Anxious childhood attachment predicts childlessness in later life

Robin Hadley [1], Chloe Newby [2], & John Barry [3]

[1] Manchester Metropolitan University, United Kingdom
[2] Male Psychology Network, United Kingdom
[3] University College London, United Kingdom

Correspondence: john.barry@ucl.ac.uk

ISSN: 2515-138X

The objective of this study was to test the hypothesis that childhood attachment predicts whether a person has children in later life. Although being a parent is considered a typical part of the human life cycle in most parts of the world, childlessness has increased substantially in recent decades in developed parts of the world. It is possible that insecure childhood attachment has contributed to this phenomenon, but this hypothesis has been relatively little explored. This study is a cross-sectional survey of 394 men and women aged over 50 years old, stratified by geographical UK region from a research panel, and analysed using hierarchical logistic regression. Validated measures of childhood attachment and other psychological and demographic factors were used. The main finding was that, independent of the impact of other variables (age, sex, education level, marital status, life stress, health-related quality of life, mental positivity, and avoidant attachment style), people who were childless were significantly more likely to have developed an anxious attachment to their primary caregiver in childhood. This study is the first to demonstrate the significance of anxious childhood attachment as a predictor of producing children in one's lifetime.

Keywords: ambivalence; childlessness; family structure; social change; social trends

The global trend of increased longevity and declining fertility rates has resulted in a population that is both increasingly ageing and increasingly without children (Kreyenfield & Konietzka, 2017; Organisation for Economic Co-operation and Development, 2015). Most societies have expectations of their citizens involving transitions across the life course with attendant roles and meanings surrounding each specific phase (Becker, 1999; Goldberg, 2014). In most cultures, parenthood is a typical and expected part of the life cycle (Neugarten, 1969) and the majority of people intend to become parents (Archetti, 2019; Riskind & Patterson, 2010; Sylvest et al., 2018; Thompson & Lee, 2011). In the Netherlands, Keizer (2010) found that childless cohort was formed of three distinct sections: the childless of circumstance accounted for 80%; with rest equally divided by the chosen-childless (10%); and the infertile (10%).

Involuntary childlessness is typically associated with distress (Boivin, Bunting, Collins, & Nygren, 2007; Letherby, 2016; Luk & Loke, 2018). A diagnosis of potential or actual infertility can have a significant impact on mental and physical health on a par with serious medical conditions (Cousineau & Domar, 2007; Fisher & Hammarberg, 2017; Saleh, Ranga, Raina, Nelson, & Agarwal, 2003).

Factors that impact the fertility outcomes of men and women include childhood experience (Allen, 2019; Hadley, 2008; Hadley & Hanley, 2011), education level, relationship breakdown, ethnicity, and religion (Fisher & Hammarberg, 2017; Sobotka, 2017).

Psychological issues can play a role in childlessness too. Caspi, Elder, and Bem (1987) examined the continuities and consequences of childhood shyness. They found that men, but not women, who were shy as children were subsequently more likely to delay entry into marriage, parenthood, and stable careers than were their contemporaries. Social withdrawal may impede the formation of romantic relationships (Nelson et al., 2008) and shyness can have a negative effect on relationships through creating lower quality romantic relationships. For example, through reduced intimacy (Wenzel, 2002); greater instability for men (Caspi, Elder, & Bem, 1988); higher level of problems, distress, and lower satisfaction in marriages (Baker & McNulty, 2010; Filsinger & Wilson, 1983).

There are three main weaknesses of previous research into the causes of childlessness. Firstly, there is a paucity of research exploring the effect of psychological factors in childlessness. The majority of studies have focused on the impact of infertility – both medically and socioculturally. Secondly, most research in this area examines how infertility and involuntary childlessness cause stress. Thirdly, the majority of studies on infertility and childlessness focus on the psychological consequences for women rather than for men (Hadley, 2019).

Unfortunately, in research literature, the term 'childlessness' has frequently been used indiscriminately. Research has often reported childlessness simply as a binary of either 'voluntary' or 'involuntary' (Allen & Wiles, 2013; Pesando, 2018). Likewise, terms such as 'infertility', 'childless', 'childlessness', 'childfree', 'childless-by-choice', 'involuntary childless', and 'childless-by-circumstance' have been used inconsistently and without definition (Hadley, 2018a; Letherby, 2016). However, the terms 'childfree', 'childless-by-choice', 'involuntary childless' and 'childless-by-circumstance' have recently become widely used in academia and the wider media. The first two terms refer to those who have decided not to become parents. The third term has been ascribed a clinical status related to people whose infertility treatment has been unsuccessful and/or have withdrawn from infertility treatment. The fourth term relates to 'childless' people who have not accessed medical services regarding their fertility and/or circumstances have prevented their wish for parenthood. Contemporary research acknowledges the subjectivity and fluidity inherent in people's reproductive circumstances. The 'childless' are now viewed as a heterogeneous group that form a 'continuum of childlessness' with distinct groups at either end (Monarch, 1993). As personal circumstances change over the life course people position themselves at different points (Letherby, 2010). For the purposes of this paper, 'childlessness' refers to an absence of 'biological' or 'social' children (i.e., those who are adopted, fostered, or stepchildren).

Demographic explanations

There is a complex relationship between demographic considerations and the social factors described in the introduction. In their review of childlessness in Europe, Tanturri et al. (2015) examined the historical context, current trends, definitions, concepts, and theoretical explanations for childlessness. The interaction between two determinants (e.g., cultural factors) and micro determinants (e.g., personality factors) of childlessness, and the consequence of childlessness were scrutinised. The main determinants were family changes (e.g., divorce), women's education (influencing postponement of first birth in some parts of Europe), social acceptance of childlessness in North and West Europe, and change in family size ideals. There is a possible influence of family-friendly policies, but this is under-researchers in the UK. Studies have also considered attitudes and values (Hakim, 2005), occupation vs education (Neyer & Hoem, 2008), household income, personality, gender equity and early life predictors.

The few studies that have focused on men show macro determinants that are largely country dependent, such as anti-traditionalism, secularisation, and celibacy. Micro determinants include relationship formation and early life predictors but again, no studies focus specifically on men. Testa (2012) analysed aspirations to family size (ideal, intended and actual family size), and found that men have a smaller ideal family size than women do. Testa also found that although there was a positive correlation between women's mean ideal family size and their share of life satisfaction, men associated childlessness with an increase life satisfaction.

