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Persuasive Communication on Social Egg Freezing in California from a Framing Theory Perspective

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***Abstract*—**This paper presents the impact of persuasive communication implemented by fertility clinics websites, and how this information influences women at their decision-making for undertaking this procedure. The influential factors for women decisions to do social egg freezing (SEF) are analyzed from a framing theory perspective, with a specific focus on the impact of persuasive information on women's decision making. This study follows a quantitative approach. A two-phase survey has been conducted to examine the interest rate to undertake SEF. In the first phase, a questionnaire was available during a month (May 2015) to women to answer whether or not they knew enough information of this process, with a total of 230 answers. The second phase took place in the two last weeks of July 2015. All the respondents were invited to a seminars called 'All about egg freezing' and afretwards they were requested to answer the second questionnaire. After the seminar, in which they were given an extensive amount of information about egg freezing, a total of 115 women replied the questionnaire. The collected data during this process were analyzed using descriptive statistics. Most of the respondents changed their opinion in the second questionaire which was after receiving information. Although in the first questionnaire their self-evaluation of having knowledge about this process and the implemented technologies was very high, they realized that they still need to access more information from different sources in order to be able to make a decision. The study reached the conclusion that persuasive and framed information by clinics would affect the decisions of these women. Despite the reasons women have to do egg freezing and their motivations behind it, providing people necessary information and unprejudiced data about this process (such as its positive and negative aspects, requirements, suppositions, possibilities and consequences) would help them to make a more precise and reasonable decision about what they are buying.

***Keywords*—**Decision making, fertility clinics, framing theory, persuasive information, social egg freezing.

I. Introduction and Background

NOWADAYS, tending to delay motherhood in a lot of countries is increasing every day. Egg freezing or oocyte cryopreservation could be defined as a solution for women to preserve some healthy unfertilized eggs in their late 30s or more, if they face infertility but still willing to have a child. Although, according to existing literature the process has been developed in the late 1980s, the first child using frozen egg was born in 1978 [1], [2].

The number of clinics offering Egg freezing has recently been increasing through the world. However, the treatment is still considered experimental and there is no sufficient data to recommend it for childbearing [3]-[6].

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Although egg freezing has been successful to absorb people's acceptance, there still not enough knowledge learned of how this technology is perceived by people and affect their motives and reasons which convince them to do this process [7].

Referring to existing literature, making a decision about the appropriate time for maternity is a complex procedure. This process is influenced by an individual-social situation such as relationship status, pertinence of partner, mental and physical readiness, individual perspective of situations required for children to get nurtured and raised, social and financial consequences due to career interruptions for childbearing, the financial issues of raising a child based on individual ideal factors, different cultural and national standards, religious or ethnic mandates [8]-[12].

II. Knowledge Related with Social Freezing

Egg freezing is now getting accepted as an opportunity to preserve fertility, not only for medical reasons, but also for women who desire to postpone their motherhood due to any other reasons, which are mostly social nature. That's why the term of social freezing has been developed to address this venture [13]-[15]. Social freezing is commonly linked to the tendency to postponing motherhood, currently increasing through the whole world [16]-[18].

Supposed benefits of SEF are empowered by various perspectives of social and personal standpoints of women. For example, as a health-related benefit, as using younger frozen eggs could reduce risk of miscarriage for women who are over the age of 35 and also the risk of genetic and chromosomal abnormalities of children [14]. It makes women feel more confident about having required time to find an appropriate partner with whom they prefer to have a child and could 'expand women's reproductive options' and offer a 'breakthrough for reproductive autonomy' [19]. It correspondingly provides women with a superior and stable personal and social situation for motherhood as a matter of psychological, financial or professional [14], [20], [21].

Considering remarkable psychosocial and health consequences of postponing motherhood, professionals and researchers of medical and mental health issues have underlined essential need to provide and embrace public with proper understanding and knowledge of fertility issues [22]-[27]. Furthermore, the effectiveness of education via media in increasing knowledge of fertility and assisted reproductive

technologies, and changing way of life and values about timing of motherhood have been always argued [28].

Although there are few research studies on the topic of egg freezing, there are increasing dilemmas about various important relevant issues; such as ethical, legal, economic, commercial, psychological, medical and social issues [14], [15], [19], [21], [29]-[40].

Although egg freezing might help to diminish some pregnancy risks through older ages, there are some predictable risks through the process of egg freezing including ovarian hyper stimulation syndrome, the risk of surgical infection, intraperitoneal hemorrhage and ovarian torsion [41]-[43].

There is not heretofore standardized protocol which confined to compare egg freezing success rate due to different clinical results. Hence results could not yet come to a general conclusion [44]. However, success rate of egg freezing is, based on the current studies, highly variable depending on different factors which include the age of the oocyte declared as the leading one. For this reason, clinical centers have achieved a higher success rate appraised between 35% to 60% by the use of younger oocytes of women in comparison to those who conduct egg freezing on healthy women of all ages [10], [45], [46]. In this regard, offering an unnecessary high-cost experimental service to a healthy woman has been debated from the ethical aspect [14]. It has also been questioned for the potential risks of impairment to the children born from frozen eggs [19].

