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Southern American University Undergraduates' Attitudes toward Intrauterine Insemination Undertaken by Women of Differing Age, Marital Status and Sexual Orientation

Sara L. Sohr-Preston¹, Ashley K. Rohner², Bryce H. Lott³

Abstract

Undergraduate college students in the southern U.S. were presented with vignettes about a fictional woman seeking to become pregnant via intrauterine insemination (IUI). Participants were randomly assigned to conditions in which the woman described was 26 or 41 years old, and single, married to a man, or married to a woman. After reading the vignettes, participants rated their expectations of the prospective mother's preparedness for parenting, ability to provide quality of life for a child, risk for pregnancy complications and achieving a healthy pregnancy. Results yielded marginally significantly ($p = .05$) lower expectations of achieving a healthy pregnancy when the mother was over 40, and significantly ($p < .05$) lower anticipation of preparedness for parenting and ability to provide quality of life when she was designated as single or married to a woman. We discuss findings in terms of bias favoring traditional families with a mother and father begun when the parents were in their twenties.

Keywords: IUI, High Maternal Age, Prejudice, Single Mothers, Same-Sex Parents

Introduction

Intrauterine insemination (IUI) is a frequently used method of assisted reproductive technology (ART) in which sperm, either from a male member of a client couple or from a donor, is inserted into a female client's uterine cavity. This technique has been employed to overcome a wide variety of obstacles to reproduction, including cervical factor infertility, ovulatory dysfunction, endometriosis, immunological causes, male factor infertility, unexplained infertility (Duran, Morshedi, Kruger, & Oehninger, 2002), and lack of a male partner for single women and lesbian couples (Ferrara, Balet, & Grudzinskas, 2000). The purpose of the current investigation is to examine potential stigma surrounding IUI as a path to parenthood for women who are of high maternal age, unmarried, or in a same-sex marriage. This stigma was explored in a geographic

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region, the southern U.S., in which all three groups of potential mothers have a legal right to pursue motherhood but may yet face social or cultural barriers to their pursuit. To use previously applied terminology, attitudes toward members of these groups utilizing IUI or other forms of ART may reflect *stratified reproduction*. In other words, reproduction is often deemed appropriate only for select women in contemporary Western society (Johnson, 2012; Rapp, 2001). We summarize reasons for focusing on these particular groups of women as possible targets of prejudice or bias below.

High Maternal Age

An expectant mother is considered to be of advanced maternal age when 35 or older and of high maternal age when 40 or older (Delbaere et al., 2007). Delaying childbearing beyond age 35 is becoming increasingly common in developed countries, and this trend appears to reflect a product of circumstances instead of conscious choice (Cooke, Mills, & Lavender, 2012). Expectant mothers over 35 are more likely to be placed in the “high risk” category by attending medical professionals although there is evidence that women of advanced maternal age can generally expect good obstetric outcomes (Windridge & Berryman, 1999). While not a guarantee of adverse obstetric outcomes, the fact remains that advanced maternal age has been repeatedly indicated as a risk factor for a variety of obstetric complications including preterm birth, low birth weight and prenatal death (Delbaere et al., 2007).

Focusing on such biological risk factors, or focusing on the biological clock, neglects the notion that becoming a mother later in life may be psychosocially advantageous in that mothers may be more satisfied in careers, more secure in their finances, or more emotionally ready to become a parent. Research supports that children of older mothers display elevated cognitive skills (Ragozin, Basham, Crnic, Greenberg, & Robinson, 1982; Zybert, Stein, & Belmont, 1978) and higher independence (Seth & Khanna, 1978). Older mothers have been shown to exhibit greater empathy to their infants’ needs (Baranowski, Schilmoeller, & Higgins, 1990), more supportive behaviors and less harsh parenting with their children (Conger, McCarty, Yang, Lahey, & Burgess, 1984), and higher levels of parenting knowledge (Bornstein, Cote, Haynes, Hahn, & Park, 2010). Furthermore, when new mothers over 35 have been directly compared to younger mothers adjusting to the maternal role, older new mothers appeared to adjust equally well to pregnancy and motherhood, with some evidence for greater difficulties in marital and sexual adjustment following childbirth (Windridge & Berryman, 1996). Taken together, available findings suggest that older mothers may be well equipped to adopt a parenting role *if* they are able to successfully conceive and experience a healthy pregnancy. IUI may help women of advanced maternal ages conceive, but success rates are lower than those for women under 40. This is particularly true for women 43 or older (Corsan, Trias, Trout, & Kemmann, 1996).

