

Soldiers' Preferences Regarding Sperm Preservation, Posthumous Reproduction, and Attributes of a Potential "Posthumous Mother"

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Abstract

We present study results regarding soldiers' willingness to conduct posthumous reproduction. Two hundred twelve Israeli soldiers filled in a questionnaire designed to examine their willingness to cryopreserve sperm and evaluate in which familial circumstances they would consent to posthumous reproduction. They ranked the desirability of 46 attributes of a potential mother and a life partner. Findings indicate a relatively high predisposition in favor of posthumous-assisted reproduction; the wishes of soldiers' parents had much more influence on soldiers' willingness to pursue this technology than those of a partner. Soldiers preferred "feminine" jobs for a potential mother that would allow her to dedicate herself to child-rearing. The desired traits of such a mother were rated similarly to partner preferences; however, significant differences were found in attributes that are most related to the potential mother's devotion to maternity. Interpretations of these findings are contextualized in relation to ethical and bereavement considerations.

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Introduction

The rise in academic interest in attitudes toward posthumous-assisted reproduction (to be referred hereinafter as PAR) began following the successful advertising campaigns held by sperm banks that encouraged American young soldiers to deposit sperm vials before deployment to Iraq and Afghanistan in the early 2000s (Doucettperry, 2008; Hans & Dooley, 2014; Kindregan, 2015). The American Bar Association Model Act on Assisted Reproduction requires that gametes or embryos be collected from either a deceased or an incompetent person only if he gave consent in a record before death or incompetency, or authorized a fiduciary to give such consent, except in emergency cases (Kindregan & Snyder, 2008; Spielman, 2009). Generally, PAR is subject to an ongoing debate in the United States partly because of the controversy over the issue of whether posthumously conceived children are entitled to Social Security benefits, especially Social Security Survivorship Benefits (Stechschulte, 2014). According to Kindregan (2015), “Hospital or clinic counsel may be reluctant to approve removal of gametes from a dead person unless authorized by a judicial order” (p. 84).

The idea of sperm freezing was introduced by Paolo Mantegazza, whose first scenario for posthumous reproduction related to soldiers, as he wrote in 1866: “It might even be that a husband who has died on a battle-field can fecundate his own wife after he has been reduced to a corpse and produce legitimate children after his death.” Sperm cryopreservation became a realistic option after the discovery in 1949 of the cryoprotective properties of glycerol (Bunge, Keettel, & Sherman, 1954). Nowadays, sperm cryopreservation is used as a routine technique in fertility clinics all over the world (Bahadur, 2002; Tremellen & Savulescu, 2015). This technology allows preserving the reproductive potential of cancer patients undergoing chemotherapy (Braun & Baider, 2007) or for relatives of a deceased man to bring a posthumous child into the world (Ravitsky, 2004; Rimon-Greenspan & Ravitsky, 2013).

Over the years, legal and public debates were triggered by lawsuits brought by widows or parents of deceased soldiers who wished to procure their beloved ones’ sperm or conduct PAR with or without his stated will or his presumed wishes. Attitudes of the public and also of the medical staff have been investigated in several studies, which are presented later. However, little is known about soldiers’ attitudes toward this issue. Moreover, for those who are willing

to preserve sperm, little is known about the traits they would like to see in a woman that would raise their posthumously conceived children. This article addresses this lacuna by reporting findings of a research project that examined soldiers' attitudes toward sperm cryopreservation for the purpose of PAR and explored which familial circumstances would make them more inclined to preserve sperm for PAR. In addition, study participants were asked about their preferences regarding the traits of a potential PAR mother, as compared with their preferences regarding the traits of a life partner.

This article offers an overview of the extant literature on attitudes toward PAR; it then describes an Israeli legal precedent where the court approved a request for the procurement of a dead soldier's sperm and the use of this material for PAR. It proceeds to present the research questions and the methodological aspects of the research project, followed by a presentation of the results and a discussion of their ethical and practical implications.

Public Attitudes Toward PAR

In a series of studies, Hans (2008) and Hans and Yelland (2013) examined the effect of circumstances of the death on public attitudes toward posthumous gamete procurement. They found that PAR following military casualty was perceived as slightly more "justifiable" than following death caused by bungee-jumping (Hans & Yelland, 2013). In addition to the cause of death, the religiosity of the respondent also had an impact on attitudes. More religious individuals tended to be less supportive of PAR. Another study examined the effect of five contextual factors on attitudes toward PAR: the gender of the survivor; the duration of the marital bond between the deceased and the survivor; the disposition of the deceased toward parenthood; the cause of the death; and the wishes of the deceased parents. Attitudes toward PAR were more favorable when the surviving spouse was female, the marital bond was relatively long, the deceased expressed wishes to become a parent in the future, the death was not initiated by the deceased in a suicidal act but rather was caused by a car accident, and his parents had positive attitudes toward the procedure (Hans & Frey, 2013). A more recent study also revealed that attitudes toward PAR are more positive when the living parent is a woman who lost her spouse (Hans & Dooley, 2014). Hans and Dooley suggest that this gender bias owes its origin to the commonly accepted beliefs regarding the allegedly better parenting skills of women.

Military Service and PAR

Major Doucetperry, a Judge Advocate General, was the first to raise the issue of freezing soldiers' sperm for the purpose of PAR (Doucetperry, 2008). Major Doucetperry maintains that during the Army's Readiness Process Training,

soldiers should be informed and consulted regarding the possibility of sperm cryopreservation, and those who decide to deposit their sperm should state that they wish and consent to have it used for PAR in the event of their death. Kindregan (2015) cites Doucettperry (2008) who claims that

There are no known reports of such requests arising in the military context, and in the case of a combat death, it is unlikely to arise because access to the body by the surviving spouse within hours of death cannot usually occur. (Kindregan, 2015, p. 86)

However, Kindregan (2015) suggests that the death of a soldier can also occur by accident on a domestic base or during training.

According to Kindregan (2015), it was common practice to ask soldiers to donate sperm for altruistic reasons before they set out on military operations, and the possibility of PAR by their family relatives was neither offered nor mentioned. Kindregan (2015) claims that sperm freezing is not seen necessarily as an indicator of the deceased's intention to conceive posthumously and therefore the use of frozen sperm for PAR should be examined case by case. Informed consent is an essential condition for doing so and hence the signed forms by which soldiers authorize the use of their sperm for PAR are kept in their personal military records (Kindregan, 2015). American law tends to approve the requests of soldiers' widows for PAR when informed consent has been obtained.

