Psychosocial adjustment during pregnancy for older couples conceiving through assisted reproductive technology

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BACKGROUND: The trend to older maternal age at first birth is well established in Western countries and biological risk factors, particularly declining fertility, are well documented. Less is known, however, about the psychosocial well-being of older first time parents. This study explores differences in psychosocial adjustment during pregnancy in older (maternal age ≥ 38 years) and younger (maternal age < 35 years) couples after assisted reproductive technology (ART) conception. METHODS: Questionnaire data were collected from a consecutive cohort of pregnant nulliparous women and their partners recruited over a 12-month period from ART clinics in Sydney, Australia. RESULTS: There were more similarities than differences when comparing older and younger couples. Older couples took longer to conceive and were more likely to use donor eggs. Older pregnant women scored higher on a measure of psychological hardiness/resilience and reported a lower identification with motherhood compared with younger pregnant women. Older men differed only in reporting a less satisfying social orientation during pregnancy (lower satisfaction with sex life, relationship with partner and social life). CONCLUSIONS: Findings do not indicate problematic adjustment during pregnancy in older couples, but differences found need further investigation using larger samples and prospective designs.

Key words: ART conception/maternal age/pregnancy/psychosocial adjustment

Introduction

Throughout the developed world there is a well-established trend towards postponement of the first pregnancy (Jensen et al., 2004; Waters et al., 2006). Despite public health campaigns urging women to have children at a younger age (e.g. Soules, 2003), many argue that the current trend to older maternal age at first birth is likely to continue (Freeman-Wang and Beski, 2002). Biological risk factors, particularly declining fertility associated with advanced maternal age are well documented (Freeman-Wang and Beski, 2002) and increase the likelihood of the need for assisted reproductive technology (ART) to achieve a pregnancy (Leridon, 2004; Klipstein et al., 2005). Given these established trends, it is important to gain a clearer understanding of the psychological and social as well as the biological implications of delayed childbearing for women and their partners.

Few studies have examined the psychosocial well-being of older first-time parents and it is difficult to disaggregate age and infertility/ART effects. Most studies of older mothers have generally controlled for the effect of maternal age in an attempt to isolate the impact of infertility/ART (e.g. Colpin et al., 1995; Cook et al., 1997; see Gibson and McMahon, 2004 for a review). In addition, no studies to date have reported on the health and well-being of men in the context of older age at first birth. This study examined psychosocial adjustment during pregnancy for younger and older men and women who had conceived through ART.

Older parents may experience considerable anxiety due to the obstetric risk factors associated with advanced maternal age, the psychological impact of prenatal screening and diagnostic procedures (Joseph et al., 2005) as well as the consequences of being labelled a high obstetric risk (Mansfield, 1988; Hanson, 2003; Carolan, 2005). Anxiety during pregnancy has been associated with less optimal maternal-fetal attachment (Rothman, 1986; Hart and McMahon, 2006) and delayed psychological preparation for the baby (McMahon et al., 1999; Carolan, 2005). Similar concerns during pregnancy have been noted when comparing parents conceiving through in vitro fertilization (IVF) with naturally conceiving parents, across a broad age-range (McMahon et al., 1997, 1999) so it is not clear to what extent pregnancy
concerns are attributable to ART conception, age or a combination of the two. Also of interest is the possibility that concerns about the pregnancy outcome and the strains of ART treatment may be offset by personal psychological and socio-economic resources believed to characterize older mothers including maturity, well-developed problem solving skills, a stable committed relationship with a partner and financial security (Berryman et al., 1999; Fekkes et al., 2003).

To date, there has been inadequate research focusing on men’s experiences and perspectives with respect to both delayed childbearing (Green and Biddlecom, 2000) and the psychological impact of infertility (Glover et al., 1998). There is some evidence that compared to naturally conceiving fathers, male partners in ART families report lower marital satisfaction during pregnancy and throughout the first post-natal year (Cohen et al., 2000). It remains unclear, however, whether this is related to infertility or age. There is also evidence suggesting that psychological adjustment in infertile men is different from that of their partners (Glover et al., 1998) and that compared to their fertile counterparts they report lower self-esteem and more anxiety which persists regardless of whether a child is subsequently born (Glover et al., 1999).