Despite evidence for possible psychosocial advantages of delayed childbearing, some may yet perceive older mothers, or those that successfully became mothers despite the very real limitations of the biological clock, as “unnatural” or “freakish” (Shaw & Giles, 2009). Put another way, objections to older mothers may be based on the social clock as well as the biological clock. The *social clock* refers to normative social expectations about the appropriate timetable for major adult developmental transitions (Peterson, 1996). These socially constructed and widely accepted timetables may be partially but not solely inspired by biological factors, such as when the typical ages for puberty and menopause influence the social clock for entering parenthood. The social clock is also shaped by actual social trends and individuals’ own experiences. In the U.S, recent

data places the average age of first birth at 26 years old (Martin et al., 2015), making it likely that U.S. residents less often have personal contact or knowledge of mothers of advanced and high maternal age. In support of the presence of a social clock for entry to motherhood in developed countries, in a sample of Australian university students, participants' average age offered for when a woman would be too old to have a first child was 43.01 years old (Peterson, 1996).

On a final note, while the elevated risk of infertility and pregnancy complications in women over 40 is genuine, some may overestimate its magnitude and perhaps even assume that women over 40 should never attempt to become pregnant. In other words, elevated risk may be incorrectly equated with high risk or guarantee of adverse outcomes when that is not necessarily the case. In fact, some professionals have gone as far to suggest placing upper age limits on women's access to ART (Porter, Peddie, & Bhattacharya, 2007). Based on these notions, we hypothesized southern U.S. college students' expectations of pregnancy and parenting outcomes from use of IUI to achieve pregnancy would be more negative in a woman over 40 compared to a woman in her twenties.

Marital Status

American attitudes regarding use of IUI to achieve motherhood may further be influenced by perceptions of the so-called "traditional" family, consisting of a man, his wife, and their offspring (Ethics Committee of the American Society for Reproductive Medicine, 2013; Robinson, 1997). While single mothers are no longer generally forced to either place their infants up for adoption or marry the biological father, stereotypes persist that single mothers are inferior to married mothers (Bennett & Jamieson, 1999; Robinson, 1997). Such stereotypes persist in spite of increases in intentional motherhood among single women, which may be achieved through IUI with donor sperm. In 2013, 40.6% of all births in the U.S. were to unmarried women (Centers for Disease Control and Prevention, 2013). While many single mothers become so as a result of unplanned pregnancy, there has been a noted increase in the number of women actively choosing to become a mother in the absence of an involved partner (Jadva, Badger, Morrissette, & Golombok, 2009).

It is essential to note that there is indeed evidence to suggest that single mothers, in general, are in many ways at a disadvantage compared to married mothers. For example, single mothers in the U.S. appear less happy when compared to other adults (Ifcher & Zarghamee, 2014). Furthermore, children reared by single mothers exhibit elevated rates of a variety of psychological problems including hyperactivity, poor peer relations, conduct disorder and emotional difficulties (Dunn, Deater-Deckard, Pickering, O'Connor, & Golding, 1998), higher school drop-out rates and greater likelihood of teenage pregnancy (McLanahan & Sandefur, 1994). Importantly, these findings were obtained from studies not distinguishing single mothers by choice from single mothers by circumstance. These negative outcomes have been explained by factors such as low income and lack of social support (Jadva et al., 2009), which are factors not necessarily at play for women pursuing IUI as a path to single motherhood by choice. In fact, single mothers by choice have been shown to be better educated and have higher occupational prestige when compared to their married peers (Pakizoglu, 1990). Still, individuals aware of general findings painting single mothers as somehow lesser than partnered mothers may harbor bias in favor of IUI clients with spouses. In fact, while not in the majority, some U.S. obstetrician-gynecologists have endorsed that they would discourage use of ART for a single female client (Lawrence, Rasinski, Yoon, &

Curlin, 2010). Based on these notions, we hypothesized that single prospective mothers would be evaluated less favorably by southern American college students than married prospective mothers.

Same-Sex Couples

In addressing potential bias in favor of married parents, it is essential to acknowledge that, in the U.S. and many other countries, marriage no longer exclusively describes a legal union between a man and a woman. Even before the U.S. Supreme Court legalized same-sex marriage nationwide in 2015, the most recent U.S. Census indicated the existence of 131,729 same-sex, married-couple households (United States Census Bureau, 2011).