Nevertheless, there is no evidence so far showing chromosomal abnormalities or birth-oddities in children born from frozen eggs [5]. Medical studies demonstrate that necessity of long-term comprehensive and precise data mining on health situation of the children born from frozen eggs prior to approving this technique getting universally established. Nevertheless, these offspring have been recognized physically smaller than those who have engendered out of fresh eggs. Besides, they could be more in expose of various social difficulties which children with older parents would face [14], [19], [47].

Recent studies indicate women's average age of 38 years when coming for egg freezing treatment [23], [48]-[51], the time which both egg quality and quantity start to weaken, necessitating women to potentially undergo multiple cycles of egg freezing treatment that often requires a higher dosage of stimulation drugs to enable the collection of a sufficient number of eggs to preserve. This has led to need for encouraging women to consider freezing their eggs at younger ages, preferably in their late 20s or early 30s [15], [52]. However, studies indicate that younger women neither show a tendency to get aware of age-related fertility failures nor consider it necessary as they expect to experience pregnancy through natural conception as a normal part of their life [53]-[55].

Finally, egg freezing has been criticized by social commentators as a very distinctive technological 'solution'. Decision-making about maternity is a complex process bound up with broader social, situational and ideological influences which, as it is argued, has just a little to compromise to this technology [15], [19], [36].

Present paper analyses various purposes to undertake the process and also examines the impact of receiving proper information about the process as the most important factors of decision making.

III. Message Framing: Theoretical Background

Over the last 2 decades, framing model have helped to explain how people generate meaning by interpreting information based on their knowledge or schemas. In a way, framing theory has its root set in the 1920s. In 1980s, the main focus of these idea had eventually converged into the question of what is it that people do with all the media information, instead of how do these messages affect people in general. In order to answer this question, different theorists and experts began to study the media in relation to message framing [56]-[59]. Message framing refers to both the selection of information as well as the way in which it is presented [60].

Framing theory evaluates the features of messages and the way in which information is produced. Then, it goes further, considering the different psychological features of audience members which are connected with the different ways in which those messages are interpreted [61].

Framing theory is used extensively in social sciences and the "frame" has been described as the central core or organizing idea, the cognitive schemata of interpretation that helps to identify, label and give meaning to a specific issue [58].

Entman (1993) states that the meaning of framing can be expressed as "select some aspects of a perceived reality and make them more salient in a communicating text" [62]. Such a rise in salience increases the chances of receivers becoming aware of the information and them being able to understand their meaning, process it and integrate it [62], [63]. That's why researchers specialized in framing focus closely on the salience of a variety of media frames related to an issue [64]. The role of media is presented by framing theorists as one that highlights certain features of reality. In that way, it leads people to think in certain ways about an issue [65].

As it was mentioned earlier, framing theory also discusses the importance of the different ways in which messages are presented. In the fields of health, advertising and media communities, there is great interest among scholars and researchers about framing in general. That is because of the enormous impact that the ways in which we present information can affect the decisions of clients as well as their judgements in those fields [66].

The main focus of framing research lies typically on how the way information is presented within gain vs loss framed scenarios which has an impact on a person's cognition, disposition and intention with regards to behaviours or make decision linked with health issues.

IV. Gain and Loss Frames

The impact of gain and loss framed content and messages are connected with the prospect theory [67]. This theory states that the choices of people, when they find themselves surrounded by uncertainty, depend in great measure on how the outcomes

of their choices are framed. To be more specific, when such outcomes are framed in terms of gains, people tend to be more cautious in connection with potential risks. However, when such outcomes are framed in terms of losses, people are more accepting of potential risks. This theory fits nicely with the process of understanding the consequences and effects of the framing of messages on persuasion techniques connected with health, because it deals with how people behave and take decisions in risky situations [67].

Talking about my study, one of the main goals of fertility clinics websites is to attract women and encourage them to visit and pick one of their fertility services, such as egg freezing in relation to delay motherhood for example. Therefore, it is possible that the premises of gain and loss framed messages with regards to promotion may take place in different ways when we deal with websites of fertility clinics. Instead, it may be the case that gain-framed messages are in a dominant position with regards to fertility clinic websites because these clinics feel that giving information related to potential risks or negative outcomes of procedures could cause patients to reconsider their options. In fact, previous research has determined that websites associated with fertility clinics often give more importance to the benefits linked with SEF process from many perspectives while at the same time diminishing the importance of any potential negative outcomes or of any associated risk [68].

The websites of fertility clinics are in general created with the goal of advertising their services [69]. Apart from certain exceptions, the main function of these websites is to describe their different offerings and their goal is to attract a larger number of clients. Most of these websites, have home page with spirited colors, a big photo of one or a group of cute babies and happy doctors. In the page of egg freezing services most of them show a high success rate, a great offer or nice conceptual pictures of women.

There are some studies that have analysed fertility clinic's websites in order to evaluate their quality. Most of them apply the American Medical Association (AMA) guidelines to assess the quality of the websites and their related SNS. The studies found that Websites for the Society for Assisted Reproductive Technology–affiliated clinics fail to meet most of the American Medical Association health information guidelines [68]-[72] and that clinics should maintain policies on the incorporation of social networks into practice [73].