The overall aim of this study was to identify age differences in adjustment during pregnancy for both men and women in a sample conceiving through ART, thus allowing us to explore the effect of age while controlling for the impact of infertility and mode of conception. We predicted that older women and their partners would report (i) higher anxiety and depression during pregnancy, particularly pregnancy specific anxiety; (ii) less optimal childbearing attitudes and (iii) lower antenatal attachment scores. We also predicted, however, that older women would score higher on indices of psychological maturity/resilience.

Materials and methods
Participants
A consecutive cohort of pregnant nulliparous women and their partners who had conceived through IVF were recruited to the study from private ART clinics in metropolitan Sydney, Australia, over a 12 month period. (In Australia, ART treatment is relatively inexpensive and is funded with minimal restrictions by Government Health Insurance. A small gap component is funded by the couple.) Of the 85 women invited, 66 (78%) agreed to participate. Two women were single. Sixty-four (100%) of partners also agreed to take part. In the light of recent evidence that the mean age for women receiving ART treatment in Australia is 35 years (Waters et al., 2006), two age-groups were targeted, women aged 35 or younger (n = 38 women: mean age = 31.5 years, SD = 2.7 years, range 25–35 years; n = 38 partners: mean age = 33.8 years, SD = 4.4 years, range 25–43 years) and women aged 38 or older (n = 28 women: mean age = 40.5 years, SD = 2.2 years, range 38–45 years; n = 26 partners: mean age = 40.9 years, SD = 5.2 years, range 31–55 years). We elected to exclude women aged 36 and 37 to maximize the age difference between the groups and mean ages for both women, t (64) = -14.46, P = 0.00, and men t (52) = 9.77, P = 0.02, were significantly different. No participants were in same-sex relationships. Both single women conceived through donor sperm. In total, five women conceived through donor sperm and nine conceived using a donor egg. No couples conceived through the use of donor embryos.

The distribution of education and family income indicates a highly socio-economically advantaged sample in which most women (n = 42, 66%) had completed tertiary education. The majority of women (75%, n = 47) identified themselves as being of Australian or New Zealand background, seven (11%) identified as Western European, five (8%) as Asian, three (5%) as American and one African. Three women did not record their country of birth.

Procedure
After gaining approval from the relevant institutional ethics committees, women were invited to participate after their 8-week ultrasound (n = 61) or after their second positive pregnancy test at ~6 weeks (n = 5). Different recruitment protocols related to different procedures at two different clinics. Those who agreed completed basic demographic information and details regarding their fertility treatment at 6–8 weeks as well as a measure of maturity/resilience and trait anxiety, and women and their partners subsequently completed questionnaires at 20 (mood state, antenatal attachment) and 30 weeks gestation (mood state, childbearing attitudes). Most questionnaires used in this study have previously been validated in an Australian study comparing couples undergoing IVF with naturally conceiving couples (McMahon et al., 1997).

Questionnaires
Treatment/infertility history
Time to conceive. At time 1, women reported on the time taken to conceive (total number of months trying to fall pregnant; number of months since commencing ART treatment). Information was also collected from the medical records regarding reason for infertility treatment, number of treatment cycles (including both stimulated cycles and frozen embryo transfers) they had undergone, mode of conception (IVF, intracytoplasmic sperm injection/ICSI, intrauterine insemination/IUI), use of donor sperm, eggs or donor embryos and prior history of miscarriages. Singleton compared with twin pregnancies were also recorded. (It should be noted that in Australia a maximum of two embryos are transferred. Increasingly, practitioners transfer just one embryo.)