Medical explanations

Medical conditions are widely associated with childlessness. One in seven couple in the UK seek medical advice concerning conception (Human Fertilisation and Embryology Authority, 2014). Factors affecting fertility are relatively common. For example, the endocrine condition polycystic ovary syndrome (PCOS) is of the most common causes of subfertility in women, affecting 10% of women or more (A.A. Barry, Smith, Deutsch, & Perry-Jenkins, 2011). It is known that fertility problems are a cause of distress for both men and women (Earle & Letherby, 2003; Petrou, 2018). However, the majority of research literature focuses on women (Culley, Hudson, & Lohan, 2013; Letherby, 2016; Throsby & Gill, 2004). This gender difference might be due to the greater social pressure on women to have children (Benyamini, Gozlan, & Kokia, 2009; Russo, 1976; Seager, Sullivan, & Barry, 2014), and the stressful treatment procedures that women may go through (Cousineau & Domar, 2007; Everywoman, 2013). For example, the invasive procedures involved in vitro fertilisation (IVF) including general anaesthetic for laparoscopic egg retrieval (Littleton & Bewley, 2019). In addition, as noted by the Royal College of Obstetrics and Gynaecology (RCOG): 'the negative psychological impact of early pregnancy loss can be both severe and protracted and affects women and their families' (Graziosi, Mol, Ankum, & Bruinse, 2004, p.10).

In the UK, men's fertility history is not routinely recorded; therefore it is not possible to assess the number of childless men in the UK (Hadley, 2018b). However, despite the widely held belief that men are fertile from puberty until death, the reality is that sperm efficacy lessens with age (Bray, Gunnell, & Smith, 2006) and many fertility clinics will not accept donations from men aged over 40. Men are said to experience existential stress over involuntary childlessness more than women do. Yalom (2008, p.9) suggests that there is a 'longing to project oneself into the future... biologically through children transmitting our genes.' This existential aspect can make engaging in infertility issues with men difficult because men are often socially validated by their virility in biological, social, and economic arenas. Moreover, an international review of anthropological studies reported infertile men may be deemed 'weak and ineffective' (Dudgeon & Inhorn, 2003, p.45).

A number of studies have focused on the impact of infertility on Health-Related Quality of Life (HRQoL). Women in these studies typically report lower Quality of Life (QoL) that men do, though men's QoL is also reduced by a diagnosis of infertility (Chachamovich et al., 2010; Fisher & Hammarberg, 2017).

Psychological explanations

Psychological factors may be associated with childlessness. For example, psychological stress can affect physical and psychological well-being. This is complex process but, broadly speaking, mostly occurs through two mechanisms. First, the impact on the behaviour of the individual includes anxiety and social withdrawal, depressive behaviour and maladaptive coping strategies such as substance abuse. Second is the impact on health through psychoneuroimmunological pathways (McEwen, 2008) i.e., a direct impact of stress hormones on the immune and reproductive systems.

An example of the impact of stress on childlessness is the meta-analytic finding that distress is associated with miscarriage (Qu et al., 2017). The mechanism for this effect is likely to be the activation of the hypothalamic pituitary adrenal axis (HPA) increasing stress hormones such as corticotrophin-releasing hormone and adrenal cortisol (Parker & Douglas, 2010).

Attachment

The qualities of our relationships in adult life are based on the quality of our relationships in early life (Bretherton & Munholland, 1999). The emotional bond, or attachment, created with our primary caregiver(s) in infancy and childhood influences all future bonds, especially romantic partnerships (Hazan & Shaver, 1987). Childhood attachment can influence the quality of our relationships throughout life, and consequently whether people have children or not.

There is a large body of work, dating back to Hampton (1927), demonstrating the impact of personality on relationships (Arroyo & Harwood, 2011; Kerr, Lambert & Bem, 1996; Nelson et al., 2008; Tackett, Nelson & Busby, 2013; Zhao, Kong, & Wang, 2013). For example, Caspi, Elder, and Bem (1988) found that men with childhood histories of shyness married later than other men, had children later, and were more likely to experience marital instability. Women with similar childhood shyness characteristics did not appear to be affected in the same manner.

Hazan and Zeifman (1999) emphasised that Bowlby's (1979, p.129) attachment theory operated over the life course 'from the cradle to the grave'. Parenthood and childlessness affected well-being in a variety of ways at different times across the life course; for example, by generational norms (Umberson, Pudrovska, & Reczek, 2010). In addition, substantial life events influence intimate relationships and affect attachment styles and behaviours (Cheng, Zhang, Sun, Jia, & Ta, 2015; Ding, Zhang, & Cheng, 2016; Umberson, et al., 2010). Stress experienced in infancy and childhood, especially persistent stressors which are perceived as uncomfortable, may be damaging to physical and mental health, and shape the individual's subsequent physiological response to stress (Gerdhart, 2006). Likewise, separation and loss in adult pair bonds impacts on physical, psychological, health and social well-being (Hazan & Zeifman, 1999).

Barry, Seager and Brown's (2015) survey of 217 adults found that worse childhood attachment problems, especially avoidant attachment, predicted a reduction in adulthood relationship satisfaction. Similarly, Hadley and Hanley (2011) found that involuntary childless men reported difficulties in forming of relationships due to poor parenting in childhood. Interviews with undergraduate psychology students in the US (155 male and 224 female) found that avoidant and anxious/ambivalent views of close adult relationships predict more negative views of parenthood and parent-child relationships (Rholes,

Simpson, Blakely, Lanigan, & Allen, 1997). Carnelley and Jaffe (1994) found that the romantic and marital relationships of people high in avoidant or anxious/ambivalence were less close, trusting, intimate, and less satisfying.

Hypothesis

This study tests the hypothesis that demographic and psychological factors will predict whether someone in their 50s has children or not.

METHODS

Design

This study is a cross-sectional survey analysed using hierarchical binary logistic regression. Logistic regression is used when the dependent variable is binary. The dependent variable in the present study was parent status, divided into three binary outcomes: (1) parent or childless; (2) parent or child-free; and, (3) parent or other. The predictor variables were four demographic variables (age, sex, education level, and marital status), and four psychological factors (health-related quality of life, mental positivity, attachment style [anxious or avoidant]). Background variables that were controlled for were sexuality, ethnicity, and life stress. Apart from categorical outcomes, most items were scored on a six-point Likert Scale from 'very much agree' to 'very much disagree', with an additional option of 'choose not to answer', for questions of a sensitive nature.

The survey used *Qualtrics* survey software and data were analysed using SPSS statistical software version 22.

Participants

Participants were men and women over the age of 50. This age limit was selected for two reasons. First, to cover the 'baby boom' increase in live births in the UK between World War II and the early 1960s (Goldstein, 2009). Second, at the time of the study (2017), 50 was the earliest age a person was eligible for retirement (Phillipson, 2013). Lightspeed, a digital collection company, and certified by the British Healthcare Business Intelligence Association, recruited participants from a panel of thousands of people across the UK. A quota sample of men and women, stratified by UK region, was collected.

A pilot study by the authors found a relatively low uptake rate for men. Consequently, for the purpose of statistical power, we purposefully asked Lightspeed to approach more men than women in order that we had an adequately large group of men.

The exclusion criteria were: (1) not giving key information (gender, parental status, etc.); being under 50 years old; and, (3) not completing the consent form.