V. Methods

A quantitative study has been conducted through a 2-phase survey to examine the Interest Rate to undertake Egg-Freezing among two groups of women, first group included women who had been influenced by clinics messages and second one included women who have not still been advised by clinics. Cluster sampling is the method applied to pick-up respondents because, since the study is investigating the impact of persuasive messages and unbiased information on people, two groups of women were required to attend; one initially impressed by persuasive messages and the other not.

In this regard, the first survey was conducted through 230 women in two general categories: the first with one hundred and fifteen 20~45-year-old women, from different social levels and not necessarily educated, who were selected from women already convinced of undertaking egg freezing process while they did not have a comprehensive knowledge about this technology (Sample group 1) and the second group featured 115 women who were university students, from different social levels and not necessarily interested in the method and on average, younger than the first group (Sample group 2). The reason for selecting samples from 2 different statistical societies was that the results could be better analyzed when comparing 2 various groups, one initially interested in the topic whilst the other group might never have even thought about that seriously. Besides, level of education will usually affect decision-making, so the results might demonstrate different impressibilities of sample groups.

The study steps were as: through phase-one survey (May 2015), women were questioned about their knowledge of this technology and also their motivation and reasons which might have convinced or could encourage them toward undertaking the process. Then at the end of the survey, they were invited to attend a two-session training course, one hour each, and a Free Q&A (Question & Answer) session, held in the two next consecutive weeks (two last weeks of July 2015). They enthusiastically attended the sessions, where they could get in contact with scientific, medical and psychological knowledge of egg freezing by a psychologist and a gynecologist (fertility specialist). At the second phase of survey, they were asked to answer to the same questionnaire once again, while they were not naive about the case anymore.

Afterwards, the answers were studied and analyzed to discover the impact of having a complementary knowledge of the technology and its positive and negative aspects on decisions by women. Following part would explain elicited results analyzed regarding sample groups.

VI. Results

The first phase of survey was directed to answer the first research question as discovering the Interest Rate to undertake Egg-Freezing Technology among women: those who were already convinced to apply the technology and the university students who might were in expose of encouraging and persuasive communication to enjoy their youth and postpone the commitment of being a mother.

To answer the second research question and discover the impact of having sufficient and complete information about both advantages and disadvantages of the method, this phase of the survey was conducted among attendees after completion of training sessions.

VII. Interest Rate of Egg-Freezing Technology

At the first phase, of the 115 who responded in sample group1, 89% of women answered 'YES ' to the question asking them whether they would consider freezing their eggs, 11% answered ' I don't know yet ', and no one declined freezing

their eggs. These answers were different at the second phase as 48% for "YES", 30% "NO" and 22% still doubting about their true decision. Those who answered, "I don't know yet", were uncertain about if they might answer differently in the future, having more information or having different situation (Table I and Fig. 1).

TABLE I
ANSWERS OF THE SAMPLE GROUP 1 TO "DO YOU USE EGG FREEZING TECHNOLOGY (AT THE PRESENT TIME OR FUTURE)?

Responds	First Phase (Respondents: 115)	Second Phase (Respondents: 115)	People with changed idea
YES	89%	48%	41%
NO	0%	30%	0%
I don't know yet	11%	22%	11%
Total	100%	100%	

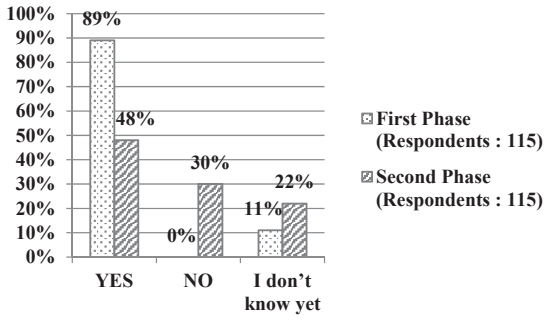

Fig. 1 Answers by sample group 1 to "Do you use egg freezing technology (at the present time or future)?"

TABLE II
ANSWERS OF THE SAMPLE GROUP 2 TO "DO YOU USE EGG FREEZING TECHNOLOGY (AT THE PRESENT TIME OR FUTURE)?"

Answers	First Phase (Respondents: 115)	Second Phase (Respondents: 115)	People with changed idea
YES	22%	33%	11%
NO	31%	41%	10%
I don't know yet	47%	26%	21%
Total	100%	100%	

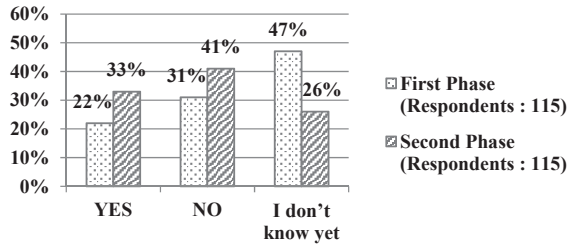

Fig. 2 Answers by sample group 2 to "Do you use egg freezing technology (at the present time or future)?"

Women in sample group 2 answered differently of course. Among the 115 women who responded, 22% answered 'YES' to the question, 47% answered 'I don't know yet', and 31% refused freezing their eggs. These answers changed at the second phase as 33% for "YES", 41% "NO" and 26% still doubting about their true decision (Table II and Fig. 2).