Until quite recently, same-sex couples raising children tended to care for offspring conceived within a heterosexual marriage or relationship (Markus, Weingarten, Duplessi, & Jones, 2010). Same-sex couples able to afford ART and having access to services, however, are increasingly becoming parents via procedures including IUI with donor sperm (Johnson, 2012). Having access to services is no guarantee, with many Americans continuing to view same-sex marriage and same-sex parenting unfavorably. For example, Americans have appeared more likely than residents of other developed nations to view homosexual relations as always wrong (Widmer, Treas, & Newcomb, 1998). Recent findings further present the cultural climate of the American South as particularly hostile to open expression of a minority sexual identity (Baunach & Burgess, 2013).

Some states or individual clinics in the U.S. explicitly limit ART services to clients in opposite-sex unions (American Society for Reproductive Medicine, 2005; Johnson, 2012), and a minority of obstetrician-gynecologists in the United States report that they would discourage ART for lesbian couples (Lawrence et al., 2010). Even in the absence of overt restriction of services to same-sex couples, more covert practices may lead women with female partners to believe they are not allowed or not welcome at certain clinics (Johnson, 2012; Robinson, 1997). There is no lack of evidence for persisting prejudice against lesbian mothers in the U.S., even when legally wed, as demonstrated when married foster parents Beckie Peirce and April Hoagland had their foster daughter removed from their home by a judge who believed the girl would be better cared for by a heterosexual couple (Moyer, 2015).

Potential bias in favor of opposite-sex parents may be rooted in concerns over the ability of same-sex parents to provide adequate quality of life for children. While children of same-sex parents have received far less empirical attention than those of opposite-sex parents, possibly because of difficulties in identifying and recruiting samples of families headed by same-sex parents (Tasker, 2005), available evidence suggests much similarity in the quality of life and adjustment of both populations of offspring (Adams & Light, 2015; Anderssen, Amlie, & Ytterøy, 2002; Gartrell, Deck, Rodas, Peyser, & Banks, 2005; Meezan & Rauch, 2005; Patterson, 2006; Stacey & Biblarz, 2001; Wainright & Patterson, 2006). While some research has supported differences such as more severe disputes between lesbian mothers and their children compared to mothers partnered with a father (see MacCallum & Golombok, 2004), there exists some evidence that lesbian-led families provide, in some ways, higher quality of life than more traditional families led by opposite-sex parents. For example, planned lesbian-led families (i.e., children not resulting from a previous opposite-sex relationship) may involve less corporal punishment and more imaginative and domestic play when compared with families led by opposite-sex parents (Golombok et al., 2003). In addition, evidence has suggested children perceive closer relationships with their mothers when in families led by a single or partnered lesbian mother compared to

opposite-sex, two-parent families (Golombok, Tasker, & Murray, 1997). Furthermore, non-biological mothers in two-parent, lesbian-led families appear more involved in child care (Tasker & Golombok, 1998; Vanfraussen, Ponjaert-Kristoffersen, & Brewaeys, 2003), more desirous of having children (Bos, van Balen, & van den Boom, 2007), and more committed as a parent (Bos et al., 2007) than fathers in two-parent heterosexual families. Finally, reviews, while limited by difficulties in isolating key variables, do not support that children must have both a mother and a father to foster adequate development (Biblarz & Stacey, 2010).

Despite these indications that same-sex parents are just as capable as opposite-sex parents in providing a supportive home environment conducive to healthy adjustment in offspring, there remain general and widespread attitudes and beliefs that being reared by same-sex parents will adversely affect children's development (Pennington & Knight, 2011). The greater levels of social conservatism or traditionalism in the American South (Valentino & Sears, 2005; Woodberry & Smith, 1998) may be especially conducive to this line of thinking. Beyond traditional values, concerns about the potential harm from same-sex parenting may be due in part to concerns about the lack of a male role model (Robinson, 1997). The documented existence of such concerns prompted our third hypothesis that southern American college students' attitudes toward married prospective parents undergoing IUI would be less positive when the marriage is between two women compared to a man and a woman. Since past research indicates male college students are more likely than females to view homosexuality as chosen and to believe parents' same-sex relations to be detrimental to child development (Costa, Almeida, Anselmo, Pereira, & Leal, 2014), participant sex was included as a control variable in hypothesis testing.

Method

Participants

The convenience sample consisted of 230 college undergraduate students enrolled in introductory psychology and lifespan developmental psychology classes at an exurban public university in the southern United States. Class sections from which participants were recruited ranged from 40 to 100 students and included a mixture of online and traditional classes. Students received course credit for participation, and other studies and an alternate assignment were available to students unwilling to participate or ineligible for any available investigation. This study specified that participants must have been 18 years of age or older at the time of participation.