Dependent variable

Parent status was assessed by self-reported answers to the questions: 'Do you have children?' (Yes or No); 'For you, how much is having children (or not) a matter of your personal choice?'; 'If you don't have children, how much have each of the following contributed to you being childless: fertility problems, age, medical problems and other issues e.g., employment status, shyness, etc.'

From the reported answers, participants were grouped as: (1) parents; (2) a non-parent by not finding the right partner ('childless'); (3) a non-parent by choice ('child-free'); and, (4) a non-parent due to other reasons.

Predictor variables (demographics)

Age was measured in years by self-report. Gender was self-reported from a choice of male, female, male-female, or female-male transgender. Level of education by the response to the question: 'What is your highest level of educational qualification?' [O Level General Certificate of Secondary Education (GCSE), A Level, GCSE, Degree (or above), Skill (National Vocational Qualification (NVQ), City and Guilds, etc., Other (please specify). Marital status was defined by self-report of any of the following being single, married, in a civil partnership, divorced, in a relationship, widowed or other.

Predictor variables (psychological)

Health-Related Quality of Life (HRQoL) – The MOS 36-item Short Form Health Survey (SF-36; McHorney, Ware, Lu, & Sherbourne, 1994) is a 36-item health questionnaire which addresses HRQoL for eight dimensions of health whereby lower scores indicate worse health. The median Cronbach's alpha for this scale was 0.85.

Mental positivity – Positive Mindset Index (PMI; J.A. Barry, Folkard, & Ayliffe, 2014) was used. This brief scale consists of six items (happiness, confidence, being in control, emotional stability, motivation, and optimism) on a five-point Like scale (from, for example, 'very happy' to 'very unhappy'). This scale shows how good internal reliability (Cronbach's alpha = 0.926) and correlates well with the psychological subscale of the SF-36 whereby higher scores indicate more mental positivity.

Attachment – The Relationship Structures (ECR-RS) questionnaire (Fraley, Niedenthal, Marks, Brumbaugh, & Vicary, 2006) is a nine-item measure based on Hazan and Shaver's (1987) classic study. A review of the ECR-RS concluded that it provides 'one of, if not the, most appropriate self-report measure of adult romantic attachment currently available' (Sibley, Fischer, & Liu, 2005, p. 1534). In the ECR-RS, *anxious attachment* (which corresponds to Hazan and Shaver's description of *anxious/ambivalent attachment*) is described by three items: (1) 'I often worry that this person doesn't really care for me'; (2) 'I'm afraid that this person may abandon me'; and, (3) 'I worry that this person won't care about me as much as I care about him or her'. *Avoidant attachment* is described by six items: (1) 'It helps to turn to this person in times of need'; (2) 'I usually discuss my problems and concerns with this person'; (3) 'I talk things over this person'; (4) I find it easy to depend on this person'; (5) 'I don't feel comfortable opening up to this person' (reversed); and, (6) 'I prefer not to show this person how I feel deep down'. Cronbach's alpha coefficients are between 0.75 and 0.91 for anxious attachment and between 0.87 and 0.92 for avoidant attachment (Fraley, Hefferman, Vicary, & Brumbaugh, 2011; Moreira, Martins, Gouveia, & Canavarro, 2015) whereby higher scores indicate more problems with attachment

Control variables

Ethnicity and sexuality – Ethnicity was assessed by the response to the question: 'Please state your ethnic group: White, Mixed, Asian or Asian British, Black or Black British, Chinese, Other (please specify)'. Sexual orientation was assessed by the response to the question: 'How would you describe your sexual orientation: Bisexual, Gay, Heterosexual, Lesbian Woman, Choose not to answer, Other (please specify)'.

Stressful life events – Stressful life events were measured in order to control for any impact of recent events on any of the other psychological variables. To measure stress related to life events experienced in the past 12 months, participants completed a checklist of life events of various degrees of stressfulness (Miller & Rahe, 1997) whereby higher scores indicate more exposure to stressors.

Setting

The setting was online and recruitment was from the Lightspeed panel that consists of thousands of people across the UK.

Sample size

Based on the guidelines by Peduzzi, Concato, Kemper, Holford, and Feinstein (1996), the minimum sample size for logistic regression should be 10 k/p, where k is the number of predictor variables, and p is the smallest of the proportions of negative positive cases. In the present study, $k = 9$ and $p = 0.24$ (24%), where the smallest proportions of cases was of parents (n = 332) to other reasons (n = 79). Thus, minimum sample size needed for statistical power was 10*9/0.24 = 375. This is smaller than our total sample size (N = 394) which meant that there was sufficient power to compare parents to non-parents study.

Procedure

During June 2017, potential participants were identified on the panel who met the inclusion criteria for this study. These people were contacted, and the study was run until our quota was reached. Recruitment was completed in five days.

Ethics

All participants gave their informed consent to participating in the study, and the guidelines of the Declaration of Helsinki were followed. Participants were paid a small fee for doing the survey, as is the norm when panel members complete a survey. Phrasing questions was done with sensitivity. At the end of the survey, contact details were given for those who might need further information or support from Samaritans (UK charity), and childless community support networks More to Life and Infertility Network UK. The study received ethical approval from the University College London's Research Ethics Committee (REC Reference: 4075/010). Continuous data were presented as means ± SD, and categorical data were analysed using Pearson's Chi-square (X^2) test; with Fishers Exact Test adjustment where appropriate (see Tables 1 & 2). Binary logistic regression models were employed to investigate the factors associated with parent status, and the results reported as odds ratios (ORs, called 'Exp(B)' in SPSS) with 95% confidence intervals (CIs). Missing data were deleted pairwise, so that where a participant gave some information but had given responses to all items; data for any responses they gave could be included in the analysis. The significance threshold was set at $p < .05$ and all significance values were two-tailed. All statistical analyses were carried out using SPSS statistical software for Windows, version 22 (IBM Corporation, 2013).

RESULTS

The median duration participants took to complete the survey was 610 seconds (minimum 193, maximum 62,783). 'Speedsters' (those who completed the survey in less than 40% of the median time) were excluded, as per the Lightspeed standard practice. Also excluded were data showing signs of response bias (e.g., giving the same response to every question). Twelve participants were omitted from analysis because they were aged less than 50. Only one of the non-heterosexual samples was childless,

meaning that there were too few non-heterosexual people in the sample for sufficient statistical power, thus non-heterosexual data had to be omitted from further analysis. Similarly, the ethnicity variable had to be omitted from the regression models because only 1% of the sample was non-White. Therefore, regression models in this study included predictor variables: age, sex, education level, marital status, life stress, health-related quality of life, mental positivity, attachment style (anxious, avoidant).

The final sample size was 394 (237 men and 157 women) aged >50. The mean ± SD age of men is (76.9 ± 7.5), for women is (76.8 ± 7.4). Of the men, there were 195 parents and 42 non-parents. Of the women, there were 125 parents and 32 non-parents.