Bereavement and the Quest for PAR

Noteworthy is the emotional context surrounding requests for postmortem sperm retrieval. This kind of request usually arises during the confusing and jolting bereavement period following an unanticipated death. Request for sperm retrieval is therefore not always followed by reproductive use, once the initial shock has subsided. For example, Bahadur says,

In our clinic, among requests by 21 new widows to keep frozen sperm, there has been no evidence of its subsequent use, which reflects just how strong the psychological bond was with the deceased, and the complex process of mourning that ensues. After 7 years, even those 11 widows who stated their intention to use frozen sperm did not resort to PAR. (Bahadur, 2004, p. 299)

Bereavement creates different grief reactions for each mourner because of the unique interactions between the death circumstances, the characteristics of each individual personality, and the cultural and social context of each society (Rubin, Malkinson, & Witztum, 2016). Landau (1999) raises the concern that people who lose a spouse and wish to bring a posthumous child into the world

using their spouse's genetic material may find it extremely difficult to accept the finality of their partner's death. She calls posthumous children *planned orphans* and Wardi (1990) calls them *memorial candles*, terms that imply that they could be expected to fill a void left by their deceased parent. The desire for a posthumous child may be for some an answer to the painful emptiness, loneliness, and loss of vitality experienced in a time of grief and throughout life following a tragic loss.

While "classical" bereavement literature, mostly inspired by Freud, maintains that the bereaved needs to disengage from the deceased, modern theory of continuing bonds sees the continuity of the relationship between the bereaved and the deceased person as a vital part of normal and successful rehabilitation (Klass, Silverman, & Nickman, 1996). According to this approach, death ends the life of a person, but not the relationship between him and the surviving relative. Mourning is not to be seen as a psychological state that is expected to end and from which one recovers, but rather the grieving is continuous and never-ending (Anderson, 1974; Silverman, 1988). Therefore, maintaining a connection with the deceased may bring relief to the mourner in processing the meaning of the loss. This is in contrast to the approach that was dominant in the 20th century, whereby a continuing relationship was considered a psychopathology (Klass et al., 1996).

Both the recovery and the well-being of the bereaved, as well as the continuation of the relationship with the deceased, are addressed in Rubin's (1981, 1992) Two-Track Model of Bereavement. The bereaved person's adjustment is evaluated in two independent dimensions: functioning and continuing one's life, while continuing the relationship with the deceased in one's inner mental world. Rubin (1992) examined these two tracks among parents who lost their soldier son in wars in Israel and compared the two tracks of bereaved and nonbereaved families. He found out that the bereaved parents functioned at a significantly more impaired level than the nonbereaved group. The identity of the nonbereaved was more independent and remote from their sons, and the bereaved were very involved and enmeshed with their sons' identity (Rubin, 1992). Applying Rubin's Two-Track Model of Bereavement to the context of PAR, we propose that a bereaved person seeking to bring a posthumous child into the world can explore, by themselves or with the support of a counsellor, whether their desire stems from pathological grief or a subconscious desire to "resurrect" the beloved deceased, or rather from a constructive rehabilitation process that can be facilitated by the joy of a new baby.

The Israeli Context

In Israel, every Jewish person or Druze man 18-year old is enlisted into compulsory military service of 32 months. After being discharged from compulsory service, most soldiers continue a yearly military reserve service, usually until

the age of 40, the length of which depends on the type of military job and the person's health. Unfortunately, during these periods, some soldiers die in military action or are injured and lose their fertility. During military service, the state takes full responsibility for each soldier's life, health, and well-being. In the event that soldier loses some functional ability, he is entitled to monetary compensation for physical or mental health therapy and medication. This responsibility partially includes fertility preservation, and the Israeli Ministry of Defense covers the expenses associated with sperm cryopreservation for soldiers who undergo chemotherapy (which damages sperm quality) for a maximum period of 5 years.

In October 2003, the Attorney General of the Israeli Government at that time published Guidelines, allowing posthumous sperm retrieval from a deceased man for the purpose of PAR by his female partner (Ravitsky, 2004). According to these Guidelines, sperm retrieval is allowed in response to the request of a female partner regardless of the status of the couple's relationship (e.g., marriage or cohabitation). If and when the woman asks permission to use the sperm for reproduction, a court hears the case and grants such permission (Ministry of Justice, 2003).

These Guidelines do not acknowledge parents request for PAR and regard the female partner as the only person who is entitled to it. The rationale is that the parents had no right to influence their son's procreative behavior when he was alive, and therefore they have no such right after his death. However, the permission given to the partner has been expanded by the current Attorney General to include also women who did not know the deceased personally, but rather had signed an agreement with his parents to use his sperm for PAR. According to Rimon-Greenspan and Ravitsky (2013), since 2000 a number of requests to use a deceased man's sperm for the purpose of PAR have been heard. Ten of them were submitted by the deceased's parents based on a contract with a woman who wished to bear a child using the preserved sperm. Family courts decided in favor of the parents, in which the deceased son did not have a partner who might be considered as the one entitled to decide whether or not to conceive posthumously.

The Israeli Guidelines regarding PAR are uniquely permissive in that they do not require formal written consent by the deceased. Rather, they settle the concept of presumed consent (Hashiloni-Dolev, Hacker, & Boaz, 2014). If there is no evidence to the contrary, it is assumed that the deceased would have wished his partner to conceive a child using his sperm. This can be explained by the cultural values underlying Israeli societal attitudes, which are extremely pronatalist for a variety of historical and political reasons. Notwithstanding, the abovementioned Guidelines evoked public debate and received diverse responses, ranging from support to criticism. Both proponents and opponents of PAR used the deceased's stated will and his presumed wishes as arguments in favor of or against the Guidelines, alongside claims regarding the welfare of the

potential child as well as that of the widow and the bereaved parents (Hashiloni-Dolev et al., 2014).

