

Original Research Article in *Social Science & Medicine* –

Author Version

**Perceptions of susceptibility to pregnancy among U.S.
women obtaining abortions**

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Volume 99, December 2013, Pages 18–26

Available online 17 October 2013

<http://dx.doi.org/10.1016/j.socscimed.2013.10.010>

Abstract available on [Social Science & Medicine Web site](#)

Abstract

More than half (52%) of unintended pregnancies in the United States occur among the 10.7% of women using no contraceptive method. We interviewed a sample of women obtaining abortions in the U.S. in 2008 (n=49) and explored their attitudes towards and beliefs about their risk of pregnancy. We found that most respondents perceived themselves to have a low likelihood of becoming pregnant at the time that the index pregnancy occurred. Respondents' reasons for this perceived low likelihood fell into four categories: perceived invulnerability to pregnancy without contraceptive use, perceptions of subfecundity, self-described inattention to the possibility of conception and perceived protection from their current use of contraception (although the majority in this subgroup were using contraception inconsistently or incorrectly). About half of the women discussed more than one reason when explaining why they perceived themselves to have a low risk of pregnancy at that time. We propose a modified Health Belief Model to account for women's low perceived susceptibility to pregnancy based on our results. Further research is needed to quantify the proportion of women who are at risk of pregnancy who do not believe they are at risk and their reasons why, so as to be able to better address women's misconceptions about fecundity and conception with the goal of preventing unintended pregnancy.

Keywords: United States, contraceptive use; Health Belief Model; fertility; qualitative methods

Introduction

Nearly half of all pregnancies in the United States are unintended, and about four in ten of these end in induced abortion (Finer & Zolna, 2011). Approximately 37% of live births from 2006-2010 were unintended at the time of conception (Mosher, Jones, Abma & Division of Vital

Statistics, 2012). More than half (52%) of unintended pregnancies in the United States occur among the 10.7% of women using no contraceptive method (Finer & Henshaw, 2006); the remaining pregnancies are attributable to inconsistent or imperfect use, or to contraceptive failure (Trussell & Wynn, 2008).

Many studies have looked at reasons for nonuse, or discontinuation, of contraception. Jaccard (Jaccard, 2009) summarized a large body of existing literature on the topic in 2009, and presented a basic theoretical framework for contraceptive behavior. He posited that contraceptive use is influenced by distal (structural or external barriers such as lack of access to methods including cost and medical contraindications), near-distal (personal attributes that do not directly relate to contraceptive use such as personality traits, general goals and health factors), near proximal (factors relating to why an individual does or does not intend to contracept) and the binary proximal factor (whether or not the individual intends to contracept). Jaccard considers couple-based frameworks and the specific dynamics they create separately from the individual-level factors each person brings to the interaction. Couple-level factors inhibiting contraceptive use which have been identified in the literature to date include male partners' objections, fear that the suggestion of condoms or pregnancy prevention in general is an indication of infidelity, fear that contraceptive use "would have a negative impact on the relationship" (Nettleman, Chung, Brewer, Ayoola & Reed, 2007, p.363), or outright pregnancy promotion by the partner (Moore, Frohwirth & Miller, 2010; Nettleman, Brewer & Ayoola, 2007; The National Campaign to Prevent Teen and Unplanned Pregnancy, 2009). Apart from distal factors, most reasons for nonuse that have been examined in the literature are near-proximal factors and can be classified as a broad dislike of contraceptive methods or objection to the notion of controlling one's

fertility at all. This paper is interested in further unpacking these reasons for contraceptive non-use.

Fear of side effects and difficulties with methods have been identified by virtually every study on contraceptive nonuse (Frost, Darroch & Remez, 2008; Huber, Hogue, Stein, Drews, Zieman, King et al. 2006; Jaccard, 2009; Jones, Darroch & Henshaw, 2002; Kaye, Suellentrop & Sloup, 2009; Nettleman et al., 2007a; Nettleman et al., 2007b). More recently, studies have identified women's distrust of the promotion of contraceptives both in advertising and by healthcare professionals among various U.S. subgroups (Frost, Duberstein & Finer, 2012; Huber et al., 2006; Jaccard, 2009; Kaye et al., 2009a; Nettleman et al., 2007a).