Table 1 shows the background characteristics of the sample measured as categories. There was no significant difference between men and women in terms of ethnicity, marital status, or educational level.

Table 1
Background Characteristics of the Men and Women in the Study

		Male	Female	X^2
Ethnicity	White	235 (99.6%)	154 (98.1%)	3.204 [ns]
	Other	1 (0.4%)	3 (1.9%)	
	None	5 (2.1%)	4 (2.5%)	
Education	GCSE	64 (27%)	52 (33.1%)	2.580 [ns]
	A Level	90 (38%)	54 (34.4%)	
	University	57 (24.1%)	31 (19.7%)	
	Postgraduate	16 (6.8%)	12 (7.6%)	
	Doctoral	5 (2.1%)	4 (2.5%)	
Marital Status	Married/Civil partnership	151 (64.2%)	87 (55.8%)	7.390 [ns]
	Divorced	33 (14%)	25 (16%)	
	Widowed	12 (5.1%)	18 (11.5%)	
	In relationship	18 (7.7%)	10 (6.4%)	
	Single	20 (8.5%)	15 (9.6%)	
	Other	1 (0.4%)	1 (0.6%)	

Note: X^2 values are all with Fisher's Exact Test adjustments; show that there was no statistically significant difference between men and women on ethnicity, relationship status or education.

Table 2 shows the background characteristics of the sample measured on a continuous scale (age, life stress, etc.) and the categorical outcome variables, grouped according to the sex and parent status of the participants.

Table 2

Mean ± SD Outcomes According to the Sex and Parent Status of the Participants

	Male				Female			
	Parent (n = 195)	Child-free (n = 22)	Childless (n = 12)	Other (n = 8)	Parent (n = 125)	Child-free (n = 14)	Childless (n = 11)	Other (n = 7)
Age	77.62±7.69	73.14±6.33	71.75±4.83	75.50±4.14	77.50±7.44	73.21±5.66	71.55±6.44	79.57±5.41
Life stress	82.69±91.24	53.36±56.18	66.67±52.43	45.88±60.42	93.75±75.99	78.36±76.31	96.73±82.19	35.00±43.25
HRQoL	50.10±12.00	55.10±8.00	51.28±9.79	54.58±9.87	49.84±10.43	49.95±11.37	48.19±14.42	44.63±14.95
PMI	3.62±0.73	3.89±0.81	3.32±0.78	3.73±0.64	3.65±0.70	3.48±0.74	3.27±0.89	3.38±0.81
Anxious	2.20±1.31	2.24±1.27	2.50±0.98	1.71±0.68	2.00±1.09	2.14±1.08	3.45±1.37	2.19±1.26
Avoidant	2.26±1.00	2.47±1.30	2.79±1.18	1.73±0.93	2.21±1.10	2.45±1.31	2.48±1.13	2.40±1.39

HRQoL = Health-Related Quality of Life, measured with the SF-12

PMI = Positive Mindset Index

Binary logistic regression

Four binary logistic regressions were conducted, each comparing the odds of being a parent to the odd of being: (1) a non-parent for any reason; (2) a non-parent through not finding the right partner (childless); (3) a non-parent by choice (child-free); and, (4) a non-parent due to other reasons, including the health of self of partner. The term for item 2: 'a non-parent through not finding the right partner' was drawn from the work of several authors (e.g., Allen & Wiles, 2013; Cannold, 2005; Graham, Hill, Taket, & Shelley, 2013; Simpson, 2005). For the purpose of using marital status as a predictor in binary logistics regression, the various subgroups of the marital status variable were combined into one dichotomous variable: participants who were married or in a civil partnership, versus participants in all other categories.

Tables 3–6 show that marital status was by far the strongest predictor of whether someone was a parent or not.

Table 3 shows that being older increased the odds of being a parent rather being a non-parent (OR = 0.923 [0.89–0.96], $p < .0002$). More life stress in the past 12 months was associated with increased odds of being a parent (OR = 0.995 [1.00–0.99], $p < .022$). The strongest predictor of parent status was marital status: being married significantly increased the odds of being a parent (OR = 9.117 [4.9–16.72], $p < .001$).

Table 3
Predictors of being a Parent (n = 319) Compared to not Having Children for Any Reason (N = 74)

Variable	OR	95% CI	*p*
Age	.923	0.89–0.96	.0002
Sex	1.179	0.65–2.14	.589
Education	.987	0.75–1.30	.926
Marital status	9.117	4.97–16.72	.001
Life stress	.995	1.00–0.99	.022
HRQoL	1.008	1.01–0.98	.627
Mental positivity	1.332	1.33–0.83	.231
Anxious attachment	1.223	0.92–1.64	.174
Avoidant attachment	.927	0.67–1.28	.648

Table 4 shows that being older increased the odds of being a parent rather than being childless (OR = 0.903 [0.84–0.97], $p < .006$). Showing more signs of an anxious attachment style was associated with increased odds of being childless (OR = 1.772 [1.09–16.2.88], $p < .021$). The strongest predictor of parent status was marital status: being married significantly increased the odds of being a parent (OR = 19.439 [6.23–60.61], $p < .003$).

Table 4
Predictors of Being a Parent (n = 319) Compared to Being Childless (N = 23)

Variable	OR	95% CI	*p*
Age	.904	0.84–0.97	.006
Sex	1.386	0.50–3.87	.533
Education	.808	0.51–1.28	.366
Marital status	19.439	6.23–60.61	.003
Life stress	.998	1.00–0.99	.593
HRQoL	1.042	0.98–1.10	.167
Mental positivity	1.195	0.54–2.67	.664
Anxious attachment	1.772	1.09–2.88	.021
Avoidant attachment	1.0553	0.59–1.88	.860

Table 5 shows that being older increased the odds of being a parent rather than being child-free (OR = 0.914 [0.87–0.97], $p < .001$). The strongest predictor of parent status was marital status: being married significantly increased the odds of being a parent (OR = 9.246 [4.18–20.45], $p < .003$).

Table 5
Predictors of Being a Parent (n = 319) Compared to Being Childless (N = 36)

Variable	OR	95% CI	*p*
Age	.914	0.87–0.97	.001
Sex	.983	0.44–2.19	.966
Education	.928	0.65–1.33	.685
Marital status	9.246	4.18–20.45	.003
Life stress	.996	0.99–1.00	.158
HRQoL	1.010	0.97–1.05	.644
Mental positivity	1.692	0.91–3.13	.094
Anxious attachment	1.061	0.72–1.56	.767
Avoidant attachment	1.085	0.71–1.65	.704

Table 6 show that more life stress in the past 12 months was associated with increased odds of being a parent (OR = .986 [0.98–1.00], $p < .02$). Being married significantly increased the odds of being a parent (OR = 3.494 [1.11–10.96], $p < .032$).