General psychological adjustment
Resilience/hardiness. At 6–8 weeks, mothers completed the Personal Views Survey (3rd ed., rev., or PVS-III-R; Maddi and Khoshaba, 2001), an 18-item measure designed to assess hardness or the ability of individuals to turn stressful circumstances into growth-inducing experiences. A seminal prospective study of the transition to parenthood (Heinicke, 1984) has shown that the personality construct ego resilience, conceptualized as a capacity to cope flexibly with life’s challenges, measured antenatally predicts a greater capacity to cope with parenting challenges post-birth and also more positive and responsive parenting. The hardness measure was selected for the current study as the focus on response to challenge and adversity seemed appropriate to the stressful IVF context, as well as the transition to parenthood and the hardness construct has been found to significantly correlate with measures of ego resilience (Gramzow et al., 2000).

The PVS-III-R consists of three factors, commitment (the extent that individuals seek involvement rather than withdrawal), control (the extent that individuals strive to exert influence over their circumstances rather than feeling powerless) and challenge (the extent that individuals strive to learn from experiences rather than feeling threatened) in addition to yielding a total hardness score. Items are rated on a four-point scale from 0 (not at all true) to 3 (very true).
Mood state. Anxiety and depression were assessed using widely validated measures. At 8 weeks mothers completed The State-Trait Anxiety Inventory (Spielberger et al., 1970) and both mothers and fathers completed the state scale at 20 and 30 weeks. Depression was assessed at 20 weeks for both mothers and fathers using the Edinburgh Post-natal Depression Scale (EPDS; Cox et al., 1987) a 10-item self-report scale specifically designed to identify women at risk of post-natal depression. The measure has also been validated for use in pregnancy with scores ≥13 and ≥15 believed to indicate minor and major depression, respectively (Murray and Cox, 1990).

At 20 weeks, mothers also completed the ‘anxiety concerning health and defects in the child’ factor items from the Baby Schema questionnaire (Gloger-Tippelt, 1983). Responses were rated on a six-point scale ranging from 1 (strongly agree) to 6 (strongly disagree), with high scores indicating high anxiety. The scale has previously been shown to discriminate between women conceiving through IVF and those conceiving naturally (McMahon et al., 1997).

Pregnancy-specific psychosocial adjustment
Maternal and paternal childbearing attitudes. At 30 weeks, mothers and fathers completed the Childbearing Attitudes Questionnaire (CAQ; Ruble et al., 1990). This omnibus measure consists of 60 items that assess attitudes, beliefs and parenting characteristics across a range of domains thought to be important in the adjustment to parenthood. The CAQ consists of four factors: self-confidence (17 items e.g. ‘I feel completely ready for motherhood’), negative aspects of caretaking (11 items e.g. ‘The messes that babies make bother me a lot’), social orientation (15 items e.g. ‘My partner and I spend very little time together’) and identification with parenthood (17 items e.g. ‘Whenever I see a baby, I feel like picking it up’). Respondents rated each item on a seven-point Likert scale from 1 (disagree strongly) to 7 (agree strongly). The questionnaire has been shown to demonstrate satisfactory test–retest reliability over the different stages of pregnancy and early parenthood and good construct validity (Ruble et al., 1990). Modifications were made to the wording of some questions to be appropriate for fathers, and some items related directly to the physical experience of being pregnant were deleted. Thus, factor scores are not directly comparable for mothers and their partners.

Maternal and paternal fetal attachment. At 20 weeks the mother and father versions of the Antenatal Attachment Questionnaire (Condon, 1993) were administered. This self-report scale consists of two factors: ‘quality of attachment’ (the quality of the parent’s affective experiences) and ‘time spent in attachment mode’ (the amount of time spent thinking about, talking to and palpating the fetus). The internal consistency (and split-half reliability) of the instrument is acceptably high with both alpha coefficients in excess of 0.8 (Condon, 1993). Responses were rated on five-point scales with high scores reflecting a more positive quality of attachment and a greater amount of time spent preoccupied with the fetus, respectively. The factor scores are not directly comparable for mothers and their partners as maternal and paternal scales consist of different numbers of items.

Statistical analyses
All statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS Version 14). Questionnaire data were normally distributed. Multivariate and univariate analyses of variance were used to compare age-groups. Alpha levels were set at P < 0.05 for multivariate analyses and Bonferroni corrections were applied for follow-up univariate analyses according to the number of questionnaire factors. Since the sample size was small, trends, P < 0.10, are also noted. There is some variability in participant n in the statistical analyses due to attrition as several women miscarried prior to different data collection points during the study and one couple in the older age group dropped out of the study after the 8 week contact. One father did not complete questionnaires.