A less frequently identified reason for contraceptive nonuse is whether people perceive avoiding a pregnancy is indeed even possible. "Fatalism" about pregnancy, a belief that one has a predestined time to become pregnant or cause a pregnancy and that contraceptive use has limited power to influence this predestination; forty percent of young adults (38% of young men and 42% of young women) in the US currently using a method agreed with the statement: "It doesn't matter whether you use birth control or not, when it is your time to get pregnant, it will happen" (Frost et al., 2012, p.110; Kaye et al., 2009, p. 10). Fatalism has been shown to negatively affect actual and expected contraceptive use (i.e., the percentage of respondents who reported that it is likely that they will have unprotected sex within the next three months) (Frost et al., 2012; Kaye et al., 2009; Nettleman et al., 2007b).

Dislike of contraception, mistrust of contraception and fatalism about preventing a pregnancy have been explored in detail, but individuals' perceptions *of their own need* for contraception have not been well documented. Several studies have found that respondents report feeling that they thought they were unlikely to become pregnant at the time of the study,

or at a time when they did become pregnant (Kaye et al., 2009; Mosher et al., 2012; Nettleman et al., 2007a; Nettleman et al., 2007b; The National Campaign to Prevent Teen and Unplanned Pregnancy, 2009; Wu, Meldrum, Dozier, Stanwood & Fiscella, 2008). As part of the Pregnancy Risk Assessment Monitoring System (PRAMS, which is a stratified systematic sample of new mothers drawn from all birth certificates from 26 states, updated every month and covering 2000 through 2002), women with a recent birth whose pregnancies were unintended were asked why they had not used birth control. Forty-two percent of the respondents either thought that they could not get pregnant at the time of conception (33%) or that their partner was sterile (10%) (Nettleman et al., 2007b). In a nationally representative study of all women having births in 2010, women who reported that their most recent births were unintended and who were not using contraception at the time that they became pregnant were asked why they had not done so. Thirty-six percent of these women said that it was because they did not think they could get pregnant at that time (Mosher et al., 2012). Not feeling at risk for pregnancy is also a primary reason why women obtaining abortions did not use contraception in the month they became pregnant. When asked about their perception of their likelihood of becoming pregnant, two nationally-representative surveys of abortion patients found just over a third of women thought they were at low risk for an unintended pregnancy (Jones et al., 2002; Jones, Frohwirth & Moore, 2012). Low perceived susceptibility to pregnancy has been found among family planning clinic clients as well: a recent study found that, of the nearly half of clients who said that they had had unprotected intercourse within the last three months, 42% cited a belief that they could not get pregnant as a reason (Biggs, Karasek & Foster, 2012). In a study using focus groups to identify reasons why adult women at risk of unintended pregnancy have unprotected intercourse, two primary user-related reasons for unprotected intercourse emerged: women

thought that they were at low risk of pregnancy, and “lack of thought or preparation” (Nettleman et al., 2007a, p. 149). A small qualitative study of young Scottish women explored perceptions of pregnancy risk in the context of using of emergency contraception (EC) (Williamson, Buston & Sweeting, 2009). Williamson et al. found that misperception of the risk of pregnancy was common among their respondents, and that it was somewhat paradoxically more common (and more commonly led to EC use) among those who were having frequent unprotected intercourse than among those who had unprotected sex as a one-time event or who had experienced an obvious condom failure.

Some women are under the impression that they are not at risk for pregnancy because they believe that they are subfecund, that is, that they are less fertile than other women and/or that they would experience some difficulty becoming pregnant. Kaye et al. (Kaye, Suellentrop & Sloup, 2009) used behavioral and opinion data from a nationally-representative telephone survey of 1,800 unmarried 18-29 year olds in the U.S to explore conceptual issues related to contraceptive use. They found that, while only 10% of young women aged 15-29 in the U.S. are estimated to have impaired fecundity (Chandra, Martinez, Mosher, Abma & Jones, 2005), almost 60% of young women say that it is at least “slightly likely” that they are infertile, and over three-quarters of these women were not basing this belief on medical information received from a doctor. Polis and Zabin’s (Polis & Zabin, 2012) examination of the same data reveal that 19% of young women believe that it is “very likely” that they are infertile. Moore et al.’s qualitative study, which looked specifically at perceptions of fecundity, found that it was common that female respondents had doubted their fecundity at some point in time. When pressed as to why they held these beliefs, some respondents pointed to medical conditions and prior abortions which they presumed may have left their fecundity damaged, but most were

using the logic that they had had unprotected sex at some point and had not become pregnant (Moore, Singh & Bankole, 2011). Beliefs about subfecundity have also been shown to affect contraceptive behavior: A small study of U.S. adolescent girls found that the 10% who believed themselves to be infertile were significantly more likely to report having sex without a condom (Downs, Bruine de Bruin, Murray & Fischhoff, 2004).