Table 6
Predictors of Being a Parent (n = 319) Compared to not Having Children for Medical or Other Reasons (n = 15)

Variable	OR	95% CI	*p*
Age	.979	0.91–1.05	.566
Sex	1.551	0.52–4.66	.434
Education	1.132	0.69–1.86	.627
Marital status	3.494	1.11–10.96	.032
Life stress	.986	0.98–1.00	.020
HRQoL	.992	0.94–1.04	.749
Mental positivity	.793	0.33–1.90	.603
Anxious attachment	.971	0.55–1.72	.920
Avoidant attachment	.699	0.36–1.37	.299

DISCUSSION

The aim of this study was to discover the predictors of being childless in later life. A total of 393 men and women participated (319 parents and 74 non-parents). The main finding of interest was that, controlling for other variables, participants who were childless showed significantly more signs than parents of having an anxious attachment style ($p < .021$).

Table 2 shows that HRQoL and PMI scores were around the norm for this age group. The life stress scores were below 150 in each group, indicating generally low levels of stress (i.e., not many life events). The anxious attachment scores are similar to those found by Fraley et al (2011) – about 2.1 compared to 2.5 – though the avoidant attachment scores are slightly lower (about 2.2 compared to 3.2), perhaps due to the much older age of the present sample compared to Fraley et al (mid 70s to early 20s).

The findings that parents were significantly older and experienced more life changes than the other groups is unlikely to be of theoretical interest. The finding of being older is probably due to chance. The finding regarding life events probably relates to the various formal and informal social interactions – schools, health, employment, relationships – involved with children across the life course. For example, the SHARE study (Dykstra & Fokkema, 2011) reported that family were significant positive factors in the health and well-being of older people. European later-life families were exemplified by having an adult child living close by and with frequent contact with at least one of their children. Moreover, there were strong family care obligations with regular parent-to-child 'help-in-kind' (Dykstra & Fokkema, 2011). However, the finding the childless people showed more sign of an anxious attachment style than parents did is of theoretical and practical significance. Because this study was able to control for other psychological variables, we can say that the relationship between anxious and childlessness is independent of other demographic and psychological variables. For example, it cannot be explained HRQoL, PMI, or the impact of recent life stress.

There is evidence that the quality of relationships in adult life echo the quality of our relationships in early life (Bretherton & Munholland, 1999). Stress in childhood impacts physical and mental health and shapes the subsequent physiological response to stress (Gerhardt, 2006). Childhood attachment problems, especially avoidant attachment, predict both adult relationship quality (Bretherton & Munholland, 1999) and adulthood relationship satisfaction (J.A. Barry et al., 2015; Caspi et al., 1988) argued that childhood experience produces a style of 'interactional continuity' that is active throughout life course. This links directly with the inner working model of attachment theory where the pattern for

relating to others is set by parental responses (Bretherton & Munholland, 1999). Therefore, there is an evidence base for the present finding that anxious attachment predicts childlessness in adulthood, though ours is the first study to find evidence for this link in older adults.

It is interesting that in the present study attachment anxiety, but not avoidance, should predict childlessness. In one sense, it might be predicted that avoidant people would be less likely to become parents given that they tend to have little hope of achieving intimacy (Crittenden & Ainsworth, 1989). In contrast, people high anxious/ambivalence would be predicted to be preoccupied with intimacy needs (Hazan & Shaver, 1987). The answer might be that a person's fears (of abandonment, rejection, etc.) create emotional and behavioural barriers that prevent them from doing the things that create the circumstances of becoming parents, rather than simply having a general sense of lack of intimacy, as seen in the avoidant people. Our study did not find that other demographic variables, apart from age and marital status, predicted parenting status. In contrast, Tanturri et al (2015) found that some demographic factors increased childlessness, for example, women's education caused postponement of first birth in some parts of Europe. However, the present study found no significant influence of educational level on being a parent or not. In addition, medical problems associated with fertility (of one's self or partner) were not a significant predictor of childlessness.

Strengths of the present study

This study has several strengths. Firstly, while most research explored cultural or medical explanations for childlessness, the present study explored the relationship between psychological factors and childlessness. Many research have explored the impact of infertility and childlessness on psychological functioning, but the present study explored the impact in the opposite direction i.e., the relationship between psychological experiences in childhood and childlessness in later life. Furthermore, the majority of previous studies focus on the psychological consequences for women rather than men; this study examined the influence of sex as a predictor of parent status, though we found no significant influence of sex.

Another strength of the study is that we used a quota sample stratified by UK region, which means that potential regional differences were accounted for in the analysis.

Weaknesses of the present study

Although a novel aspect of this study is that it tested the hypothesis that psychological factors influence childlessness rather than vice versa, the fact is that with a cross-sectional design we cannot say with certainty what the direction of causality is. In order to know this with more certainty, a longitudinal study would be required, assessing the development of attachment in infancy, and following up the infants into later life. This design, although being much more costly in terms of time, effort, and finances, would – with appropriate control for other variables – be a landmark study in our understanding of the relationship between childhood attachment and parent status in later life.

Although the sample size was large and adequate to power the main test in this study (parents vs those with no children for any reason), the other three tests needed an average of 8% more participants for adequate power. Although this loss of statistical power is relatively small, we cannot be sure that our analysis overlooked a significant relationship in regards the predictors of being child-free, and not having children for other reasons. On the other hand, the statistical power was sufficient to detect several significant findings.

The participants were almost entirely White and heterosexual, thus the findings might not generalise well to more ethnically and sexually diverse population. This narrowness of the sexuality characteristics

probably reflects that the fact that the present study drew upon a sample of people who were raised in times of strong heteronormative and pronatalist norms. This means that the findings can be best generalised to Caucasian heterosexual people across the UK, but on the other hand this is a relatively large demographic.

Future studies

Ideally, research into the impact of childhood experiences on adult lifestyle should be done longitudinally. Likewise, there is a concomitant need to characterise stressors that may have impact on fertility. Consequently, future studies may require participants to identify any stressors that they experienced during their reproductive years.

CONCLUSION

To the knowledge of the authors, no other study to date has highlighted the significance of anxious childhood attachment as a predictive factor of childlessness in later life. These findings have implications for our understanding of lifespan development. For example, if confirmed by longitudinal research, they provide an interesting insight into one of the potential causes of social isolation and vulnerability in later life, and suggest interventions based on attachment theory that might be introduced at almost any point in the lifespan. The present findings also have implications for interventions in relationship counselling and other therapeutic settings. For example, where couples are in disagreement concerning whether or not to have children, the therapist might aim to address any unresolved childhood attachment issues in each partner before the question of having children is resumed. Moreover, the findings offer an insight into a profound aspect of the continuation of the human species.