The impact of persuasive information communicated by clinics: As illustrated, the study indicates that having complete and comprehensive Information of positive and negative consequences of such a decision have obvious impact on the final decisions. Table III and Fig. 3 demonstrate the answers changed or remained constant through the two phases of survey in each sample group:

TABLE III
ANALYSIS OF THE IMPACT OF KNOWLEDGE ON DECISION-MAKING

Sample	YES to NO	YES to MAYBE	NO to YES	NO to MAYBE	MAYBE to YES	MAYBE to NO	Not Changed
Group1	26%	22%	0%	0%	6%	4%	42%
Group2	5%	8%	6%	15%	18%	25%	23%

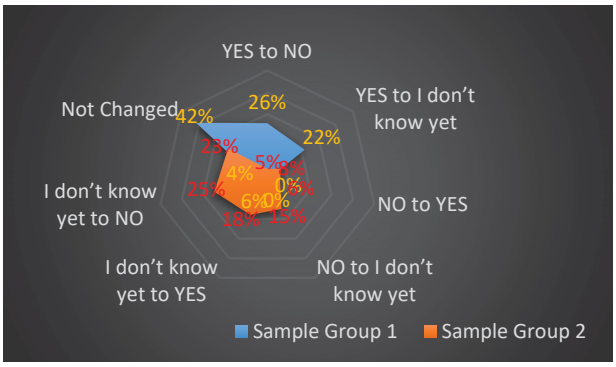

Fig. 3 Analysis of the impact of knowledge on decision-making

26% of people in group 1 have renewed their judgments from "YES" to "NO" in light of the new knowledge of the whole they are dealing with. In addition, 22% of the group 1 have doubted their primary decisions, which were certain "YES" at first, and reached to the point that they need more time, information and consultancy, whether scientific, social or psychological, to make their mind about their final decision. The second group also shows a considerable difference among the answers before and after the sessions. The most changed decisions happened through the ones with "I don't know yet" answer which is not surprising, because group 2 included women not primarily influenced by clinics, some just heard about the technology in various ways and some not even aware of the process. Therefore, we might assume they just decided based on their own judgment from the beginning and through the progressive elaboration of the content, they got just more capable of making reasonable decisions. As the "YES" answers increased totally around 18% either "NO" answers up to 25%. It should be mentioned that some of initially certain YES/NO responses changed to a doubt at the end of the sessions, too. Total percentages aggregate all increase either decrease in every category of the answers.

This implies that, although the first sample group was almost sure to undertake the process at the beginning, they have most changed their "YES" decisions after receiving true information of what they are actually taking. On average, the first sample

group shows more unsteadiness in their answers, which was addressed by some of the attendees as feeling deceived by clinics advertisements and consultancies.

VIII. Motivating and Preventive Factors

Respondents in sample group 1 indicated that there are different reasons, categorized in three following groups, which would make them interested in this technology. The first reason which includes 36% of the responds is not having an appropriate partner (having no partner, living an unmarried cohabitation or having an inappropriate partner); this group wishes to give themselves more time to find a suitable partner to raise a baby with. 29% for the desire to enhance the educational level and subsequently to consolidate their social and financial situation. The last noteworthy share, 18%, belonged to homosexuals or those who prefer to be a single mother and the 17-remaining percent is attributed to other various reasons (Table IV and Fig. 4).

TABLE IV
Sample Group 1; Convincing Factors to Undertake Egg Freezing

Motivation	Answers percentage
Not having of an appropriate partner	36%
Desire to enhance social, financial & educational level	29%
Homosexuals or those who prefer to be a single mom	18%
Other Reasons	17%
Total	100%

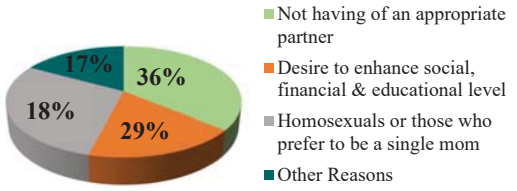

Fig. 4 Sample gruop1; convincing factors to undertake egg freezing answers percentage

Analyzing responses of sample group 2 shows various shares for convincing factors as illustrated in Table V and Fig. 5.

Furthermore, responds, including both the ones which are interested in either those who refuses to undertake such a method and to almost likewise through both sample groups, specified that high cost, low success rate, concerns about the potential risks threatening their future fertility and also children born from frozen oocytes, the other potential risks of the surgery and recognizing the process unnecessary are respectively the most convincing factors which could prevent them from pursuing egg freezing.

IX. Discussion

The study reached to the conclusion that offering information by clinics which is understandably framed to lead people to be convinced about buying their clinical services would affect women's decisions. Nevertheless, providing women, no matter what are their reasons and motivations, with scientific, comprehensive and unprejudiced information about the technology and its positive and negative aspects, requirements, suppositions, possibilities and consequences would help them to make a more precise and reasonable decision about what they are buying. Actually, the strategy applied by clinics was mostly concentrated on offering women the confidence that they could overcome challenges of their modern lives by framing massages into a gain scenario. Directing all related information in a way that ends up with successful social and personal life, optimizing lifetime and not losing anything.