Apart from beliefs about subfecundity, the meanings of the response category “I did not think I would get pregnant” are not well understood (Biggs et al., 2012; Jones et al., 2002; Jones et al., 2012; Mosher et al., 2012; Nettleman et al., 2007b). Most studies that have documented the presence of this belief are quantitative, and therefore cannot provide details about what this concept means to women. A near-proximal factor that is often theorized to explain why people who claim to intend to contracept sometimes do not do so is ambivalence about pregnancy intentions (defined as “unresolved feelings about whether one wants to have a child at this time,” (Higgins, Hirsch & Trussell, 2008, p.130)). Pregnancy ambivalence has been identified both as a factor in contraceptive misuse and contraceptive nonuse in multiple studies (Bruckner, Martin & Bearman, 2004; Campo, Askelson, Spies & Losch, 2012; Finer & Henshaw, 2006; Frost et al., 2012; Higgins et al., 2008; Huber et al., 2006; Jaccard, 2009; Mosher et al., 2012; Trussell & Wynn, 2008), although some research has not found this connection (Zabin, 1999). Abortion patients provide an interesting population with whom to examine potential reasons for contraceptive nonuse, as these women are clearly motivated not to have a child at that time (Jones et al., 2002; Schunmann & Glasier, 2006). We use in-depth interviews (IDIs) from the 2008 Abortion Patient Survey to provide new evidence about women’s reasons for perceiving themselves to have a low susceptibility to pregnancy.

Methods

Study design and sample

We conducted 49 semi-structured face-to-face IDIs with women at abortion clinics either on the day of their abortion procedure (n=39) or when they returned to the clinic for their follow-up appointment approximately two weeks post-procedure (n=10). We captured women at either point in time to recruit the largest number of participants possible within the limited time the study could afford to position interviewers at the abortion clinics. We recruited women from three locations: one clinic in a mid-sized city in Texas, one in a large town in a rural area of Washington State, and one in a small city in Connecticut. All women 18 years of age or older obtaining abortions at the selected facilities were eligible for participation in the study.

The interviewers were trained on good interviewing techniques, the informed consent process, and the administration of the interview guide. Participants were interviewed by authors (LF and AMM) during the long wait-times patients endure during their abortion appointments. It is not uncommon that women must show up hours before the doctor arrives, and that they wait hours between the various parts of their preparation for the abortion that they must complete: intake, counseling, ultrasound and payment. This waiting is tedious for many but it is done to maximize the doctor's efficiency upon arrival at the clinic since abortions themselves are quick procedures so the doctor can work most efficiently if s/he can provide care for many women in quick succession. Oral consent was provided by all participants. Data collection took place between June and October 2008. All women who participated in the IDIs received \$35 cash as compensation for their time. This study and all associated procedures and study instruments were approved by the Guttmacher Institute's Institutional Review Board. (For further detail on the

overall study design, sample, data collection, management and analysis, see Moore, Frohwirth and Blades, 2011.

Instrument

The interview guide was piloted with approximately 10 women at one of the study sites, and was modified based on the piloting experience. The majority of the interview focused on the woman's decision-making about the pregnancy, her perceptions about the abortion experience and counseling, and experience she may have had with stigma around abortion. In addition, women were asked about anything they had ever done to prevent pregnancy with the man involved with this pregnancy. If contraception was not used with the partner, or was not used at the time that this pregnancy occurred, women were asked about their thought processes and decision-making regarding contraception. Using wording employed in previous studies (Moore, Frohwirth & Blades, 2011), women were also asked what they thought the likelihood was that they were going to become pregnant at that time and why. While contraceptive use is something that affects both members of the couple, the focus of this interview was on the woman's thoughts, perceptions and experiences of contraception. To the extent that the woman brought descriptions of her partner into the narrative, men's involvement was also noted. Interviews lasted between 45 and 90 minutes, and at the conclusion of the oral part of the interview, participants were asked to fill out a short socio-demographic questionnaire.