The first case in which PAR was approved in Israel following a request by parents of a deceased son with a woman who was not his partner was a worldwide precedent. An Israeli soldier named Keivan Cohen was killed during his military service in Gaza strip in 2002. He explicitly stated his will for PAR and left a document expressing his consent to allow his parents to use his sperm for PAR. He was a 19-year-old never-married man and did not have an intimate partner. His parents turned to the court requesting sperm procurement few hours after he died. They then searched for a woman who would want to conceive and raise a child by herself, with their intensive emotional and instrumental support. They published an ad and received 200 answers within the first hour of publication. After a period of screening candidates, they chose their preferred potential mother and turned together to the hospital where the sperm was preserved.

However, when they asked the hospital to release the sperm, the hospital refused. Consequently, the family turned to obtain court approval. In the first place, their request was declined because Cohen had not been romantically involved with that woman. The Attorney General of Israel opposed the request because the Guidelines allow PAR only for a surviving partner (with whom the deceased had a long-term romantic relationship, although not necessarily a formal wife), and not the parents. The woman chosen by the parents had to hire a prominent lawyer named Irit Rosenblum, who specializes in family law and human rights. This lawyer achieved a legal precedent by obtaining the court's approval. Eleven years after Cohen's death, a baby girl was born from the use of his sperm, raised by her mother and embraced by her paternal grandparents, uncles, and aunt. Kindregan (2015) points to the fact that the request was approved only after the judges were convinced that the woman entered the agreement voluntarily without pressure and that she intended to bear and raise the child herself. Attorney Irit Rosenblum, who heads an organization called "New Family," is promoting legislation that would establish a procedure of sperm cryopreservation for soldiers in the very first days of their enlistment.

The Aim of the Study

The literature review provided earlier relates mainly to attitudes of the public toward PAR. There has been scant research relating to soldiers' perspectives toward this topic, and their voices have thus not been heard yet. Owing to the relative paucity of legal cases, as well as academic scholarship, regarding soldiers' attitudes and willingness to preserve sperm for the purpose of PAR, this article seeks to address this research lacuna and presents an exploratory study. The study yielded some important insights into the realm of posthumous reproduction as well as the relationship between the army and the family, two

demanding social institutions in Israel (Eran-Jona, 2011). Specifically, the study is aimed at information gathering regarding the following research questions:

Research Questions

RQ1: To what extent do soldiers support sperm preservation for the purpose of PAR?

RQ2: In what familial circumstances would the soldier consider explicitly asking his family to conduct PAR in the case of his death?

RQ3: What is the significance attached to the socioeconomic attributes of a PAR mother (i.e., the woman who would conceive, bear, and rear the posthumously conceived child)?

RQ4: What is the desired sociocultural profile of a PAR mother, in terms of traditional versus liberal/progressive gender roles and family status?

RQ5: Are there any differences in the attributes sought in a life partner as compared with a PAR mother?

Method

Research Tool

A research questionnaire was developed to explore soldiers' opinions regarding the highly sensitive topic of PAR. The preparation of the questionnaire was preceded by an extensive literature review focusing on cryopreservation and PAR and on preferences for life partners, as well as a search for existing cases in which deceased men's relatives sought to conduct PAR using their sperm. Next, a draft questionnaire was developed to address the major issues surrounding sperm freezing for the purpose of PAR, as well as the significance of various attributes sought in a PAR mother. This draft was pilot tested on eight soldiers who were asked to read it carefully and answer the questions, while marking any unclear wording or questions, parts of questions, or words that were not clear to them. Based on their comments and questions, the questionnaire was refined. A second draft was then pilot tested on 12 different soldiers who provided feedback, based on which a further qualification of the questionnaire was performed.

Sampling Method

The sampling technique was based on the snowball method: Each of the soldiers who participated in the pilot test of the questionnaire was requested to provide contact details of other soldiers with whom he was acquainted until a sample size of 245 has been reached. Of the 245 potential respondents, 33 soldiers did not agree to take part in the study, yielding a response rate of 86.5%. It is important

to note that the vast majority of those who declined to participate were Modern-Orthodox religious (28 soldiers).

Demographic Characteristics of the Sample

The sample consisted of 212 Jewish never-married male soldiers, the mean age was 19.72 ($SD = 0.85$), and the median age was 19.85. See Table 1 for details about the sample characteristics.

Results

The first research question was to what extent soldiers support sperm preservation for the purpose of PAR. Because Jewish law commands “be fruitful and multiply” only within a formal religious marriage, PAR is a controversial issue that some rabbis do not condone or even permit. Religious Jews tend to reject those reproductive technologies that are perceived as violating the Jewish Orthodox law (*halakha*, i.e., the collective body of religious laws derived from the written and oral *Torah*). Previous research has shown that religious respondents tend to have less favorable attitudes toward PAR (Hans & Yelland, 2013). Therefore, a global measure for evaluating the support of sperm preservation for the purpose of PAR would not be indicative, and the attitude should be measured for each segment of the three religious levels (Most Ultra-Orthodox Jews do not serve in the army, hence were not included in the study). In addition to religious level, military unit is expected to have an impact over soldiers’ inclination to preserve sperm. Because combat soldiers are more prone to casualties and life-endangering missions, it was reasonable to expect that they would express a higher degree of support than those who serve at rear units. Findings show the opposite: The mean of combat soldiers’ support was 6.53 ($SD = 0.86$), whereas the mean of rear unit soldiers’ support was 7.12 ($SD = 0.96$); in both groups, these means are quite higher than the average of the scale. A two-way analysis of variance was performed to assess the impact of the military unit and the religious level on the support of sperm cryopreservation for the purpose of PAR. The results indicate a significant main effect for the religious level ($F(2, 209) = 310.19$, $sig. = .000$); religious soldiers expressed the lowest level of support, the traditional soldiers were more supportive, and the secular soldiers expressed the highest level of support. No significant main effect for the military unit and no significant interaction effect were found (see Table 2).

The lack of significance of main effect for the military unit is in contrast to reasonable expectations and can be understood only by considering the religious context. Most combat soldiers, both in the present sample and also among the entire Israel Defense Force personnel, are Modern-Orthodox religious (Bokek-Cohen, 2014) and consequently abide by religious laws and restrictions concerning PAR.

Table 1. Sample Characteristics.