TABLE V
Sample Group 2; Convincing Factors to Undertake Egg Freezing

Motivation	Answers percentage
Not having of an appropriate partner	23%
Desire to enhance social, financial & educational level	52%
Homosexuals or those who prefer to be a single mom	9%
Other Reasons	16%
Total	100%

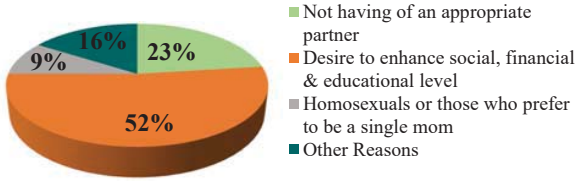

Fig. 5 Sample gruop2; convincing factors to undertake egg freezing answers percentage

As discussed through "Findings", the study shows that a noticeable number of attendees of the first group, who were initially encouraged by persuasive information presented by clinics, changed their minds and refused the offer in expose of illuminated comprehensive awareness of the whole story through the sessions. Deceptively, there has not been unpredictable from the beginning that framed messages arranged for persuasive communication has an influence, but it was worth to discover that to what extend brightened understandings of the original story would influence the decisions which have already been made.

Among the attendees with all kind of answers, they recognized that women have some common inspirations encouraging them to consider egg freezing as an option or not. Likewise, any other social factors, these inspirations are also routed in individual family backgrounds, traditions, ethics, character, etc. Clinics have been of course targeting those individual essentials through online communications and presentation meetings with customers. The most common discovered motivations have been indicated as the fear of "it might become so late to give birth to a child when we are all set in all aspects", of course with wide-range perceptions of the words of "all set" and "all aspect". As a result of noticeable enhancement in social level of consciousness during the recent decades, modern women do not like to be mothers of undesirable educational, social or financial level. They also do

not admit sharing a family life with their partners while they are not the one, so these women prefer to wait to find the right person to be their children's father. Furthermore, increasing during recent years and routing in modern life styles, there are perceptible number of women interested in being a single mom or homosexuals who wish to raise their own children. They all still need a strong hope of the possibility of becoming a mother when the struggles will finally fade away. Predictably, these various groups face differently with the subject, whether while first-step decision-making or the second phase, after learning enough about the topic. So, it was not surprising that the training and consultancy sessions had different impact on their first judgment, as well fertility clinics have been certainly applying various encouraging tricks while dealing with a customer from each category.

As considered during the surveys, despite the training sessions and complementary consultancies clearly expressed all advantages/disadvantages, optimistic and pessimistic possibilities, and all other features even the financial concerns of the topic, some attendees still had remained in dilemma and were not yet ensure enough to make their final decision. They requested for more psychological and social advice sessions to overcome their doubts and reach to a conclusion. It should be considered as a meaningful entity, because it implies that there not merely scientific, social, statistical, financial, etc. information is directing the final decision of customers, but also lots of uncommon factors impress people's behavior in dealing with the adventure of novel technologies and generally every product/service through the market. These are the gaps which are required to get bridged while advertisement or generally persuade societies to a direction.

The curious point is that women with similar inspirations showed some common behaviors in reviewing their primary decisions. Revised answers demonstrate some trend which could be meaningful in this regard. It could be considered further in next studies, because realizing the influencing factors and process on initial decisions would bring more light to the impression of persuasive information, too; factors that are influencing the made-up minds expectedly would be also impressive at the first step.

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REFERENCES

[1] Baldwin, K., Culley, L., Hudson, N., & Mitchell, H. (2014). Reproductive technology and the life course: current debates and research in social egg freezing. *Human Fertility*, *17*(3), 170-179.

[2] Inhorn, M. C., & Patrizio, P. (2015). Infertility around the globe: new thinking on gender, reproductive technologies and global movements in the 21st century. *Human reproduction update*, dmv016.

[3] Martin, J., Hamilton, B., Osterman, M., Driscoll, A., Mathews, T., (2017, January 5) *National Vital Statistics Reports. Births: final data for 2015*. Available at: https://www.cdc.gov/nchs/data/nvsr/nvsr66/nvsr66_01.pdf, Accessed April/ 25/2017

[4] Mertes, H., Pennings, G., Dondorp, W., & Wert, G. d. (2012). Implications of oocyte cryostorage for the practice of oocyte donation. *Human reproduction, 27*(10), 2886-2893. doi:10.1093/humrep/des250

[5] Noyes, N., Porcu, E., & Borini, A. (2009). Over 900 oocyte cryopreservation babies born with no apparent increase in congenital anomalies. *Reproductive biomedicine online, 18*(6), 769-776. doi:10.1016/S1472-6483(10)60025-9

[6] Rudick, B., Opper, N., Paulson, R., Bendikson, K., & Chung, K. (2010). The status of oocyte cryopreservation in the United States. *Fertility and sterility, 94*(7), 2642-2646. doi:10.1016/j.fertnstert.2010.04.079

[7] Moss , B . (2011) . The annual Red Magazine Fertility Report 2011 .Available at: /news/editor-s. Retrieved March 14,2013 from http://www.redonline.co.uk

[8] Martinez, G. M., Chandra, A., Abma, J. C., Jones, J., & Mosher, W. D. (2006). *Fertility, contraception, and fatherhood: data on men and women from cycle 6 (2002) of the 2002 National Survey of Family Growth* (Vol. 23). National Center for Health Statistics.