References

Allen, M. S. (2019). The role of personality in sexual and reproductive health. *Current Directions in Psychological Science,* 0963721419862293. https://doi.org/10.1177/0963721419862293

Allen, R. E. S., & Wiles, J. L. (2013). How older people position their late-life childlessness: A qualitative study. *Journal of Marriage and Family, 75*(1), 206–220. https://doi.org/10.1111/j.1741-3737.2012.01019.x

Archetti, C. (2019). No life without family: Film representations of involuntary childlessness, silence and exclusion. *International Journal of Media & Cultural Politics, 15*(2), 175–196. https://doi.org/10.1386/macp.15.2.175_1

Arroyo, A., & Harwood, J. (2011). Communication competence mediates the link between shyness and relational quality. *Personality and Individual Differences, 50*(2), 264–267. https://doi.org/10.1016/j.paid.2010.09.041

Baker, L., & McNulty, J. K. (2010). Shyness and marriage: Does shyness shape even established relationships*? Personality and Social Psychology Bulletin, 36*(5), 665–676. https://doi.org/10.1177/0146167210367489

Barry, A. A., Smith, J. Z., Deutsch, F. M., & Perry-Jenkins, M. (2011). Fathers' involvement in child care and perceptions of parenting skill over the transition to parenthood. *Journal of Family Issues, 32*(11), 1500–1521. https://doi.org/10.1177/0192513x11406229

Barry, J. A., Folkard, A., & Ayliffe, W. (2014). Validation of a brief questionnaire measuring positive mindset in patients with uveitis. *Psychology, Community & Health, 3*(1), 1–10. https://doi.org/10.5964/pch.v3i1.76

Barry, J. A., Seager, M., & Brown, B. (2015). Gender differences in the association between attachment style and adulthood relationship satisfaction (brief report). *New Male Studies, 4*(3), 63–74.

Benyamini, Y., Gozlan, M., & Kokia, E. (2009). Women's and men's perceptions of infertility and their associations with psychological adjustment: a dyadic approach. *British Journal of Health Psychology, 14*(1), 1–16. https://doi.org/10.1348/135910708x279288

Boivin, J., Bunting, L., Collins, J., & Nygren, K. (2007). International estimates of infertility prevalence and treatment-seeking: Potential need and demand for infertility medical care. *Human Reproduction, 22*(6), 1506–152. https://doi.org/10.1093/humrep/dem046

Bowlby, J. (1979). *The making and breaking of affectional bonds.* London, UK: Tavistock.

Bray, I., Gunnell, D., & Smith, G. D. (2006). Advanced paternal age: How old is too old? *Journal of Epidemiology & Community Health, 60*(10), 850–853. https://doi.org/10.1136/jech.2005.045179

Bretherton, I., & Munholland, K. A. (1999). Internal working models in attachment relationships: A construct revisited. In J. Cassidy & P. R. Shaver (Eds.), *The handbook of attachment: Theory, research and clinical applications* (pp. 89–111). New York, NY: Guildford Press.

Cannold, L. (2005). *What, no baby? Why women are losing the freedom to mother, and how they can get it back*. Fremantle, Australia: Curtin University Books.

Carnelley, K. B., F, P. P., & Jaffe, K. (1994). Depression, working models of others, and relationship functioning. *Journal of Personality and Social Psychology, 66*(1), 127–140. https://doi.org/10.1037/0022-3514.66.1.127

Caspi, A., Elder, G. H., & Bem, D. J. (1987). Moving against the world: Life-course patterns of explosive children. *Developmental Psychology, 23*(2), 308–313. https://doi.org/10.1037/0012-1649.23.2.308

Caspi, A., Elder, G. H., & Bem, D. J. (1988). Moving away from the world: Life-course patterns of shy children. *Developmental Psychology, 24*(6), 824–831. https://doi.org/10.1037//0012-1649.24.6.824

Chachamovich, J. L. R., Chachamovich, E., Ezer, H., Cordova, F. P., Fleck, M. M. P., Knauth, D. R., & Passos, E. P. (2010). Psychological distress as predictor of quality of life in men experiencing infertility: a cross-sectional survey. *Reproductive Health, 7*(3). https://doi.org/10.1186/1742-4755-7-3

Cheng, G., Zhang, D., Sun, Y., Jia, Y., & Ta, N. (2015). Childless adults with higher secure attachment state have stronger parenting motivation. *Personality and Individual Differences, 87*, 39–44. https://doi.org/10.1016/j.paid.2015.07.004

Cousineau, T. M., & Domar, A. D. (2007). Psychological impact of infertility. *Best Practice & Research Clinical Obstetrics & Gynaecology, 21*(2), 293–308. https://doi.org/10.1016/j.bpobgyn.2006.12.003

Crittenden, P. M., & Ainsworth, M. D. S. (1989). Child maltreatment and attachment theory. In D. Cicchetti & V. Carlson (Eds.), *Child maltreatment: Theory and research on the causes and consequences of child abuse and neglect* (pp. 432–463). New York, NY: Cambridge University Press. http://dx.doi.org/10.1017/CBO9780511665707.015

Culley, L., Hudson, N., & Lohan, M. (2013). Where are all the men? The marginalization of men in social scientific research on infertility. *Reproductive biomedicine online, 27*(3), 225–235. https://doi.org/10.1016/j.rbmo.2013.06.009

Ding, F., Zhang, D., & Cheng, G. (2016). The effect of secure attachment state and infant facial expressions on childless adults' parental motivation. *Frontiers in Psychology, 7*(1237). https://doi.org/10.3389/fpsyg.2016.01237

Dudgeon, M. R., & Inhorn, M. C. (2003). Gender, masculinity and reproduction: Anthropological perspectives. *International Journal of Men's Health, 2*(1), 31–56. https://doi.org/10.3149/jmh.0201.31

Dykstra, P. A., & Fokkema, T. (2011). Relationships between parents and their adult children: A West European typology of late-life families. *Ageing & Society, 31*(04), 545–569. https://doi.org/10.1017/s0144686x10001108

Earle, S., & Letherby, G. (2003). Introducing gender, identity and reproduction. In S. Earle & G. Letherby (Eds.), *Gender, identity and reproduction: Social perspectives* (pp. 1-11). Basingstoke, UK: Palgrave Macmillan.

Everywoman, J. (2013). Cassandra's prophecy: Why we need to tell the women of the future about age-related fertility decline and 'delayed' childbearing. *Reproductive Biomedicine Online, 27*(1), 4–10. https://doi.org/10.1016/j.rbmo.2013.03.023

Filsinger, E. E., & Wilson, M. R. (1983). Social anxiety and marital adjustment. *Family Relations: An Interdisciplinary Journal of Applied Family Studies, 32*(4), 513–519. https://doi.org/10.2307/583691

Fisher, J., & Hammarberg, K. (2017). Psychological aspects of infertility among men. In M. Simoni & I. Huhtaniemi (Eds.), *Endocrinology of the testis and male reproduction* (pp. 1287–1317). Cham, Switzerland: Springer International Publishing.