Results
Demographics
There were no significant differences regarding the number of years mothers in the two age-groups had been married/in a de facto relationship, with older couples together for an average of 29 months (SD = 36 months) before they started to try for a baby and younger couples an average of 38 months (SD = 27 months). Age-groups did not differ on education of mothers or fathers, family income, or country of birth, all Ps > 0.10. See Table 1 for demographic characteristics of the sample, as well as data regarding mode of conception.

Table 1. Demographic characteristics of participants and details regarding mode of conception by age group

<table>
<thead>
<tr>
<th>Age Group</th>
<th>n</th>
<th>%</th>
<th>n</th>
<th>%</th>
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<tr>
<td>≤35 years</td>
<td>38</td>
<td>100</td>
<td>26</td>
<td>97</td>
</tr>
<tr>
<td>≥38 years</td>
<td>28</td>
<td>100</td>
<td>97</td>
<td>100</td>
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<td>Maternal marital status</td>
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<tr>
<td>Married/de facto</td>
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<td>38</td>
<td>97</td>
<td>28</td>
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<tr>
<td>Single</td>
<td>0</td>
<td>0</td>
<td>97</td>
<td>28</td>
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<td>Tertiary education level</td>
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<td>23</td>
<td>38</td>
<td>62</td>
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<td>Bachelor and masters</td>
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<td></td>
</tr>
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<td>3</td>
<td>1</td>
<td>4</td>
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<tr>
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<td>29</td>
</tr>
<tr>
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<td>3</td>
<td>10</td>
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<tr>
<td>Donor embryo</td>
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<td>0</td>
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<td>Intracytoplasmic sperm injection</td>
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<tr>
<td>Intruterine insemination</td>
<td>4</td>
<td>11</td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>

Treatment/infertility history
The groups did not differ on reason for infertility treatment (female versus male factor, mixed, unexplained). Older couples took significantly longer in total to fall pregnant than younger couples, t (63) = -2.06, P = 0.04, Mean = 46 months, SD = 33 months, mode = 24 months; Mean = 32 months, SD = 20 months, mode = 30 months, respectively. There was also a non-significant trend for older mothers to spend longer in ART treatment, t (61) = -1.71, P = 0.09, mean = 20 months, SD = 25 months, mode = 12 months; mean = 12 months, SD-13 months, mode = 6 months, respectively. The age-groups did not differ on number of treatment (stimulated and frozen embryo transfer) cycles, with older women undergoing a mean of 3.3 cycles (SD = 2.9, mode = 1), whereas younger women had a mean of 2.6 cycles, (SD = 1.8, mode = 1). Older couples were more likely to have conceived using a donor egg, n = 8, 29%, n = 1, 3%, respectively, χ²(1, N = 66) = 9.21, P = 0.002, but did not differ in use of donor sperm, or mode of conception.
null $Ps > 0.10$. Table I shows that four women in the younger age-group and one in the older group conceived using IUI, a procedure that may be associated with a less stressful path to conception. Given the group difference in donor egg conception, and the potential that conception by IUI may be associated with less psychological impact, analyses yielding significant findings were repeated, excluding first all mothers conceiving with donor eggs, and secondly those mothers who conceived using IUI.

Hypothesis testing
Preliminary analyses
Since the age difference between the youngest in the older group and the oldest in the younger group was only 3 years, relations among age and the psychosocial variables were initially explored using correlations. Table II shows that maternal age was significantly positively correlated with hardiness and negatively correlated with trait anxiety and the childbearing attitudes factors ‘negative aspects of giving birth’ and ‘identification with motherhood’.