[9] Proudfoot, S., Wellings, K., & Glasier, A. (2009). Analysis why nulliparous women over age 33 wish to use contraception. *Contraception, 79*(2), 98-104. doi:10.1016/j.contraception.2008.09.005

[10] Cooke, A., Mills, T. A., & Lavender, T. (2010). 'Informed and uninformed decision making'—Women's reasoning, experiences and perceptions with regard to advanced maternal age and delayed childbearing: A meta-synthesis. *International journal of nursing studies, 47*(10), 1317-1329. doi:10.1016/j.ijnurstu.2010.06.001

[11] Mills, M., Rindfuss, R. R., McDonald, P., & Velde, E. T. (2011). Why do people postpone parenthood? Reasons and social policy incentives. *Human reproduction update, 17*(6), 848-860. doi:10.1093/humupd/dmr026

[12] Baldwin, K., Culley, L., Hudson, N., & Mitchell, H. (2014). Reproductive technology and the life course: current debates and research in social egg freezing. *Human Fertility, 17*(3), 170-179. doi:10.3109/14647273.2014.939723

[13] Bernstein, S., & Wiesemann, C. (2014). Should Postponing Motherhood via "Social Freezing" Be Legally Banned? An Ethical Analysis. *Laws, 3*(2), 282-300. doi:10.3390/laws3020282

[14] Goold, I. & Savulescu, J. (2009). In Favour of Freezing Eggs for Non-Medical Reasons. *Bioethics, 23*(1), 47-58. doi:10.1111/j.1467-8519.2008.00679.x

[15] Mertes, H., & Pennings, G. (2011). Social egg freezing: for better, not for worse. *Reproductive biomedicine online, 23*(7), 824-829. doi:10.1016/j.rbmo.2011.09.010

[16] Office for National Statistics. (2013). Statistical bulletin: Live Births in England and Wales by Characteristics of Mother 1 2012. ONS. Retrieved February 2, 2016, from http://www.ons.gov.uk

[17] Rendall, M., Couer, C., Lappegard, T., Robert-Bobée, I., Ronsen, M., & Smallwood, S. (2005). First births by age and education in Britain, France and Norway. *POPULATION TRENDS-LONDON-, 121*(27).

[18] Ní Bhrolcháin, M., & Toulemon, L. (2005). Does postponement explain the trend to later childbearing in France? *Vienna Yearbook of Population Research*, 83-107.

[19] Harwood, K. (2009). Egg freezing: a breakthrough for reproductive autonomy? *Bioethics, 23*(1), 39-46. doi:10.1111/j.1467-8519.2008.00680.x

[20] Myrskylä, M., & Margolis, R. (2014). Happiness: Before and after the kids. *Demography, 51*(5), 1843-1866. doi:10.1007/s13524-014-0321-x

[21] Dondorp, W. J., & De Wert., G. M. (2009). Fertility preservation for healthy women: ethical aspects. *Human Reproduction, 24*(8), 1779-1785. doi:10.1093/humrep/dep102

[22] Benzies, K., Tough, S., Tofflemire, K., Frick, C., Faber, A., & Newburn-Cook, C. (2006). Factors influencing women's decisions about timing of motherhood. *Journal of Obstetric, Gynecologic, & Neonatal Nursing, 35*(5), 625-633. doi:10.1111/j.1552-6909.2006.00079.x

[23] Schuman, L., Witkin, G., Copperman, K., & Greca, M. A.-L. (2011). Psychology of egg freezing patients: would they consider single motherhood? *Fertility and Sterility, 96*(3), S206. doi:10.1016/j.fertnstert.2011.07.799

[24] Bunting, L., & Boivin, J. (2008). Knowledge about infertility risk factors, fertility myths and illusory benefits of healthy habits in young people. *Human Reproduction, 23*(8), 1858-1864. doi:10.1093/humrep/den168

[25] Maheshwari, A., Hamilton, M., & Bhattacharya., S. (2008). Effect of female age on the diagnostic categories of infertility. *Human reproduction, 23*(3), 538-542. doi:10.1093/humrep/dem431

[26] Bretherick, K. L., Fairbrother, N., Avila, L., Harbord, S. H., & Robinson, W. P. (2010). Fertility and aging: do reproductive-aged Canadian women

know what they need to know? *Fertility and sterility, 93*(7), 2162-2168. doi:10.1016/j.fertnstert.2009.01.064

[27] Daniluk, J. C., & Koert, E. (2013). The other side of the fertility coin: a comparison of childless men's and women's knowledge of fertility and assisted reproductive technology. *Fertility and sterility, 99*(3), 839-846. doi:10.1016/j.fertnstert.2012.10.033

[28] Daniluk, J. C., & Koert., E. (2015). Fertility awareness online: the efficacy of a fertility education website in increasing knowledge and changing fertility beliefs. *Human Reproduction, 30*(2), 353-363. doi:10.1093/humrep/deu328

[29] Gammeltoft, T. M., & Wahlberg, A. (2014). Selective reproductive technologies. *Annual Review of Anthropology, 43*, 201-216. doi:10.1146/annurev-anthro-102313-030424

[30] Moll, T. (2015). Biological relatives: IVF, stem cells, and the future of kinship. *Anthropology Southern Africa, 38*(1-2), 149-151. doi:10.1080/23323256.2015.1030435