Out of the full sample, 222 participants' data were complete on all proposed covariates, independent variables and dependent variables, and were therefore included in final statistical analyses. Data were missing because of skipped items and sections. Participants providing their sex included 45 males (19.57%) and 180 females (78.26%). The average age was 19.84 years ($SD = 2.38$). The sample was predominantly White (70.00%), with 20.87% African-American, 2.17% Asian, 1.74% Hispanic or Latino and 1.74% Native American, Aleut, or Aboriginal peoples. Out of participants reporting on their religion ($n = 221$), 12.17% reported having no religion or religious affiliation. Among the remaining participants, 34.78% endorsed the general category of Christianity, 13.48% specified Protestantism, 26.52% selected Catholicism, .87% endorsed Islam, .87% selected Buddhism and .87% endorsed Hinduism. The university Institutional Review Board reviewed and approved this study prior to recruitment.

Measures

- Demographic information: Participants completed questions regarding their sex, race, age in years and religion.
- IUI vignettes: Participants were presented with a written description of a woman named Lillian Jones undergoing IUI in hopes of becoming pregnant (see Appendix for full vignette). There were six versions of the vignette, differing by how Lillian's age and marital status were described: 26 year-old and single, 41 year-old and single, 26 and married to a man (named Will), 41 and married to a man, 26 and married to a woman (named Emily) and 41 and married to a woman. Lillian's race was not identified.
- Expectations of IUI outcomes: Participants were asked to predict, based on only the information presented in the vignette, how likely various pregnancy and parenting outcomes would be using a 9-point rating scale ranging from 1 (*not at all likely*) to 9 (*extremely likely*). This measure was created for the current study. Item content and descriptive statistics can be found in Table 1. Further data reduction involving this measure will be described in the Results section of this document.

Procedure

Data collection occurred online. Participants accessed the questionnaire via a web link posted by the primary investigator on the psychology department's participant recruitment site. Upon opening the survey, participants were randomly assigned to view one of the six versions of the vignette. Before viewing the vignette and follow-up questions, participants completed an informed consent form by indicating consent with their initials. They were required to complete the survey in one session. Instructions stated that participants were allowed to skip any items with which they felt uncomfortable.

Results

Preliminary Analyses / Data Reduction

Given the large numbers of items addressing participants' expectations regarding IUI outcomes, before testing hypotheses, data reduction was desirable for further analyses. A principal components analysis (PCA) with Promax rotation was conducted with the items listed in Table 1. The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy was .85, and Bartlett's Test of Sphericity was significant ($p = .00$). Therefore, the data was deemed suitable for PCA. Factor loadings from the pattern matrix are summarized in Table 2. Using an eigenvalue cutoff of 1.00 and pattern matrix component loading cutoff of .70, results supported the presence of four components. Given these results, four variables for expectations of IUI outcomes were created, with all four variables created from multiple items.

Composite variables were computed with the mean rather than a sum of included items so as to retain the scaling of 1 (*not at all likely*) to 9 (*extremely likely*). Based on the PCA results (see Table 2), four composite variables (preparedness for parenting, ability to provide quality of life, pregnancy complications, and achieving a healthy pregnancy) were created using the mean ratings of items with a factor loading of .70 or higher. The variable *preparedness for parenting* comprised the mean of items addressing whether Lillian would be excited about being pregnant, financially equipped for a new baby, emotionally equipped for a new baby, have family friends welcome the

new baby, exhibit warmth and sensitivity with her baby, and be a good role model. The variable *ability to provide quality of life* was computed from items asking whether Lillian's child would have a happy life, receive needed attention, receive needed guidance and life lessons, and develop healthy perceptions of romantic relationships. The *pregnancy complications* variable was created by averaging items addressing the likelihood of miscarriage, high blood pressure, gestational diabetes, preterm delivery and postpartum depression. The final variable, *achieving a healthy pregnancy* was made up of the mean of two items asking participants to predict the likelihood of becoming pregnant at all and enjoying a relatively healthy pregnancy. The means and standard deviations of the final four dependent variables are listed in Table 3 with the bivariate correlations among them.