Fraley, R. C., Heffernan, M. E., Vicary, A. M., & Brumbaugh, C. C. (2011). The experiences in close relationships-relationship structures questionnaire: A method for assessing attachment orientations across relationships. *Psychological Assessment, 23*(3), 615–625. https://doi.org/10.1037/a0022898

Fraley, R. C., Niedenthal, P. M., Marks, M. J., Brumbaugh, C. C., & Vicary, A. (2006). Adult attachment and the perception of emotional expressions: Probing the hyperactivating strategies underlying anxious attachment. *Journal of Personality, 74*(4), 1163–1190. https://doi.org/10.1111/j.1467-6494.2006.00406.x

Gerhardt, S. (2006). Why love matters: How affection shapes a baby's brain. *Infant Observation, 9*(3), 305–309. https://doi.org/10.1080/13698030601074476

Goldberg, W. A. (2014). *Father time: The social clock and the timing of fatherhood.* Basingstoke, UK: Palgrave Macmillan.

Goldstein, J. R. (2009). How populations age. In P. Uhlenberg (Ed.), *International handbook of population aging* (Vol. 1, pp. 7–18). Houten, Netherlands: Springer.

Graham, M., Hill, E., Taket, A., & Shelley, J. (2013). Why are childless women childless? Findings from an exploratory study in Victoria, Australia. *Journal of Social Inclusion, 4*(1), 70–89. https://doi.org/10.36251/josi.63

Graziosi, G. C. M., Mol, B. W., Ankum, W. M., & Bruinse, H. W. (2004). Management of early pregnancy loss. *International Journal of Gynecology & Obstetric, 86*(3), 337–346. https://doi.org/10.1016/j.ijgo.2004.04.038

Hadley, R. A. (2008). *Involuntarily childless men: Issues surrounding the desire for fatherhood* (Master's thesis). University of Manchester, UK.

Hadley, R. A. (2018a). Ageing without children, gender and social justice. In S. Westwood (Ed.), *Ageing, diversity and equality: Social justice perspectives* (pp. 66–81). Abingdon, UK: Routledge.

Hadley, R. A. (2018b). "I'm missing out and I think I have something to give": Experiences of older involuntarily childless men. *Working with Older People, 22*(2), 83–92. https://doi.org/10.1108/wwop-09-2017-0025

Hadley, R. A. (2019). The impact of male involuntary childlessness. *Psychreg Journal of Psychology, 3*(2), 58–64. http://doi.org/10.5281/zenodo.3236689

Hadley, R. A., & Hanley, T. S. (2011). Involuntarily childless men and the desire for fatherhood. *Journal of Reproductive and Infant Psychology, 29*(1), 56–68. https://doi.org/10.1080/02646838.2010.544294

Hakim, C. (2005). Childlessness in Europe: Full report. Retrieved from https://www.researchcatalogue.esrc.ac.uk/grants/RES-000-23-0074/read

Hampton, F. A. (1927). Shyness. *Journal of Neurology and Psychopathology, 8*(30), 124–131. https://doi.org/10.1136/jnnp.s1-8.30.124

Hazan, C., & Shaver, P. R. (1987). Romantic love conceptualised as an attachment process. Journal of *Personality and Social Psychology, 52*(3), 511–524. https://doi.org/10.1037/0022-3514.52.3.511

Hazan, C., & Zeifman, D. (1999). Pair bonds as attachment. Evaluating the evidence. In J. Cassidy & P. R. Shaver (Eds.), *The handbook of attachment: Theory, research and clinical applications* (pp. 336–354). New York, NY: Guildford Press.

Human Fertilisation and Embryology Authority. (2014). Fertility treatment 2014–2016. Trends and figures. Retrieved from https://www.hfea.gov.uk/media/2563/hfea-fertility-trends-and-figures-2017-v2.pdf

IBM Corporation (2013). IBM SPSS Statistics for Windows, Version 22.0. Released 2013. Armonk, NY: IBM Corporation.

Keizer, R. (2010). *Remaining childless. Causes and consequences from a life course perspective* (PhD dissertation). Utrecht University, Netherlands.

Kerr, M., Lambert, W. W., & Bem, D. J. (1996). Life course sequelae of childhood shyness in Sweden: Comparison with the United States. *Developmental Psychology, 32*(6), 1100–1105. https://doi.org/10.1037//0012-1649.32.6.1100

Kreyenfeld, M., & Konietzka, D. (Eds.). (2017). Childlessness in Europe: Contexts, causes, and consequences. Springer International Publishing.

Letherby, G. (2010). When treatment ends: The experience of women and couples. In M. Crawshaw & R. Balen (Eds.), *Adopting after infertility: Messages from practice, research, and personal experience* (pp. 29–42). London, UK: Jessica Kingsley Publishers.

Letherby, G. (2016). "Infertility" and "involuntary childlessness": Losses, ambivalences and resolutions. In S. Earle, C. Komaromy, & L. Layne (Eds.), *Understanding reproductive loss: Perspectives on life, death and fertility* (pp. 9–22). Abingdon, UK: Routledge.

Littleton, F., & Bewley, S. (2019). Honouring 'Patient 38' – A mother of all IVF mothers? *Reproductive Biomedicine & Society Online, 8,* 7–9. https://doi.org/10.1016/j.rbms.2018.10.009

Luk, B. H. K., & Loke, A. Y. (2018). Sexual satisfaction, intimacy and relationship of couples undergoing infertility treatment. *Journal of Reproductive and Infant Psychology, 37*(2), 108–122. https://doi.org/10.1080/02646838.2018.1529407

McEwen, B. S. (2008). Central effects of stress hormones in health and disease: Understanding the protective and damaging effects of stress and stress mediators. *European Journal of Pharmacology, 583*(2), 174–185. https://doi.org/10.1016/j.ejphar.2007.11.071

McHorney, C. A., Ware, J. E., Jr., Lu, J. F., & Sherbourne, C. D. (1994). The MOS 36-item Short-Form Health Survey (SF-36): III. Tests of data quality, scaling assumptions, and reliability across diverse patient groups. *Medical Care, 32*(1), 40–66. https://doi.org/10.1097/00005650-199401000-00004

Miller, M. A., & Rahe, R. H. (1997). Life changes scaling for the 1990s. *Journal of Psychosomatic Research, 43*(3), 279–292. https://doi.org/10.1016/s0022-3999(97)00118-9

Monach, J. H. (1993). *Childless, no choice: the experience of involuntary childlessness.* Abingdon, UK: Routledge.