Variable	N	%
Preferred sexual orientation of a PAR mother ^a		
Heterosexual	212	100
Homosexual (lesbian)	12	5.6
Do not care about it	14	6.6
Military unit		
Combat	105	49.5
Rear	107	50.5
Religious level ^b		
Secular	74	34.9
Traditional	53	25.0
Modern-Orthodox religious	85	40.1
Education (years)		
Less than 12	28	13.2
12	178	84.0
13–14	8	3.8
Country of birth		
Israel	188	88.7
United States	5	2.3
Former Soviet Union (FSU)	18	8.6
Other	1	0.4
Ethnic origin ^c		
Ashkenazic	87	41.0
Sephardic	98	46.3
Ashkenazic–Sephardic mixed	27	12.7

Note. PAR = posthumous-assisted reproduction.

^aRespondents were allowed to mark more than one value.

^bThe secular sector consists of people who do not systematically observe Jewish law and its commandments, although some do observe various imperatives such as circumcision, Jewish marriage and divorce rites, Jewish burial ceremonies, and customs related to Jewish holidays. Modern-Orthodox religious Jews see the observance of *halacha* as a central value yet at the same time support Zionism and active integration into general society in the State of Israel. A traditional orientation is expressed in partial observance of the Jewish law, whereby each individual chooses which laws to observe and which not.

^cAshkenazic ethnic origin relates to those whose parents or grandparents immigrated from Europe or America; Sephardic ethnic origin relates to those whose parents or grandparents immigrated from Africa or Asia.

Table 2. Mean Attitudes Toward Sperm Cryopreservation and Standard Deviations by Military Unit and Level of Religiosity (Range: 1–10; $N = 212$).

Level of religiosity	Military unit			
	Combat		Rear	
	(N = 105)		(N = 107)	
	M	SD	M	SD
Secular	8.3	1.18	8.2	1.35
Traditional	6.3	0.92	7.7	0.89
Modern-Orthodox religious	5.1	0.65	5.4	0.68

Table 3. Scenarios of Familial Circumstances in Which the Soldier Would Consider Explicitly Asking His Family to Conduct PAR (Frequencies; Descending Order).

Scenario	Frequencies
I will ask for PAR in case that I die only if my parents would ask me to allow them to have a grandchild after I die	188
I will ask for PAR only if at the time of my death, I do not have any children and my parents do not have any grandchildren	117
I will ask for PAR only if at the time of my death I do not have any children and hence I would not leave any genetic offspring	92
I will never ask my family to conduct PAR in case of my death	72
I will ask for PAR in case I die only if I have a life partner who would ask me to allow her to have a child after I die	65
I will ask for PAR in case I die only if my future children ask me to make possible the birth of a new sibling after I die	2

Note. PAR = posthumous-assisted reproduction.

The second research question was in what familial circumstances the soldier would consider explicitly asking his family to conduct PAR in case of his death. Respondents were presented with six scenarios and were allowed to mark as many scenarios as they wanted out of the six. Table 3 presents the scenarios and how many respondents marked each one; the numbers in the parentheses represent the frequencies each scenario was marked.

The third research question was what is the significance attached to the socio-economic attributes of a PAR mother (the woman who would conceive, bear, and rear the posthumously conceived child in case the soldier dies). Geographical proximity to the soldiers' parents was also included under the

Table 4. Means and Standard Deviations of the Ratings of Socioeconomic Characteristics of a PAR Mother (Range: 1–10).

Socioeconomic characteristics	<i>M</i>	<i>Mdn</i>	<i>SD</i>
Owens an apartment	9.41	9.17	0.72
Works in a steady/tenured job	9.12	9.03	0.74
Her parents are willing to provide financial support	8.65	8.79	0.48
Sephardic ethnic origin	8.44	8.12	0.62
Received an academic degree	8.34	8.07	0.68
Mixed Ashkenazic–Sephardic ethnic origin	7.68	7.94	0.78
Ashkenazic ethnic origin	7.08	6.95	0.67
Lives near the soldier's parents	4.78	4.88	0.74

Note. PAR = posthumous-assisted reproduction.

assumption that some instrumental help can be gained from them, which is assumed to reduce the need to fund childcare services, such as babysitter, day-care, and so forth. This question was examined by asking the soldiers to rate the importance attached to each of 8 traits on a 10-point Likert scale. Table 4 presents the average significance of each attribute in descending order.

The fourth research question was what is the desired culturally constructed profile, in terms of traditional versus liberal/progressive gender roles, of a woman who would conceive, bear, and rear the posthumously child in case the soldier dies. This question was examined by asking the soldier to grade eight profiles according to his order of priorities by rating the profiles of the mother in a descending order. Each profile included information about the woman's age, occupation, and marital status. Five of these profiles included relatively older women at the age of 38, while the remaining 3 included 22-year-old women. Two women were described as having a successful and demanding professional occupations; another woman was presented as a guitar player in a rock band, while the others worked in traditionally "feminine" jobs. The profiles also differed with regard to marital status: One woman was married to an infertile man; one woman cohabited with her lesbian partner, and the rest of the six were single and never-married. Table 5 presents the average significance of each profile in a descending order.

The fifth research question was whether there are differences in the attributes sought in a life partner as compared with a PAR mother. To examine this question, respondents were asked to rate the importance of 46 attributes on a 10-point Likert scale, once regarding a life partner and again regarding a PAR mother; then, a *t* test for paired samples was calculated for each attribute. Table 6 presents the average significance of each attribute in descending order and also the *t* scores for the differences between the importance of each attribute for a life partner and a PAR mother.

Table 5. Significance of the Profile of a PAR Mother (Range: 1–10).

Profile	<i>M</i>	<i>Mdn</i>	<i>SD</i>
A 35-year-old woman married to an infertile man and works as a secretary	9.05	9.01	0.77
A 38-year-old never-married teacher	7.56	7.89	1.18
Orthopedic doctor	6.72	6.78	0.83
A 38-year-old never-married Bank CEO	6.38	5.89	0.95
A 35-year-old lesbian couple who work as teachers	3.75	3.92	1.18
A 25-year-old never-married kindergarten teacher	3.49	3.88	0.92
A 38-year-old never-married guitar player in a rock band	1.87	1.92	0.93
A 22-year-old never-married student in the humanities	1.68	1.92	0.58

Note. PAR = posthumous-assisted reproduction.