Hypothesis Testing

To examine hypothesized differences in expectations of Lillian's preparedness for parenting, ability to provide quality of life, pregnancy complications, and achieving a healthy pregnancy, a multivariate analysis of covariance (MANCOVA) was conducted with the four composite dependent variables and two-factor or grouping variables: maternal age (26 versus 41) and marital status (single, married to a man, or married to a woman). Participant sex was included as a covariate. MANCOVA was conducted rather than a series of analyses of covariance (ANCOVA) due to significant correlations between most of the four dependent variables ($r = .02$ to $r = .67$; $p < .01$ for 4 out of 6 correlations; see Table 3). The assumption of homogeneity of covariance was examined with Box's test of equality of covariance matrices. Results were not significant ($p = .73$), suggesting the assumption had not been violated. However, the assumption of normality did appear to be violated for all dependent variables based on significant Kolmogorov-Smirnov and Shapiro-Wilk tests and evident negative skew (with scores situated at higher values) in histograms. Since analysis of variance (ANOVA) procedures are considered robust to violations of the normality assumption, analyses proceeded as planned but results should be interpreted with caution.

As summarized in Table 4, the covariate of participant sex was statistically significant, the main effect of maternal age was marginally significant ($p = .05$), and the main effect of marital status was statistically significant. Specifically, the ratings on the four dependent variables differed depending on Lillian's stated age (Wilks' $\Lambda = .96$; $F = 2.41$; $p = .05$; partial $\eta^2 = .04$ or small effect size), but the difference was not sufficiently large within this sample to achieve statistical significance as traditionally defined. Expectations for Lillian were significantly different ($p < .05$) based on whether she was described as single, married to a man, or married to a woman (Wilks' $\Lambda = .91$; $F = 2.51$; $p < .05$; partial $\eta^2 = .05$ or small effect size). The interaction effect for maternal age X marital status was computed but was not significant.

Follow-up tests were conducted using a series of univariate ANCOVA. For the maternal age main effect, differences at the univariate level were significant for achieving a healthy pregnancy ($F = 7.73$; $p < .01$; partial $\eta^2 = .04$ or small effect size). Examination of the means (see Figure 1) revealed that participants rated Lillian as being less likely to achieve a healthy pregnancy when she was specified to be 41 years old compared to 26 years old. Regarding the main effect of marital status, ratings were significantly different for preparedness for parenting ($F = 7.47$; $p < .01$; partial $\eta^2 = .05$ or small effect size) and ability to provide quality of life ($F = 12.27$; $p < .01$; partial $\eta^2 = .05$ or small effect size). As seen in Figure 2, the pattern of difference among the means for each of these dependent variables placed expectations at their highest when Lillian was described as being married to a man. Post-hoc comparisons indicated that the ratings for single

and married to a woman groups were significantly lower than those of the married to a man group, but not significantly different from one another.

Discussion

The current study aimed to examine the potential presence of bias among college undergraduates in the southern U.S., specifically bias against prospective mothers seeking to become pregnant via IUI when of high maternal age, unmarried, or in a same-sex marriage. Expectations of pregnancy and parenting factors were assessed with a measure developed for this investigation. Using the four variables of preparedness for parenting, ability to provide quality of life, risk of pregnancy complications, and likelihood of achieving a healthy pregnancy, results of this investigation did reveal evidence-supporting bias in favor of prospective mothers attempting to become pregnant with IUI within the context of a traditional male-female marital union. When presented with a description of a prospective mother making the exact same preparations (i.e., taking prenatal vitamins, exercising, not smoking, giving up caffeine), while also specified as either single or in a less traditional, same-sex marriage, participants rated her as less prepared for parenting and less able to provide quality of life for a child. The observed differences imply that college students in the present sample viewed being single as a risk factor on its own, and that, with other factors being equal, a single woman could not provide the same quality of parenting or home environment as a woman with a husband. The presence of a second mother garnered no higher an average rating in these domains; as such, it may have been viewed as not advantageous at all, or perhaps as an additional barrier to positive parenting and quality of life. Participants may have held the widespread belief that all children need both a maternal and paternal influence in their lives to develop optimally. Alternatively, some may have been concerned that having two mothers would actually be harmful to child adjustment because of lack of moral guidance, lack of a model of heterosexual relations, or teasing and discrimination towards the family (see Meezan & Rauch, 2005).

Additionally, while results merely bordered on statistical significance, there was evidence meriting further investigation regarding college students' beliefs about the likelihood that prospective mothers of high maternal age can achieve a healthy pregnancy. Unlike the results suggesting bias against single and lesbian prospective mothers, these results, if replicated, may reflect accurate knowledge of declines in fertility after age 40. That is, despite concerns over widespread ignorance of advanced or high maternal age by itself being a risk factor for infertility (see Cooke et al., 2012), the students may have rated Lillian's likelihood of achieving a healthy pregnancy as lower when she was described as 41 years old because of awareness of fertility declines after age 40. No evidence emerged for any other maternal age-based bias in this study. In other words, participants rated Lillian's preparation for parenthood, ability to provide quality of life and risk of pregnancy complications similarly whether she was depicted as either 26 or 41. Predicting elevated risk for pregnancy complications would have been reasonable, though, given the body of evidence supporting increased risk after 40 independent of other risk factors (Cleary-Goldman et al., 2005). Our results did not support bias against older mothers regarding their ability to parent, meaning that, while there was possible evidence of bias based on the biological clock, there was no evidence for an influence of the social clock on expectations of older mothers.