[31] Van Loendersloot, L. L., Moolenaar, L. M., Mol, B. W., Repping, S., Veen, F. v., & Goddijn, M. (2011). Expanding reproductive lifespan: a cost-effectiveness study on oocyte freezing. *Human reproduction*, der284. doi:10.1093/humrep/der284

[32] Devine, K., Mumford, S., Hodes-Wertz, B., Druckenmiller, S., Propst, A., & Noyes, N. N. (2012). Baby budgeting: a cost-effectiveness analysis (CEA) of elective oocyte cryopreservation (EOC) as a means to increase live birth rates (LBR) in women delayingreproduction. *Fertility and Sterility, 98*(3), S7-S8. doi:10.1016/j.fertnstert.2012.07.028

[33] Hirshfeld-Cytron, J., Grobman, W. A., & Milad, M. P. (2012). Fertility preservation for social indications: a cost-based decision analysis. *Fertility and sterility, 97*(3), 665-670. doi:10.1016/j.fertnstert.2011.12.029

[34] Mertes, H., & Pennings, G. (2012). Elective oocyte cryopreservation: who should pay? *Human reproduction, 27*(1), 9-13. doi:10.1093/humrep/der364

[35] Bittner, U. (2009). A reply to Karey Harwood. *Bioethics, 23*(9), 525-525. doi:10.1111/j.1467-8519.2009.01751.x

[36] Petropanagos, A. (2010). Reproductive 'choice'and egg freezing. In *In Oncofertility* (Vol. 156, pp. 223-235). Springer US.

[37] Rybak, E. A., & Lieman, H. J. (2009). Egg freezing, procreative liberty, and ICSI: the double standards confronting elective self-donation of oocytes. *Fertility and sterility, 92*(5), 1509-1512. doi:10.1016/j.fertnstert.2009.09.008

[38] Homburg, R., Veen, F. v., & Silber, S. J. (2009). Oocyte vitrification—women's emancipation set in stone. *Fertility and sterility, 91*(4), 1319-1320. doi:10.1016/j.fertnstert.2008.02.127

[39] Soliman, H. H., Khaki, A. A., Al-Azawi, T., & Al-Hasani, S. (2012). Oocyte cryopreservation, will it be a real social choice and family solution? *Middle East Fertility Society Journal, 17*(1), 8-11. doi:10.1016/j.mefs.2012.01.003

[40] Shkedi-Rafid, S., & Hashiloni-Dolev, Y. (2011). Egg freezing for non-medical uses: the lack of a relational approach to autonomy in the new Israeli policy and in academic discussion. *Journal of medical ethics (2011), medethics-2011*.

[41] De Sutter, P., Gerris, J., & Dhont, M. (2008). Assisted reproductive technologies: how to minimize the risks and complications in developing countries?. *ESHRE Monographs 2008, 2008*(1), 73-76. doi:10.1093/humrep/den160

[42] Grynberg, M. (2013). Is Oocyte Cryopreservation for Social Reasons Ethically Defendable. Against. *Proceedings of the 1st International Symposium on Social Egg Freezing*, (pp. 60-5). Barcelona.

[43] Delvigne, A. (2009). Epidemiology of OHSS. *Reproductive biomedicine online, 19*(1), 8-13. doi:10.1016/S1472-6483(10)60040-5

[44] Wang, C. T., Liang, L., Witz, C., Williams, D., Griffith, J., Skorupski, J., . . . Wang, W. (2013). Optimized protocol for cryopreservation of human eggs improves developmental competence and implantation of resulting embryos. *Journal of ovarian research, 6*(1), 1. doi:10.1186/1757-2215-6-15

[45] Cobo, A., Kuwayama, M., Pérez, S., Ruiz, A., Pellicer, A., & Remohí, J. (2008). Comparison of concomitant outcome achieved with fresh and cryopreserved donor oocytes vitrified by the Cryotop method. *Fertility and sterility, 89*(6), 1657-1664. doi:10.1016/j.fertnstert.2007.05.050

[46] Rienzi, L., Cobo, A., Paffoni, A., Scarduelli, C., Capalbo, A., Vajta, G., . . . Ubaldi, F. M. (2012). Consistent and predictable delivery rates after oocyte vitrification: an observational longitudinal cohort multicentric study. *Human reproduction, 27*(6), 1606-1612. doi:10.1093/humrep/des088

[47] Dobrzykowski, T., & Noerager Stern, P (2003). Out of sync: A generation of first-time mothers over 30. *Health Care for Women International, 24*(3), 242-253. doi:10.1080/07399330390183552

[48] Klein, J., Howard, M., Grunfeld, L., Mukherjee, T., Sandler, B., & Copperman, a. A. (2006). "P-486: preliminary experience of an oocyte cryopreservation program: are patients presenting too late? *Fertility and Sterility, 86*(3), S315. doi:10.1016/j.fertnstert.2006.07.849

[49] Gold, E., Copperman, K., Witkin, G., Jones, C., & Copperman, A. B. (2006). P-187: a motivational assessment of women undergoing elective egg freezing for fertility preservation. *Fertility and Sterility, 86*(3), S201. doi:10.1016/j.fertnstert.2006.07.537

[50] Nekkebroeck, J., Stoop, D., & Devroey, P. (2010). A preliminary profile of women opting for oocyte cryopreservation for non-medical reasons. *Human Reproduction, 25*, 14-17.