To sum up the findings concerning the desired attributes, 41 out of the 46 attributes were rated similarly regarding both a life partner and a PAR mother. Five significant differences emerged: Soldiers attached a greater importance to the socioeconomic status and industriousness of a PAR mother and a lower importance to her friendliness, beauty, and social popularity as compared with a life partner.

The ideal PAR mother would be a Jewish woman in her 30s, of Sephardic ethnic origin, most preferably married to an infertile husband; she would preferably work in a traditionally feminine occupation and not have a demanding professional career; she is also desirable if she owns an apartment and holds a steady job. The five most preferred traits of a PAR mother were “Jewish”; “emotionally stable”; “moral”; “loves children”; and “wants children.” It is noteworthy that the highest importance was attached to the religion of the future mother, while the remaining four traits related to her personality. We turn now to elaborate on possible interpretations of these findings as well as their important implications in the next section.

Discussion

Attitudes Toward PAR

The goal of this exploratory study was descriptive rather than analytic. It was motivated by a desire to allow soldiers, who may not feel at liberty to express preferences and concerns to their military superiors, to convey their authentic feelings toward sperm preservation for the purpose of PAR. The main findings of this study point to a relatively high predisposition of secular soldiers in favor of sperm preservation and PAR.

Table 6. Significance of Attributes of a Life Partner Versus a PAR Mother (Range: 1–10).

Attribute	Life partner	PAR mother	<i>t</i> (<i>df</i> = 211)
Jewish	9.26 (<i>SD</i> = 1.23)	9.36 (<i>SD</i> = 1.04)	0.005; <i>n.s.</i>
Emotionally stable	8.88 (<i>SD</i> = 0.57)	8.86 (<i>SD</i> = 0.61)	0.000; <i>n.s.</i>
Moral	8.65 (<i>SD</i> = 1.05)	8.62 (<i>SD</i> = 2.02)	0.001; <i>n.s.</i>
Loves children	8.55 (<i>SD</i> = 0.66)	8.47 (<i>SD</i> = 0.70)	0.008; <i>n.s.</i>
Wants children	8.41 (<i>SD</i> = 0.68)	8.43 (<i>SD</i> = 0.67)	0.001; <i>n.s.</i>
Intelligent	8.37 (<i>SD</i> = 0.67)	8.34 (<i>SD</i> = 1.63)	0.001; <i>n.s.</i>
Healthy	8.29 (<i>SD</i> = 0.95)	8.26 (<i>SD</i> = 1.05)	0.001; <i>n.s.</i>
Dependable	8.29 (<i>SD</i> = 1.50)	7.89 (<i>SD</i> = 1.32)	0.966; <i>n.s.</i>
Maternal	8.28 (<i>SD</i> = 1.05)	8.25 (<i>SD</i> = 0.92)	0.002; <i>n.s.</i>
Under 40 years old	8.28 (<i>SD</i> = 0.71)	8.39 (<i>SD</i> = 1.12)	0.089; <i>n.s.</i>
Economically well off	8.27 (<i>SD</i> = 1.03)	8.45 (<i>SD</i> = 0.88)	0.084; <i>n.s.</i>
Has academic degree	8.15 (<i>SD</i> = 0.95)	8.03 (<i>SD</i> = 0.79)	0.003; <i>n.s.</i>
Earns a high income	8.04 (<i>SD</i> = 1.22)	8.11 (<i>SD</i> = 1.28)	0.003; <i>n.s.</i>
Feminine	8.02 (<i>SD</i> = 1.38)	7.86 (<i>SD</i> = 1.16)	0.311; <i>n.s.</i>
Gentle	8.01 (<i>SD</i> = 1.02)	7.67 (<i>SD</i> = 1.12)	0.122; <i>n.s.</i>
Beautiful and attractive	7.96 (<i>SD</i> = 1.96)	6.35 (<i>SD</i> = 1.74)	6.32; <i>sig.</i> = .000
Bright-colored	7.92 (<i>SD</i> = 0.87)	7.89 (<i>SD</i> = 1.06)	0.001; <i>n.s.</i>
Beautiful face	7.92 (<i>SD</i> = 1.08)	7.95 (<i>SD</i> = 1.16)	0.002; <i>n.s.</i>
Nice teeth	7.90 (<i>SD</i> = 1.18)	7.86 (<i>SD</i> = 1.05)	0.001; <i>n.s.</i>
Socially popular	7.86 (<i>SD</i> = 1.88)	5.74 (<i>SD</i> = 2.33)	7.29; <i>sig.</i> = .000
Easygoing	7.86 (<i>SD</i> = 1.88)	8.04 (<i>SD</i> = 1.34)	0.144; <i>n.s.</i>
Physically strong	7.84 (<i>SD</i> = 0.98)	7.69 (<i>SD</i> = 0.96)	0.158; <i>n.s.</i>
Reliable	7.83 (<i>SD</i> = 1.18)	7.86 (<i>SD</i> = 0.89)	0.001; <i>n.s.</i>
High socioeconomic status	7.82 (<i>SD</i> = 1.38)	8.28 (<i>SD</i> = 1.54)	3.239; <i>sig.</i> = .001
Good genes and heredity	7.81 (<i>SD</i> = 1.04)	7.73 (<i>SD</i> = 1.71)	0.246; <i>n.s.</i>
Kind and considerate	7.80 (<i>SD</i> = 1.23)	8.17 (<i>SD</i> = 1.35)	1.458; <i>n.s.</i>
Ambitious	7.74 (<i>SD</i> = 1.09)	7.78 (<i>SD</i> = 1.14)	0.002; <i>n.s.</i>
Has sense of humor	7.74 (<i>SD</i> = 1.31)	7.72 (<i>SD</i> = 1.15)	0.001; <i>n.s.</i>
Similar ethnic origin	7.73 (<i>SD</i> = 1.61)	7.81 (<i>SD</i> = 0.88)	0.005; <i>n.s.</i>
Good-hearted	7.68 (<i>SD</i> = 1.52)	7.71 (<i>SD</i> = 1.15)	0.002; <i>n.s.</i>
Creative	7.64 (<i>SD</i> = 1.78)	7.09 (<i>SD</i> = 1.89)	0.345; <i>n.s.</i>
Good interpersonal skills	7.62 (<i>SD</i> = 1.54)	7.61 (<i>SD</i> = 1.22)	0.001; <i>n.s.</i>
Friendly	7.32 (<i>SD</i> = 1.29)	5.12 (<i>SD</i> = 0.63)	15.73; <i>sig.</i> = .000
Physically fit	7.03 (<i>SD</i> = 1.45)	7.07 (<i>SD</i> = 1.58)	0.002; <i>n.s.</i>
Industrious	6.92 (<i>SD</i> = 0.86)	8.45 (<i>SD</i> = 1.78)	7.99; <i>sig.</i> = .000
Exciting personality	4.28 (<i>SD</i> = 1.29)	4.24 (<i>SD</i> = 1.27)	0.002; <i>n.s.</i>

Note. PAR = posthumous-assisted reproduction.