Limitations and Directions for Future Research

The current findings must be evaluated within the context of several noteworthy limitations. First and foremost, that sample was drawn from a single university campus in the southern United States, meaning results may not generalize to other universities, to other geographic regions in the U.S. or in other countries, or to adults not attending college. In fact, the documented differences between the American South and other regions of the country (e.g., Baunach & Burgess, 2013; Valentino & Sears, 2005; Woodberry & Smith, 1998) inspired our caution in explicitly labeling this as a “southern U.S.” sample to avoid falsely implying that our participants reflect the views of college students across the country. In addition, the sample consisted of individuals not guaranteed to ever have a say in whether a woman would undergo IUI or how supported she would be if doing so. Results may be more telling if the sample involved members of the medical community, especially those working in settings in which IUI is offered as a service.

Another key limitation involves the small effect sizes. Results, while statistically significant, or bordering on statistical significance in the case of the effect of maternal age, involved lower levels of practical significance. Put another way, the differences in ratings observed when Lillian was described as over 40, single, or married to a woman were not large enough that she was placed in a qualitatively different category of preparedness, ability, or risk. For variables exhibiting differences by group, ratings still generally fell within the range of “somewhat likely,” even if some groups were slightly lower on the provided scale.

The vignettes and the measure used to assess expectations of IUI outcomes were newly created for this study, meaning further testing to more strongly establish reliability and validity is desired. In the case of differentiating maternal age, the older prospective mother was just barely in the “over 40” category. Differences in ratings may have been sharper had she been in her late forties or early fifties instead of 41. Future research could involve manipulation of Lillian’s race, occupational status, or religion in the vignettes to explore further potential sources of bias.

It also would be interesting to attempt replication with different stimuli, such as an in-person meeting with or a video of an IUI client describing her desire to become pregnant, the preparations she has made, and her expectations for the future. Further studies should additionally extend the examination of potential biases to adoption or raising biological children (of at least one spouse in the case of same-sex marriage).

A final limitation of this study is one shared with much of the research relevant to single parenting. The descriptor “single” simply indicates a lack of a legally recognized spouse. Many women listed as single mothers may be romantically involved with a man or a woman but not officially married to that individual, even when he or she plays the role of parent or is somehow involved in child care. Likewise, a former romantic partner may continue to have contact with a child he or she helped to conceive, whether as a biological parent or as a non-biological second mother. We cannot be certain participants did not make assumptions or have expectations about the role of other adults not explicitly acknowledged in the vignette. Future replication should probably include two additional versions of the vignette featuring committed couples (opposite-sex and same-sex) seeking to become parents outside of a legal marriage to determine whether the lack of a certified union produces different ratings. Alternatively, future research may simply employ the term “committed relationship” in place of “marriage.”

Implications

While the results certainly must be evaluated within the context of the above limitations, our findings suggest that undergraduate students in the southern U.S. harbor a negative bias against those seeking to become mothers when not fitting the mold of a heterosexual married woman in her twenties. Such bias would not necessarily lead to overt discrimination against older potential mothers, single potential mothers, or prospective mothers in a same-sex marriage, but may contribute to a more covert, negative appraisal of women seeking to become non-traditional mothers. These more latent attitudes remain troubling since they may contribute to the degree to which older, single and lesbian prospective mothers are taken seriously or nurtured in their attempts to become mothers. Consistent with this idea, prior research has indicated that lesbian couples experiencing a pregnancy sometimes encounter subtle prejudice with midwives and hospital staff, such as ignoring the non-biological mother, exhibiting hesitation or confusion with referring to the co-mother, asking irrelevant invasive questions, or generally offering less support to lesbian parents (Dahl, Fylkesnes, Sørli, & Malterud, 2013). Single pregnant women may experience similar hassles such as being asked about their intent to find a father or facing intrusive questions about donor insemination, and older expectant mothers may face pessimistic attitudes about the health of their pregnancies or invasive inquiries about how old they will be at various milestones. Compared to mere decades ago, women in the U.S. currently have greatly expanded options to delay childbearing, to conceive a child without a male partner, and to purposefully aim to start a family with a legally recognized wife. Taking advantage of these options, however, may be more likely to be frustrating, awkward, or embarrassing than the same endeavors taken on by younger women in opposite-sex marriages.