Data Management and Analysis

All IDIs were conducted in English and digitally recorded. The recordings were transcribed verbatim; identifying information was stripped during the cleaning phase. Once all of the interviews were transcribed and cleaned, authors adopted a systematic analytical approach which consisted of creating an inductive and deductive code structure using NVivo 8 (QSR

International, Melbourne, Australia). Key relevant topics that emerged were summarized via textured description and illustrated using direct quotes from participants (Moustakas, 1994), identifying respondents by their age and gravidity based on the woman's self-reports. We do not draw conclusions based on these demographic identifiers, rather this information is meant to provide information for the reader on length of exposure to pregnancy and on previous experiences with pregnancy to help contextualize the woman's current experiences.

Results

The total sample (n=49) is composed of women primarily 20-24 years of age who were white or Hispanic, who identified as Catholic or non-religious. (See Table 1 for a summary of respondents' demographic characteristics.) Most had some college education with two-thirds of the sample living below 250% of the poverty line. Just about one-third of the sample had never been pregnant before; 45% had had two or more previous pregnancies. Sixty percent had had a previous abortion. This sample is poorer than the national profile of all women having abortions, and is slightly less likely to have already had a child. On other characteristics, this sample does not deviate substantially from all women having abortions (Jones, Finer & Singh, 2010). This analysis focuses on the 32 respondents who perceived themselves to have a low likelihood of becoming pregnant. Compared to the total sample, these women had higher incomes and were slightly less likely to have: been pregnant, already had a child or had a previous abortion.

[Insert Table 1 approximately here]

We do not think that interviewing women on the day of their procedure vs. at their follow up led to any differences in the data analyzed in this paper as these topics did not seem subject to reinterpretation of the experience based on time between the procedure and interview.

Three main themes emerged among the respondents who felt that their likelihood of getting pregnant was low at the time they conceived: feeling invulnerable, perceived subfecundity, and inattention to the possibility of conception. A fourth and related reason that respondents thought that they were not at risk was because they were using a contraceptive method at the time that they became pregnant (although the majority in this subgroup were using contraception inconsistently or incorrectly). About half of the women discussed more than one reason when explaining why they perceived themselves to have a low likelihood of becoming pregnant at that time.

Perceived invulnerability to pregnancy

The most common reason that respondents did not think they were likely to become pregnant at that time was perceived invulnerability to pregnancy. Some women described this belief as part of a larger sense of invincibility:

Respondent (R): I'd always had a good luck.

Interviewer (I): What does that mean?

R: I don't know. I've always got lucky with everything, like I have never been hurt, the most I have ever done is dislocate my pinky [finger]. Nothing bad ever seems to happen to me that's crazy. (18 years old, one previous pregnancy ending in a miscarriage)

Respondents who related feeling invulnerable understood that pregnancy could happen but, for reasons they often could not explain, they thought themselves immune, or safe, from this outcome at the time they were engaging in unprotected sex. The following respondent was so comfortable with the idea of not having children that she thought this was somehow enough to prevent her from becoming pregnant:

The older I got and the more comfortable with me knowing that I don't want to have children, for some reason, I think made me invincible in my head, I guess, I don't know. It's like you believe something so much, like, "I just really don't

want children” [and] for some reason I thought that would prevent me from getting pregnant. (32 years old, 1 previous pregnancy ending in abortion)

Some women ascribed their belief in their safety from unwanted conception to their age or naiveté. Common language women used to express this concept included, “It won’t happen to me,” and, “It hasn’t happened yet,” the latter referring to having had unprotected sex in the past but not becoming pregnant.

I: Did you think it was likely that you would become pregnant?

R: I didn’t. I don’t know why...I don’t know that I really thought that as much as it’s just kind of that “won’t happen to me type thing” like “teenager complex.”(23 years old, no previous pregnancies)

I didn’t think it [pregnancy] very likely, to be honest, because I had been in relationships and not used any protection at all and never had a child. (18 years old, no previous pregnancies)

This magical thinking that pregnancy would somehow not happen to her at the time she became pregnant in spite of her acknowledged exposure to pregnancy suggests a disconnect between the respondent’s lived experience of not becoming pregnant while having unprotected sex and the actual risk of pregnancy incurred by the average couple who does not use contraception (estimated at 85% over the course of a year (Trussell & Wynn, 2008)).