An interesting finding of this study is that the wishes of soldiers' parents, or a scenario in which they would not have any grandchildren at the time of death, had much more influence on soldiers' willingness to pursue PAR than the wishes of a life partner. Indeed, parents' wish for PAR using their son's sperm had 3 times the impact of a partner's wish. One possible interpretation is that the soldiers are young and most are not yet married or in a committed relationship. While the wishes of a life partner are thus more hypothetical for them, they feel a greater obligation toward their current nuclear family, that is, to respect the wishes of their parents.

This finding is of particular interest in light of the fact that the Israeli guidelines, as noted earlier, permit PAR based on the request of a female partner, and not of parents. While Israeli courts have approved over the past few years, the requests of parents when they were submitted in conjunction with an identified potential PAR mother (Rimon-Greenspan & Ravitsky, 2013), as explained earlier, this issue remains controversial. The present study may thus shed some light on what matters to the soldiers themselves, in a way that may help inform future regulatory decision-making in this area.

Another interesting finding related to the influence of religiosity on the attitude toward PAR. While one could expect combat soldiers, who are at higher risk of casualty, to express a higher willingness to conduct PAR, the study found that the level of religiosity is a more influential factor than the soldier's type of unit. This can be explained by the fact that religious attitudes toward PAR are variable, and some rabbis consider the practice undesirable or even forbidden (Ravitsky & Bokek-Cohen, 2018). This finding also validates findings from studies conducted by Hans (2008) and Hans and Yelland (2013), showing that respondents' level of religiosity has an impact on their attitudes, with more religious individuals tending to be less supportive of PAR.

Attitudes Toward a Hypothetical PAR Mother

A significant finding of the study relates to the soldiers' preferences regarding a hypothetical PAR mother of their posthumously conceived child. Many of the preferences regarding the woman's traits, ethnicity, socioeconomic status, and occupation can be interpreted as reflecting the soldiers' concern for the material and the emotional well-being of their genetic child. This demonstrates that they filled the survey while seriously considering the implications of PAR and while trying to envisage the life circumstances of such a child.

Soldiers' responses express a preference for socioeconomic stability and reliability when it comes to the attributes of the PAR mother. They attach high importance to her housing condition, with a preference for a woman who owns her own residence, and her job security, with a preference for a woman who is economically and vocationally stable. On the other hand, soldiers' responses show a clear rejection of profiles lacking stability and security, such as that of

a rock guitarist or a young student. This reflects a preoccupation with the prospective child's future economic security and stability and can be easily understood in light of the fact that in most scenarios the PAR mother would be a single mother who must provide for the child on her own.

An important nuance is that this clear preference for economic security and stability was not at the expense of a career that may require sacrifices in terms of the woman's maternal role. While wishing that the woman would have economic conditions that can benefit the child, soldiers also expressed preferences for jobs and careers that are considered traditionally "feminine" and would allow the PAR mother to spend time at home and dedicate herself to child-rearing. The profile of a career woman, such as an orthopedic doctor or a bank CEO, was ranked lower than that of a woman with a job that is less time-consuming and requires standard working hours, such as a secretary or a teacher. This reflects the intricate balance sought by the soldiers to ensure what they view as the optimal life conditions for their PAR child. On one hand, a mother who is economically secure and can provide the child with good material conditions, such as high-quality housing, nutrition, and education. On the other hand, a mother who is unlikely to work long hours, be absent from home, travel extensively, and overall be less available to the child.

Keeping in mind the PAR child's best interests, soldiers also preferred a woman who can expect the support of her own parents (the prospective child's maternal grandparents), over a woman who would reside close to their own parents (the prospective child's paternal grandparents). This demonstrates the practicality of their considerations. The expected commitment and involvement of the mother's parents can be seen as a "safer bet" or as a more "natural" support system for a single mother, than that of the deceased's parents. This takes into account the circumstances of PAR, whereby the father is not there to help build the relationship with the PAR mother, to mitigate any possible tensions, and to create the link to the child's life as may be the case in many families.

Interestingly, soldiers expressed a higher preference for a woman of Sephardi ethnic origin, although this ethnic group is generally perceived in Israeli society as having lower social prestige and cultural capital than those of Ashkenazi ethnic origin. Studies of ethnic gaps show consistently that Israelis of Sephardi origin are located, on the average, at lower socioeconomic levels than their Ashkenazi counterparts (Benjamin & Barash, 2004; Haberfeld & Cohen, 2007; Sasson-Levy & Shoshana, 2013). However, popular culture ascribes to Sephardi mothers more warmth, domesticity, and better housekeeping skills, while Ashkenazi mothers are portrayed as cold and distant. As Ella Shohat says in her analysis of popular films, Sephardi women are perceived as good housekeepers, hence are hired by wealthy Ashkenazi women to perform housekeeping chores: "... Other personal films feature Sephardic women, who,

as in Israeli/Hebrew literature, are presented as housemaids” (Shohat, 2010, p. 113). She further notes that

Interior shooting of the houses of Sephardi characters emphasizes poverty as well as communality . . . The colors, however, are warm and bright, appropriate to the characterization of Sephardi people as warm, familial, lively, trustworthy, and affectionate. The shooting of the houses of wealthy Ashkenazim . . . all suggesting an alienated, cold world, often in conjunction with Ashkenazi characters who are snobbish and hypocritical egotists. These contrasting images largely correspond to the Ashkenazi and Sephardi stereotypes in Israel. (2010, p. 119)

These findings regarding soldiers’ preferences for a Sephardi PAR mother over an Ashkenazi one do not reinforce ethnic stereotypes, but rather demonstrate existing prejudice as expressed in the new social space of posthumous reproduction.