General psychological adjustment during pregnancy
Resilience/hardiness. Older women scored significantly higher than younger women on the total score for the measure of hardiness (PVS − III), $t (63) = −2.55$, $P < 0.01$, at 6–8 weeks pregnancy (Table II), but did not differ on the subscales ($Ps > 0.10$). When women conceiving with donor eggs were excluded, this effect was reduced to a trend, $t (54) = −1.85$, $P < 0.06$. The removal of women conceiving through IUI, however, did not alter results with older women still scoring significantly higher than younger women, $t (56) = −2.23$, $P = <0.03$.

Mood state. Multivariate analyses of variance revealed no significant differences for older compared to younger mothers or fathers on measures of anxiety or depression at any time, all $Ps > 0.10$.

Maternal and paternal childbearing attitudes. The multivariate analysis revealed a significant age-group effect for mothers on the four CAQ factors, $F (1, 57) = 4.76$, $P < 0.01$. Univariate analyses revealed that older mothers differed from younger mothers in reporting a lower identification with motherhood, $F (1,57) = 8.95$, $P = 0.003$. The identification with motherhood factor includes items regarding quality of the relationship with their own mother, feelings of fulfillment associated with pregnancy, positive feelings about children and parenting and information seeking regarding birth and parenting. There was also a significant multivariate age-group effect for fathers for the CAQ factors, $F (1, 51) = 2.59$, $P < 0.05$. Univariate analyses showed that older and younger fathers were similar on three of the four factors, self-confidence, negative aspects of giving birth and identification

| Table II. Correlations among maternal age, hardiness and mood state measures during pregnancy |
|-----------------------------------------------|-----------------------------------------------|
| Hardiness | Anxiety | Attachment | Mood | Time in attachment | Care - IBM | Care - IUI | Parenting | Self-confidence childbearing attitudes (CAQ) | Identification with motherhood (CAQ) |
|-----------------------------------------------|-----------------------------------------------|
| Mother age | 0.374 | 0.301 | 0.112 | -0.081 | 0.298 | 0.068 | 0.168 |
| Hardiness | 0.302 | 0.085 | 0.301 | 0.227 | 0.336 | 0.336 | 0.336 |
| State anxiety | 0.336 | 0.301 | 0.301 | 0.301 | 0.301 | 0.301 | 0.301 |
| Trait anxiety | 0.301 | 0.301 | 0.301 | 0.301 | 0.301 | 0.301 | 0.301 |
| Quality of attachment | 0.301 | 0.301 | 0.301 | 0.301 | 0.301 | 0.301 | 0.301 |
| Time in attachment | 0.301 | 0.301 | 0.301 | 0.301 | 0.301 | 0.301 | 0.301 |
| Care - IBM | 0.301 | 0.301 | 0.301 | 0.301 | 0.301 | 0.301 | 0.301 |
| Care - IUI | 0.301 | 0.301 | 0.301 | 0.301 | 0.301 | 0.301 | 0.301 |
| Parenting | 0.301 | 0.301 | 0.301 | 0.301 | 0.301 | 0.301 | 0.301 |
| Self-confidence childbearing attitudes (CAQ) | 0.301 | 0.301 | 0.301 | 0.301 | 0.301 | 0.301 | 0.301 |
| Identification with motherhood (CAQ) | 0.301 | 0.301 | 0.301 | 0.301 | 0.301 | 0.301 | 0.301 |

*Correlation is significant at the 0.01 level (two-tailed).
†Correlation is significant at the 0.05 level (two-tailed).
with fatherhood, $P < 0.10$, but older fathers reported a lower score for social orientation (items reflecting quality of relationship with their partner, interest in sex and social engagement), $F(1, 51) = 10.34, P < 0.01$.

**Maternal and paternal fetal attachment.** Multivariate analyses revealed no age-group differences for mothers or fathers for the factors quality of attachment and time in the attachment mode, $P > 0.10$. (Table III).

Table III presents the means and standard deviations for age-comparisons for all the psychological and social measures.