Women perceived themselves or their partners to be subfecund

One-third of respondents in our analysis thought they were unlikely to become pregnant because of a belief in their own subfecundity or their partner’s perceived sterility. Perceptions of subfecundity were mostly due to past experiences or family history. A series of health issues led this woman to believe that her fertility might be compromised, not based on current medical advice, but on her interpretation of her physical experience:

I have it in my head that I don’t think that I can get pregnant that easily, but apparently I can. I stopped having periods [at] about [age] 15, until I was about 22 because I was running so much and I also had a lot of issues with eating disorders, so I thought my fertility wouldn’t be that great once I did get my

periods back and I was wrong. (28 years old, 1 previous pregnancy ending in abortion)

Some women's perceived subfecundity came from either a doctor telling her she had a low likelihood of becoming pregnant, or because she underwent a medical procedure that she thought impacted her fertility.

...and a doctor of mine had told me that they thought I had polycystic ovarian syndrome which is, like, really hard to get pregnant from that [...]. And I never looked into it but that was always in the back of my head... (21 years old, no previous pregnancies)

Other health-related reasons respondents mentioned for believing that they were subfecund were having a low iron count and recently having undergone a LEEP procedure (loop electrosurgical excision procedure for excising abnormal cervical tissue). Some respondents also mentioned reasons for their belief that were directly related to their reproductive health or histories, such as a familial history of miscarriage, having taken a long time to become pregnant when they desired a pregnancy and having a "tilted uterus".

There was a subset of women whose partners claimed they [the men] were sterile:

...he told me he was sterile because when he was sponsored dirt biking and he had wrecked and apparently his wreck made him sterile in some way and they told him that he would get it back between 22 and 25. (18 years old, one previous pregnancy ending in miscarriage)

Other examples of reasons for believing that their partners were sterile or subfecund were his advanced age, his having been sexually active with women for a long time and never having fathered a child, and his having had a hernia. We cannot determine whether these partners actually believed they were sterile, or if they deliberately misled the respondents.

Lastly, there were a few women who could not point to any specific reason for their belief that they were, or were possibly, subfecund or infertile.

The possibility of pregnancy "never crossed my mind"

About a third of the 32 respondents stated that they had not thought about the possibility of becoming pregnant at that time. Answers such as, “I just wasn’t thinking about it,” “It never crossed my mind,” and “It wasn’t on my radar,” were common among this group. Most respondents who described pregnancy as “not on their radar” also spoke about other reasons they thought they had a low probability of becoming pregnant, suggesting that the possibility of pregnancy was not in their thoughts because they perceived they had a low likelihood of conceiving.

The following quotes demonstrate how these women verbalized their experience:

I: During the time the past four months that you have been sexually active, what did you think the likelihood of you getting pregnant was?

R: I didn’t think I was going to at all, I mean it didn’t even cross my mind. (33 years old, 4 previous pregnancies ending in births)

I: Did you think it was likely that you [would] get pregnant?

R: No, I didn’t think, no, I didn’t.

I: How come?

R: Because I don’t know, I guess I just I don’t really know. That’s a good question. (23 years old, 1 previous pregnancy ending in birth)

Acute disruptions, such as interpersonal violence and heavy drug use, and the consequences they can have in a person’s life can have obvious implications for a person’s ability to attend to their reproductive health (Jones et al., 2012). Some respondents indicated drugs or violence may have preoccupied them to the point where they were not thinking about pregnancy. For instance, one respondent discussed the context in which the pregnancy occurred.

I: Have there been any big changes in your life lately?

R: Yeah, a lot. I’ve I guess you could say, ran away from home in the last 6 months and went from having a car and money and a job to having no car no money no job. [...]

I: And [...] what’s contributed to all of the big life changes?

R: My boyfriend.

I: Your boyfriend, in what way?

R: ...I went to [town where he lives], and I went down there to see him and never came home. And then after that I stopped going to work and we just kept using drugs. (25 years old, 2 previous pregnancies, 1 ending in birth and 1 in abortion)

When asked what she thought her likelihood of becoming pregnant was, she said, “I don’t know. For some reason I just thought I didn’t think about it, it never crossed my mind.” Her inattention to the possibility of pregnancy is logical when contextualized within the other social disruptions she was experiencing.

Other distal factors that respondents discussed such as homelessness, difficulties within their romantic or other relationships, illness and stress contributed to their ability to devote attention to whether they might become pregnant. Furthermore, the instability that some of these respondents were dealing with resulted in a loss of health insurance and access to contraception through job loss, moving, and divorce. All of these social disruptions may have made it more challenging for women to devote time to thinking about the possibility of an unintended pregnancy (Jones et al., 2012). Furthermore, they may have been at greater risk of a pregnancy based on a recent relationship status change or violence within the relationship, which is often accompanied by sexual coercion (Moore et al., 2010).