Soldiers also expressed a preference for traditional family structure as a rearing environment for their PAR child. The profile of a married heterosexual couple in which the husband is infertile was ranked almost 3 times higher than that of a lesbian couple, despite the fact that in the lesbian couple scenario the women were teachers, a stable secure job that does not require too much absence from home. This may be related to the desire to protect the PAR child from social stigma in a society that is still dominated to some extent by heteronormative values.

These findings regarding preferences for a PAR mother can be contextualized when compared with the soldiers’ preferences for a life partner. Their desired traits in a life partner were similar to those expressed by male respondents in other studies that explored partner preferences. Specifically, in both a life partner and a PAR mother, soldiers preferred a woman who conforms to a traditional maternal image. In that sense, they were similar to married participants in the highly cited work of Buss and Barnes (1986) but differed from the unmarried young students who ranked the trait of “exciting personality” as the second most important desired traits. Soldiers attached high importance to emotional stability and ranked low a woman with an exciting personality, which can be interpreted as a desire for a PAR mother who is dependable, predictable, and stable, as opposed to a mother who may act spontaneously and unexpectedly, in ways that introduce instability and uncertainty into the child’s life. This finding is also validated by another highly cited study that compared partner preferences at six time points, from 1939 to 1996. That study found that men attach high importance to traits such as “dependable character,” “emotional stability,” and “desire for home and children” (Buss et al., 2001). In a PAR mother, soldiers did not attach importance to traits such as “attractive,” “friendly,” and “socially popular” as compared with these same traits in a life partner. This may be interpreted as expressing the view that such a woman would be less distracted by social or romantic activities and focus more on her maternal role.

In addition, soldiers attached greater importance to the PAR mother's socioeconomic status and her industriousness as compared with these traits in a life partner. While all studies of partner preferences repeatedly show that men attach low significance to the socioeconomic attributes of their desired partners (Buss et al., 1990; Buss & Schmitt, 1993; Gangestad, Haselton, & Buss, 2006; Shackelford, Schmitt, & Buss, 2005), soldiers' preference for these aspects reflects a responsible attitude that emphasizes the PAR child's economic well-being. A PAR mother would be more likely to raise the child as a single parent and therefore her financial prospects and industriousness are important elements in securing the child's future. Moreover, industriousness can be viewed as an important trait due to the demanding nature of motherhood, especially for single mothers, as compared with a life partner with whom the soldier would have shared parental chores.

In sum, the desired traits were rated in this project quite similar to ratings given by male respondents in partner preferences studies. Specifically, soldiers preferred a partner and a PAR mother who conforms to a traditional maternal image. In that sense, they were similar to the married participants and in Buss and Barnes's (1986) study and differed from the unmarried young students who ranked the trait of "exciting personality" as the second in the order of desired traits in that project. Another important study comparing partner preferences from six time points, starting from 1939 until 1996, revealed a similar pattern. Men attached a very high importance to the traits "dependable character"; "emotional stability," and "desire for home and children" (Buss et al., 2001).

Ethical Considerations

Similar to other assisted reproductive technologies, PAR raises numerous ethical issues. Arguments in favor of PAR focus on the importance of respecting the deceased's wishes (in case of explicit or presumed consent) or to respect the reproductive autonomy of the surviving partner who wants to respect his wishes (Batzer, Hurwitz, & Caplan, 2003; Corvalan, 1996; Stechschulte, 2014). More extreme arguments suggest that presumed consent is sufficient, that is, that unless a man explicitly "opted out" of PAR, his partner's wishes should prevail because the interests of the living (woman and child) trump those of the deceased (Tremellen & Savulescu, 2015), or even that genetic continuity is inherently valuable and thus is always in the best interest of the deceased regardless of his expressed wishes.

In a recent controversial article, Tremellen and Savulescu (2015) argue in favor of "presumed consent" for PAR, arguing that the surviving female partner's benefit from bearing of a posthumous child overrides the interests of the deceased. They thus contend that in such cases where explicit

consent has not been given, PAR should be allowed if the deceased wanted children when he was alive. This would allow the surviving partner to benefit herself and also confer the benefit of genetic continuation on the deceased himself.

In cases where a woman would conceive using anonymous sperm donation (as would be the case in Israel, where all sperm donation must be anonymous by law), another argument in favor of PAR can be proposed: Using the sperm of a deceased man would provide the child access to information about her or his genetic origins for medical and identity reasons (Ravitsky, 2010, 2012). Donor-conceived individuals, who are denied access to information about genetic origins (as well as adoptees, as has been amply demonstrated in adoption research), sometimes suffer negative psychological outcomes that have been dubbed *genealogical bewilderment* (Sants, 1964), that is, potential identity problems and plight of individuals who have little knowledge of one or both genetic/biological parents (Bokek-Cohen & Gonen, 2016). Such psychological issues can be prevented when the sperm of a known deceased donor is used. Despite the fact that the genetic father is deceased, the child would have full access to identifying information (medical, personal, familial, genealogical, etc.). We suggest that PAR children, as opposed to donor-conceived children, may benefit from *genealogical certainty* rather than suffer the consequences of *genealogical bewilderment*.

Opponents of PAR are concerned with the well-being of the posthumously conceived child (cf. Lawson, Zweifel, & Klock, 2016). Landau (1999) coined the term *planned orphanhood* to highlight the concern that this practice may violate the child's best interests, arguing that "an adult's desire to give birth to an orphan should not have priority over the child's basic right to two living parents, at least at the time of its conception" (Landau, 2004, p. 1953). The right to have two living parents assumes that this would have a crucial impact on the child's well-being. Corrigan, Mumford, and Hull (1996) stress that a surviving partner wishing to have a posthumous child as a loving expression in memory of the deceased spouse ignores the fact that the future offspring would have no memories of the dead parent. Additional arguments against PAR pertain to the potential pressure exerted by the deceased's parents on the surviving partner to conceive posthumously to honor or commemorate the deceased (Young, 2014) as well as general reticence regarding unconventional reproductive practices and family structures.