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Appendix

Table 1: Summary of Means and Standard Deviations for Individual Items Regarding Expectations of Pregnancy and Parenting Outcomes

	Mean	Median	Mode	SD	Min	Max
Lillian will become pregnant	6.47	7.00	7.00	1.68	1.00	9.00
Lillian will enjoy a relatively healthy pregnancy.	6.78	7.00	7.00	1.82	1.00	9.00
Lillian's pregnancy will end in miscarriage. ^R	5.75	5.00	5.00	1.66	2.00	9.00
Lillian will experience complications such as high blood pressure, gestational diabetes, or preterm delivery. ^R	5.64	5.00	5.00	1.99	1.00	9.00
Lillian will be excited about being pregnant.	8.48	9.00	9.00	1.23	3.00	9.00
Lillian will be financially equipped for a new baby.	6.88	7.00	5.00	1.73	2.00	9.00
Lillian will be emotionally equipped for becoming a new mother.	7.07	7.00	7.00	1.61	2.00	9.00
Lillian's family and friends will welcome the new baby.	7.36	8.00	9.00	1.86	1.00	9.00
Lillian will experience postpartum depression. ^R	5.46	5.00	5.00	1.86	1.00	9.00
Lillian will exhibit warmth and sensitivity with her baby.	7.90	8.00	9.00	1.35	3.00	9.00
Lillian will be a good role model for her child.	7.29	8.00	9.00	1.63	2.00	9.00
Lillian's child will have a happy life.	6.82	7.00	5.00	1.61	2.00	9.00
Lillian's child will receive needed attention.	7.14	8.00	9.00	1.81	1.00	9.00
Lillian's child will receive needed guidance and life lessons.	7.07	8.00	9.00	1.82	1.00	9.00
Lillian's child will develop healthy perceptions of romantic relationships	6.43	7.00	5.00	1.84	1.00	9.00

Note. ^R = Item was reverse scored.

Table 2: Summary of Factor Loadings from Principal Components Analysis of Expectations of IUI outcomes Items (Promax Rotation Used)

Item	PP	QL	PC	AP
Lillian will become pregnant	.22	.16	.20	.90
Lillian will enjoy a relatively healthy pregnancy.	.21	.34	.50	.85
Lillian's pregnancy will end in miscarriage. ^R	.00	-.03	.83	.43
Lillian will experience complications such as high blood pressure, gestational diabetes, or preterm delivery. ^R	-.04	.03	.81	.25
Lillian will be excited about being pregnant.	.71	.28	-.05	.23
Lillian will be financially equipped for a new baby.	.76	.52	-.10	.08
Lillian will be emotionally equipped for becoming a new mother.	.76	.59	.10	.31
Lillian's family and friends will welcome the new baby.	.80	.44	.07	.13
Lillian will experience postpartum depression. ^R	.06	.07	.74	.16
Lillian will exhibit warmth and sensitivity with her baby.	.81	.54	.16	.17
Lillian will be a good role model for her child.	.74	.65	.09	.16
Lillian's child will have a happy life.	.55	.80	.07	.23
Lillian's child will receive needed attention.	.40	.79	-.01	.13
Lillian's child will receive needed guidance and life lessons.	.52	.90	.08	.20
Lillian's child will develop healthy perceptions of romantic relationships	.51	.79	.04	.20

Note. PP = preparedness for parenting, QL = ability to provide quality of life, PC = pregnancy complications, AP = achieving a healthy pregnancy; Bolded values indicate an item was included in the factor.

Table 3: Descriptive Statistics and Correlations among Final Dependent Variables

Item	Mean (SD)	PP	QL	PC
Preparedness for parenting	7.49 (1.20)	-		
Ability to provide quality of life	6.86 (1.46)	.67**	-	
Pregnancy complications	5.62 (1.46)	.03	.02	-
Achieving a healthy pregnancy	6.61 (1.57)	.29**	.29**	.35**

Note. PP = preparedness for parenting, QL = ability to provide quality of life, PC = pregnancy complications, AP = achieving a healthy pregnancy; ** $p < .01$

Table 4: Results of MANCOVA Examining Ratings of Preparedness for Parenting, Ability to Provide Quality of Life, Pregnancy Complications, and Achieving a Healthy Pregnancy