**Discussion**

The results suggest generally comparable adjustment during pregnancy for older compared with younger parents, but findings are preliminary and need to be interpreted with caution, given the small sample size and the relatively small age difference between the youngest women in the older group and the oldest in the younger group, both factors which may have reduced our capacity to detect group differences. To our knowledge, this study is the first to examine age effects in psychosocial well-being in ART couples. In most research on older parents, age effects are confounded with infertility effects. This study allows an examination of age effects while controlling, to a degree, for the impact of infertility and the experience of ART. Although both younger and older couples were comparable in achieving a pregnancy after experiencing both infertility and ART treatment, there was some variability in mode of conception and older couples differed in taking longer to fall pregnant. Nonetheless, these potential confounds are part of the reality of becoming a parent at an older age and, therefore, it is questionable to what extent they should be controlled. Further, the men and women in the older and younger groups were also very similar regarding socio-demographic variables, such as income, education level and duration of marital relationship, which are generally considered to differentiate older and younger first-time parents and have frequently been noted as protective factors for older as well as ART parents in other research (e.g. Berryman et al., 1999; Gibson and McMahon, 2004).

Despite generally similar experiences a few interesting age-related differences emerged, which may warrant further investigation in larger and more socio-economically representative samples. Older mothers were more likely to conceive using donor eggs, and took longer to fall pregnant, but findings regarding psychosocial adjustment did not differ when the group conceiving with donor eggs were excluded. Research with larger samples would allow a more thorough investigation of adjustment to pregnancy in this subgroup of women. Interestingly, the older mothers scored higher on psychological hardness compared to the younger mothers, but reported a lower identification with motherhood. The only variable differentiating the partners of older women was a more negative social orientation during pregnancy.

Findings regarding a longer time to conceive are consistent with a large body of research confirming both age-related declines in fertility (Freeman and Beski, 2002) and lower success rates for ART treatment for older women (e.g. Leridon, 2004). Failure to find a significant difference in the number of treatment cycles may be due to the small sample size, but it was noteworthy that one cycle was the mode for both groups. Exposure to prolonged IVF treatment has been found to be associated with more adjustment difficulties during pregnancy (McMahon et al., 1997); however, contrary to prediction, we found few age differences with regard to psychological well-being and, notably, no differences in mood state or pregnancy specific anxiety. Although these preliminary findings require verification in larger samples with a larger age difference between groups, it is also interesting to speculate regarding whether the significantly higher scores for hardness identified in the older mothers may have been protective in managing the stresses related to age-related obstetric risk factors. Post hoc correlation analyses...
indicated that hardiness was inversely related to anxiety and depression throughout pregnancy, but no association with specific concerns about the outcome of the pregnancy was found.

Although many studies of older women have argued that maturity believed to be associated with older age may be an important protective factor (e.g. Berryman et al., 1999), this is the first study, to our knowledge, to empirically measure this construct. Further follow-up is needed to see whether the ‘hardiness’ identified here is actually protective during childbirth and parenthood, and to further explore the way in which both age and the hardiness construct are related to other indices associated with psychological maturity such as ego resilience and more behaviourally oriented measures of self-efficacy. Our finding that the older women reported a lower identification with motherhood is in part consistent with findings of a relative lack of pregnancy engagement in older women identified in a recent qualitative study (Carolan, 2005). Carolan reported that concurrent concerns over fetal well-being, older mothers reported a lack of preparation for the material needs of the baby and a tendency to put aside thoughts about being a mother. An examination of the individual items on the identification with motherhood factor in the current study, however, reveals that high scores (i.e. high identification with motherhood) may be associated with somewhat idealized views both about the self as mother (e.g. ‘I expect that being a mother will strengthen my sense of self’ and about children ‘just the sight of a small child makes me smile’). The finding that younger infertile women are more likely than older infertile women to have irrational cognitions about parenthood prior to commencing treatment (Fekkes et al., 2003) supports the interpretation that lower scores may, in fact, be more realistic and adaptive given the realities and challenges of early parenthood, although this is speculative and needs to be confirmed through further qualitative investigation and post-natal follow-up. Alternatively, low identification with motherhood may reflect some reluctance to engage with the enormous changes that accompany the birth of the baby. Indeed, Carolan (2005) reported that many older mothers in her study approached motherhood as a project to be managed and indicated a determination that the baby would need to fit in and not disrupt their established lifestyle. Such views may prove problematic should the baby not comply. The higher scores for identification with motherhood in the younger ART mothers, on the other hand, are in keeping with earlier findings that women conceiving through IVF tend to idealize pregnancy, despite their concerns about the pregnancy outcome (McMahon et al., 1999).