It is noteworthy that the implications of PAR for men and women are different. Although recent advancements enable egg freezing, the use of a cryopreserved egg from a deceased woman by her male partner would necessitate a surrogate mother or a new partner to carry the pregnancy, unlike a woman who can carry herself a child conceived posthumously with the sperm of her male deceased loved one (Ravitsky & Bokek-Cohen, 2018).

PAR and Bereavement

Bringing a child into the world from the frozen sperm of the deceased partner might be a way to reattach symbolically to the dead spouse (Braun & Baider, 2007). Similarly, parents willing to conduct PAR using their dead son's sperm may experience some relief knowing their beloved son has left a genetic trace. The question of whether PAR reflects pathological bereavement has not been studied to date. In 1999, medical psychologist Reicher-Atir (1999) interviewed 17 bereaved married women who lost a child and underwent fertility treatments to conceive and bear another child. She sought to examine whether the quest for a new child constituted a manifestation of normative bereavement that involves adjustment to the new reality of loss together with acceptance of the fact that the deceased child is no longer there, or demonstrated a chronic and continuous bereavement involving feelings of guilt and anxiety stemming from the irreversible separation, leading to a pathological commemoration where the future child would be memorial monument child. The interviewees said they thought of the idea of bringing new life into the world very soon after the death of their child, in most cases just a few days after the tragedy. They looked for a spark of life at a time of personal and familial destruction, and their need was triggered by a sense of personal and national insecurity. Reicher-Atir concluded that for most interviewees, fertility treatments facilitated the rehabilitation process, and they were motivated by the need to revitalize a dead part in their own selves, rather than commemorating the deceased child.

In the case of PAR by parents of the deceased, it would be inappropriate and also impossible to determine, without a clinical professional evaluation, whether PAR reflects a normal or pathological way of coping of parents because there are no universal clear criteria for the diagnosis of adaptive or complicated bereavement. Bereavement processes vary due to individual, cultural, religious factors, as well as the gender, age, life cycle phase, and the specific interpersonal relationship between the bereaved and the deceased (Rubin et al., 2016).

While Landau (1999) doubts the therapeutic potential of PAR for the widow, Bahadur (2002) proposes that the widow may get back to normal functioning more easily by conducting PAR. According to Braun and Baider (2007),

No matter what significance one may attach to the experience of the birth of a "sperm-bank" child, the timing of the decision is problematic as long as the widow is still embedded within the bereavement process. But . . . when is the right time? (p. 5526)

The same question can be raised regarding the correct timing, if at all, for the parents of dead soldiers to consider PAR. Therefore, it is recommended that soldiers sign a biological willTM and freeze sperm if they do wish their parents or spouses to conduct PAR in the event of their death during military service.

While this exploratory study provides unprecedented data and insights into important questions, some methodological limitations should be mentioned. Contrary to arguably reasonable expectations, combat soldiers expressed lower willingness to preserve sperm than those serving in rear units. This can be understood by the fact that most of them were religious Jewish soldiers, meaning that their attitudes toward reproduction out of wedlock are influenced by Jewish religious law. In addition, one must consider the religious prohibition to procure sperm by masturbation (Bokek-Cohen, 2015) as having an impact on religious respondents. This unique religious context impedes the generalizability of the findings regarding the type of military job (combat vs. rear unit) on the willingness to preserve sperm. Therefore, it is recommended that future studies examine these issues among additional segments of society while taking into consideration gender, age, socioeconomic status, and religion differences.

Moreover, it is possible that the preferences for certain attributes in a life partner would change as the soldier grows older, and consequently the aforementioned differences between the significance attached to a life partner and a PAR mother would change accordingly. In addition, it is recommended to study whether bereaved parents or a spouse seeking to conduct PAR wish to bring to life a posthumous child to symbolically “resurrect” the deceased while denying the loss, or alternatively, to bring joy and vitality to their life while accepting the finality of the death of their loved one.

Finally, there is much insight to be gained by employing mixed methodology in future studies and supplementing additional surveys with qualitative methods, such as interviews or focus groups. Qualitative methods may deepen our understanding of the issues at hand by exploring with participants the reasons behind their responses regarding sperm preservation and PAR.

Conclusion

Posthumous reproduction by soldiers is a relatively new phenomenon. This exploratory research has shown that soldiers express a relatively strong willingness to preserve sperm for the purpose of PAR, not as a general inclination but rather under certain familial circumstances. Interpretations of the soldiers’ specific preferences for a PAR mother shed light on this hitherto unstudied topic, and hence contribute to the evolving scholarship on PAR by revealing soldiers’ authentic views toward these sensitive issues.

If we acknowledge the importance of respecting the deceased’s wishes regarding the use of his sperm for PAR, should we also respect his wishes regarding the traits and familial circumstances of the mother of his posthumously conceived offspring? This question remains to be explored by ethical and legal analysis. Policy makers and army officials may consider not only informing soldiers about their options concerning sperm preservation but also allowing them to state their preferences regarding the circumstances in which they would want PAR to

be pursued and by whom (partner or parents). They may even wish to allow them to indicate which attributes they prefer in a PAR mother, as a way of informing their parents who would be the ones making this choice. Such policy decisions may benefit from the findings of this study and future studies that will hopefully be conducted to explore this understudied yet important field.

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Vardit Ravitsky is an associate professor at the Bioethics Programs within the School of Public Health at the University of Montreal. She is also Director of the Ethics and Health Branch of the CRE, an interuniversity research center in ethics. Ravitsky is an elected Board member and Treasurer of the International Association of Bioethics (IAB). She is a member of the Standing Committee on Ethics and of the Advisory Board on Research Excellence, Policy and Ethics for the Canadian Institutes of Health Research. Previously, she was faculty at the Department of Medical Ethics at the University of Pennsylvania and a fellow at the Department of Bioethics of the NIH and at the National Human Genome Research Institute (NHGRI). Her research focuses on reproductive ethics and the ethics of genetics and genomics. She is particularly interested in the various ways in which cultural frameworks shape public debate and public policy in the area of bioethics. Born and raised in Jerusalem, Ravitsky brings international perspectives to her research and teaching. She holds a BA in philosophy from the Sorbonne University in Paris, an MA from the University of New Mexico in the United States, and a PhD from Bar-Ilan University in Israel.

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