Moreira, H., Martins, T., Gouveia, M. J., & Canavarro, M. C. (2015). Assessing adult attachment across different contexts: validation of the Portuguese version of the Experiences in Close Relationships - Relationship Structures Questionnaire. *Journal of Personality Assessment, 97*(1), 22–30. https://doi.org/10.1080/00223891.2014.950377

Nelson, L. J., Padilla-Walker, L. M., Badger, S., McNamara Barry, C., Carroll , J. S., & Madsen, S. D. (2008). Associations between shyness and internalizing behaviors, externalizing behaviors,

and relationships during emerging Adulthood. *Journal of Youth and Adolescence, 37*(5), 605–615. https://doi.org/10.1007/s10964-007-9203-5

Neugarten, B. L. (1969). Continuities and discontinuities of psychological issues into adult life. *Human Development, 12*(2), 121–130. https://doi.org/10.1159/000270858

Neyer, G., & Hoem, J. M. (2008). *Education and permanent childlessness: Austria vs. Sweden. A research note.* Paper presented at the Demographic Challenges for the 21st Century: A State of the Art in Demography: Conference Organized as a Tribute to the Continuing Endeavours of Prof. Dr. Em. Ron Lesthaeghe in the Field of Demography.

Organisation for Economic Co-operation and Development. (2015). OECD family database: SF2.5. childlessness. Retrieved from http://www.oecd.org/els/family/database.htm

Parker, V. J., & Douglas, A. J. (2010). Stress in early pregnancy: Maternal neuro-endocrine-immune responses and effects. *Journal of Reproductive Immunology, 85*(1), 86–92. https://doi.org/10.1016/j.jri.2009.10.011

Peduzzi, P., Concato, J., Kemper, E., Holford, T. R., & Feinstein, A. R. (1996). A simulation study of the number of events per variable in logistic regression analysis. *Journal of Clinical Epidemiology, 49*(12), 1373–1379. https://doi.org/10.1016/s0895-4356(96)00236-3

Pesando, L. M. (2018). Childlessness and upward intergenerational support: Cross-national evidence from 11 European countries. *Ageing and Society,39*(6), 1219–1254. https://doi.org/10.1017/s0144686x17001519

Petrou, S. (2018). *I only wanted to be a dad: A man's journey on the road to fatherhood.* Newall, UK: VASPX Publishing.

Phillipson, C. (2013). *Ageing.* Cambridge, UK: Polity Press.

Qu, F., Wu, Y., Zhu, Y.-H., Barry, J., Ding, T., Baio, G., . . . Hardiman, P. J. (2017). The association between psychological stress and miscarriage: A systematic review and meta-analysis. *Scientific Reports, 7*(1), https://doi.org/10.1038/s41598-017-01792-3

Rholes, W. S., Simpson, J. A., Blakely, B. S., Lanigan, L., & Allen, E. A. (1997). Adult attachment styles, the desire to have children, and working models of parenthood. *Journal of Personality, 65*(2), 357–385. https://doi.org/10.1111/j.1467-6494.1997.tb00958.x

Riskind, R. G., & Patterson, C. J. (2010). Parenting intentions and desires among childless lesbian, gay, and heterosexual individuals. *Journal of Family Psychology, 24*(1), 78–81. https://doi.org/10.1111/j.1467-6494.1997.tb00958.x

Russo, N. F. (1976). The motherhood mandate. *Journal of Social Issues, 32*(3), 143–153. https://doi.org/10.1111/j.1540-4560.1976.tb02603.x

Saleh, R. A., Ranga, G. M., Raina, R., Nelson, D. R., & Agarwal, A. (2003). Sexual dysfunction in men undergoing infertility evaluation: A cohort observational study. *Fertility and Sterility, 79*(4), 909–912. https://doi.org/10.1016/s0015-0282(02)04921-x

Seager, M., Sullivan, L., & Barry, J. (2014). Gender-related schemas and suicidality:

Validation of the Male and Female Traditional Gender Scripts Questionnaires. *New male Studies, 3*(3), 34–54.

Sibley, C. G., Fischer, R., & Liu, J. H. (2005). Reliability and validity of the revised experiences in close relationships (ECR-R) self-report measure of adult romantic attachment. *Personality and Social Psychology Bulletin, 31*(11), 1524–1536. https://doi.org/10.1177/0146167205276865

Simpson, R. (2005). "Living like the (Bridget) Jones's?" Using the BHPS to research whether there is a delay or decline in partnership formation in Great Britain. Paper presented at the BHPS 2005 Conference, University of Essex.

Sobotka, T. (2017). Childlessness in Europe: Reconstructing long-term trends among women born in 1900–1972. In M. Kreyenfeld & D. Koneitzka (Eds.), *Childlessness in Europe: Contexts, causes, and consequences* (pp. 17–56). Cham, Switzerland: Springer.

Sylvest, R., Koert, E., Petersen, K., Malling, G. M. H., Hald, F., Nyboe Andersen, A., & Schmidt, L. (2018). Attitudes towards family formation among men attending fertility counselling. *Reproductive Biomedicine & Society Online, 6,* 1–9. https://doi.org/10.1016/j.rbms.2018.06.001

Tackett, S. L., Nelson, L. J., & Busby, D. M. (2013). Shyness and relationship satisfaction: Evaluating the associations between shyness, self-Esteem, and relationship satisfaction in couples. *American Journal of Family Therapy, 41*(1), 34–45. https://doi.org/10.1080/01926187.2011.641864

Tanturri, M. L., Mills, M., Rotkirch, A., Sobotka, T., Takács, J., Miettinene, A., . . . Nasiri, D. (2015). State-of-the-art report: Childlessness in Europe. *Families and Societies.* Retrieved from http://www.familiesandsocieties.eu/wp-content/uploads/2015/03/WP32TanturriEtAl2015.pdf

Testa, M. R. (2012). Family sizes in Europe: Evidence from the 2011 Eurobarometer survey. *Österreichische Akademie der Wissenschaften.* Retrieved from https://www.oeaw.ac.at/fileadmin/subsites/Institute/VID/PDF/Publications/EDRP/edrp_2012_02.pdf

Thompson, R., & Lee, C. (2011). Fertile imaginations: Young men's reproductive attitudes and preference. *Journal of Reproductive and Infant Psychology, 29*(1), 43–55. https://doi.org/10.1080/02646838.2010.544295

Throsby, K., & Gill, R. (2004). "It's Different for Men": Masculinity and IVF. *Men and Masculinities, 6*(4), 330–348. https://doi.org/10.1177/1097184x03260958

Umberson, D., Pudrovska, T., & Reczek, C. (2010). Parenthood, childlessness, and well-being: A life course perspective. *Journal of Marriage and Family, 72*(3), 612–629. https://doi.org/10.1111/j.1741-3737.2010.00721.x

Wenzel, A. (2002). Characteristics of close relationships in individuals with social phobia: A preliminary comparison with nonanxious individuals. In J. H. A. Wenzel & A. Wenzel (Eds.), *A clinician's guide to maintaining and enhancing close relationships* (pp. 199–123). Mahwah, New Jersey: Lawrence Erlbaum Associates.

Yalom, I. D. (2008). The ripple effect. *Therapy Today, 19*(4), 6–11.

Zhao, J., Kong, F., & Wang, Y. (2013). The role of social support and self-esteem in the relationship between shyness and loneliness. *Personality and Individual Differences, 54*(5), 577–581. https://doi.org/10.1016/j.paid.2012.11.003