[51] Schuman, L., Witkin, G., Copperman, K., Acosta, M., Barritt, J., & Copperman, A. B. (2012). Women Pursuing Non-Medical Oocyte Cryopreservation Share Information About Their Treatment With Family and Friends. *Fertility and Sterility, 97*(3), S12-S13. doi:10.1016/j.fertnstert.2012.01.029

[52] Lockwood, G. M. (2011). Social egg freezing: the prospect of reproductive 'immortality'or a dangerous delusion? *Reproductive biomedicine online, 23*(3), 334-340. doi:10.1016/j.rbmo.2011.05.010

[53] Tydén, T., Svanberg, A. S., Karlström, P.-O., Lihoff, L., & Lampic, C. (2006). Female university students' attitudes to future motherhood and their understanding about fertility. *The European Journal of Contraception & Reproductive Health Care, 11*(3), 181-189. doi:10.1080/13625180600557803

[54] Tough, S., Benzies, K., Fraser-Lee, N., & Newburn-Cook, C. (2007). Factors influencing childbearing decisions and knowledge of perinatal risks among Canadian men and women. *Maternal and child health journal, 11*(2), 189-198.

[55] Daniluk, J. C., & des190., E. K. (2012). Childless Canadian men's and women's childbearing intentions, attitudes towards and willingness to use assisted human reproduction. *Human reproduction*. doi:10.1093/humrep/des190

[56] McLuhan, M. (1964). Understanding Media: The Extensions of Man, New York: Mentor in Levinson, Paul (2000),"McLuhan and Media Ecology". *Proceedings of Media Ecology Association*, *1*.

[57] Gitlin, T. (1980). *The whole world is watching: Mass media in the making & unmaking of the new left*. University of California Press.

[58] Goffman, E. (1974). Frame analysis: An essay on the organization of experience. Boston: Northeastern University Press.

[59] Schramm, W. (1971). The nature of communication between humans. *The process and effects of mass communication*, 3-53.

[60] Wicks, R. H. (2005). Message framing and constructing meaning: An emerging paradigm in mass communication research. *Annals of the International Communication Association*, *29*(1), 335-362.

[61] Maher, T. M. (2001). Framing: An emerging paradigm or a phase of agenda setting. *Framing public life: Perspectives on media and our understanding of the social world*, 83-94.

[62] Entman, R. (1993). Framing - toward clarification of a fractured paradigm. *Journal of Communication*, 43(4), 51-58. doi: 10.1111/j.1460-2466.1993.tb01304.x

[63] Fiske, S. T., & Taylor, S. E. (1991). McGraw-Hill series in social psychology. *Social cognition (2nd ed.).* New York: Mcgraw-Hill Book Company.

[64] Zhou, Y., & Moy, P. (2007). Parsing framing processes: The interplay between online public opinion and media coverage. *Journal of Communication*, 57(1), 79-98. doi: 10.1111/j.1460-2466.2006.00330.x

[65] Peng, W., & Tang, L. (2010). Health content in Chinese newspapers. *Journal of Health Communication*, 15(7), 695-711. doi: 10.1080/10810730.2010.514028

[66] Levin, I. P., Schneider, S. L., & Gaeth, G. J. (1998). All frames are not created equal: A typology and critical analysis of framing effects. *Organizational Behavior and Human Decision Processes*, 76(2), 149-188. doi: 10.1006/obhd.1998.2804

[67] Kahneman, D., & Tversky, A. (2013). Prospect theory: An analysis of decision under risk. (pp. 99-127).

[68] Avraham, S., Machtinger, R., Cahan, T., Sokolov, A., Racowsky, C., & Seidman, D. (2014). What is the quality of information on social oocyte cryopreservation provided by websites of society for assisted reproductive technology member fertility clinics? *Fertility and Sterility*, 101(1), 222-226. doi: 10.1016/j.fertnstert.2013.09.008

[69] Jain, T., & Barbieri, R. L. (2005). Website quality assessment: Mistaking apples for oranges. Fertility and Sterility, 83(3), 545-547. doi: 10.1016/j.fertnstert.2004.09.030
[70] Huang, J. Y. J., Discepola, F., & Tulandi, T. (2005). A call for standardization of fertility clinic websites. Fertility and Sterility, 83(3), 556-557. doi: 10.1016/j.fertnstert.2004.11.024
[71] Huang, J. Y. J., Discepola, F., Al-Fozan, H., & Tulandi, T. (2005). Quality of fertility clinic websites. *Fertility and Sterility*, 83(3), 538-544. doi: 10.1016/j.fertnstert.2004.08.036
[72] Abusief, M. E., Hornstein, M. D., & Jain, T. (2007). Assessment of united states fertility clinic websitesaccording to the american society for reproductive medicine guidelines. *Fertility and Sterility*, 87(1), 88. doi: 10.1016/j.fertnstert.2006.05.073
[73] Omurtag, K., Jimenez, P., Ratts, V., Odem, R., & Cooper, A. (2012). The ART of social networking: How SART member clinics are connecting with patients online. Fertility and Sterility, 97(1), 88-94. doi: 10.1016/j.fertnstert.2011.10.001.