Contrary to prediction no age differences were apparent in mood state generally, nor in specific concerns about the well-being of the unborn baby or attachment to the fetus. This finding differs from other research on older mothers (Berryman et al., 1996) that has shown age-related differences in fetal attachment earlier in pregnancy but not in the later stages. The null finding may be due to the shared infertility/ART conception experience in both groups, since ART parents have been shown to differ from naturally conceiving parents in this regard (McMahon et al., 1997), and confirms the need to consider the impact of infertility and ART treatment when examining age differences.

Partners of older women differed only in reporting a lower social orientation in pregnancy. This factor captures feelings regarding the quality of relationship with their partner, interest in sex and social boredom, e.g. ‘I feel closer than ever to my partner’, ‘I feel I am less interested in sex than I used to be’, ‘I wish I could socialize more than I do’. It is interesting to note that the older couples had been in relationships with their partners for less time (though not significantly less) than the younger couples before trying to fall pregnant. Perhaps, for older men, a pregnancy relatively early in the relationship may compromise marital quality. Further empirical investigation of the male perspective and experience in the context of delayed childbearing is needed.

The study findings are equivocal and further research is needed. Certainly, there is no evidence of problematic adjustment, but the small sample and lack of post-natal follow-up are substantial limitations. Furthermore, this study has not addressed adjustment for those couples who miscarried, nor provided data on the emotional well-being of those older couples who were not able to conceive. Generalization is also limited since both older and younger couples came from very high socio-economic backgrounds. Nonetheless, such backgrounds are typical of older first-time parents (Berryman et al., 1999) and also common in parents conceiving through ART (Gibson and McMahon, 2004). Further research should also examine age-related adjustment in naturally conceiving couples, since age-effects may be different, depending on prior experience of infertility.

Longer follow-up would allow exploration of new challenges that may emerge over time for older parents. It is noteworthy that 29% of older mothers in this small study used donor eggs to conceive and challenging issues related to disclosure are likely to emerge later in the parenting process. In addition, older and younger parents may differ regarding the desire for and capacity to achieve further children and health-related issues may also emerge as these parents of young children move into their fifth decade.

Acknowledgements
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References
Carolan M (2005) ‘Doing it properly’: The experience of first time mothering regarding the quality of relationship with their partner, interest in sex and social boredom, e.g. ‘I feel closer than ever to my partner’, ‘I feel I am less interested in sex than I used to be’, ‘I wish I could socialize more than I do’. It is interesting to note that the older couples had been in relationships with their partners for less time (though not significantly less) than the younger couples before trying to fall pregnant. Perhaps, for older men, a pregnancy relatively early in the relationship may compromise marital quality. Further empirical investigation of the male perspective and experience in the context of delayed childbearing is needed.

The study findings are equivocal and further research is needed. Certainly, there is no evidence of problematic adjustment, but the small sample and lack of post-natal follow-up are substantial limitations. Furthermore, this study has not addressed adjustment for those couples who miscarried, nor provided data on the emotional well-being of those older couples who were not able to conceive. Generalization is also limited since both older and younger couples came from very high socio-economic backgrounds. Nonetheless, such backgrounds are typical of older first-time parents (Berryman et al., 1999) and also common in parents conceiving through ART (Gibson and McMahon, 2004). Further research should also examine age-related adjustment in naturally conceiving couples, since age-effects may be different, depending on prior experience of infertility.

Longer follow-up would allow exploration of new challenges that may emerge over time for older parents. It is noteworthy that 29% of older mothers in this small study used donor eggs to conceive and challenging issues related to disclosure are likely to emerge later in the parenting process. In addition, older and younger parents may differ regarding the desire for and capacity to achieve further children and health-related issues may also emerge as these parents of young children move into their fifth decade.

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