Grouping Variable	Wilks' Λ	$F(4, 212)$	p
Participant sex (covariate)	.91	5.21	.00
Maternal age	.96	2.41	.05
Marital status	.91	2.51	.01

Figure 1: Mean Ratings Grouped by Maternal Age

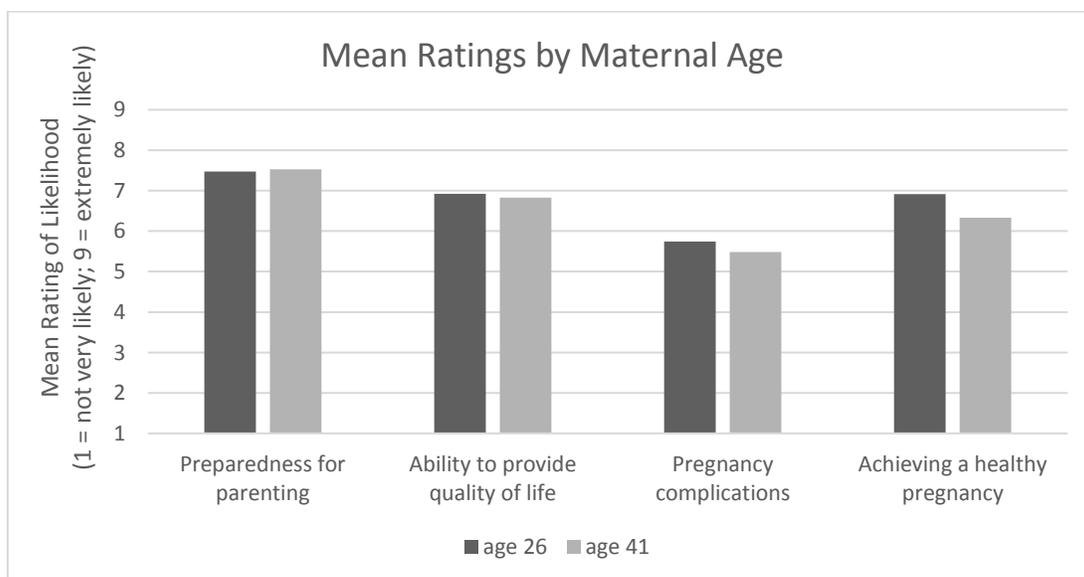
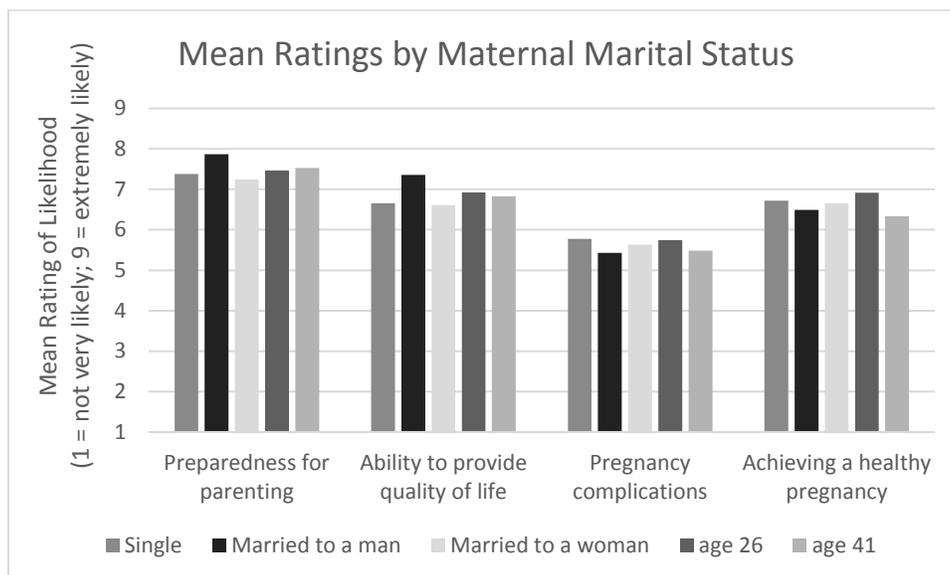


Figure 2: Mean Ratings Grouped by Marital Status



Vignette

Lillian Jones is a [single or married] [26 or 41] year-old who has undergone three intrauterine insemination (IUI) procedures in hopes of becoming pregnant. She has been taking prenatal vitamins for six months, exercises regularly, does not smoke, and has switched from regular coffee to decaffeinated coffee. If the latest IUI is successful, this will be the first child for her [and her husband, Will or and her wife, Emily].