Some women with low perceived susceptibility to pregnancy were contraceptive users

Over one-third of women (12 of 32) who reported that they thought they had a low likelihood of becoming pregnant said that their contraceptive use (condoms, withdrawal, pills and Depo Provera) was a reason that they felt they were unlikely to become pregnant at the time that they did. (It is important to acknowledge that in addition to these 12 respondents, other women may have been using contraception at or around the time they became pregnant, but they did not cite their contraceptive use as a reason for their perceived low likelihood of becoming pregnant.) In most cases, these respondents described using contraception inconsistently or incorrectly. A small number of the women in this category described consistent and correct method use that should have prevented pregnancy, and it is possible that these cases represent

true method failures. Yet contraceptive use alone was not the only factor leading these women to feel protected. Nine of these twelve respondents also cited one of the other, previously-discussed reasons for feeling immune to pregnancy as well.

When reporting the use of coital-dependent methods (condoms and withdrawal), women were often unclear in their reporting of consistency of use. Only one woman in this group identified a broken condom as a possible reason for her pregnancy. The others stated that they used their method “every time” and did not explicitly identify an instance of non-use as a possible reason for their pregnancies. Some of their descriptions of use indicate possible inconsistent use:

R: ...I don't know if it [the condom] broke, I don't know what happened.

I: ...do you have an idea of what went wrong with the condom or --?

R: I really don't, I couldn't tell you I wasn't too worried about the condoms [laughs]. I figured that was his deal. (18 years old, no previous pregnancies)

A few respondents acknowledged not using their method consistently and correctly, while still believing they were protected from pregnancy. The quote below from a woman who had stopped using the pill and was using condoms inconsistently while planning to restart pill use illustrates a clear misunderstanding of the way the birth control pill works.

I didn't think it [my probability of conception] was high because I have been on birth control for so long I didn't think my body would come back to that so fast, but I guess it has that ability. (21 years old, no previous pregnancies)

Another woman felt that a few missed pills did not put her at risk:

I just thought they were, like, since I was on [pills], they were like magic. If I missed it one day, it wouldn't really matter, ya know, “I am on the pill,” and it was just so stupid, I didn't think it all the way through, of course. (18 years old, one previous pregnancy ending in miscarriage)

Perceived errors by healthcare providers were cited by a number of women in the sample as contributing to their perceived protection from pregnancy. The following woman, presenting

for an abortion at 20 weeks gestation, said she did not suspect she was pregnant because she was using Depo:

I had been on Depo since I had my baby, and he is 7 months, and I had been on Depo since. And I went back to get my Depo shot and they told me that I was pregnant, and I am now 5 months pregnant so they still had been giving me the Depo while I was pregnant...And I had them do a sonogram and she says, "Well, you are 5 months pregnant," and I said, "Well, I have been on the Depo for 6 months now, so I am not understanding, you know, how this happened"... (23 years old, one previous pregnancy ending in birth)

Other perceived provider errors included "my doctor not changing me up" (being kept on Depo for "too long" by her provider, because she perceived that her body may have become "immune" to it and that is why she became pregnant) and understanding that she was told by a provider that she could not become pregnant at a particular time in her cycle when in fact she was at risk. Therefore, inaccurate understandings of contraceptive use or one's fertile period, sometimes attributed to providers, led to misperceived risk of pregnancy.

Discussion

The majority of respondents in our sample of women obtaining abortions thought they had a low likelihood of becoming pregnant at the time that this pregnancy occurred (n=32/49). By identifying primary reasons that women reported which led them to feel a low susceptibility to pregnancy, these data yield more in-depth information to elucidate the concept than has previously been captured on quantitative surveys (Biggs et al., 2012; Jones et al., 2002; Jones et al., 2012; Mosher et al., 2012; Nettleman et al., 2007b). Perceived invulnerability to pregnancy, perceptions of subfecundity, lack of attention to the possibility of pregnancy and incorrect or inconsistent method use resulted in an unintended pregnancy which these respondents were choosing to terminate.

Some of these findings have been substantiated with other samples. In Scotland, Williamson et al. found a relatively large portion of their sample stated feeling invulnerable to pregnancy (Williamson et al., 2009). Magical thinking regarding pregnancy has been highly visible in U.S. public discourse recently, indicating that it is not just the provenance of individuals who have recently had their lives disrupted by an unintended pregnancy. Statements by politicians during the 2012 electoral primary season implied that rape cannot result in pregnancy and that control over preventing pregnancy does not lie with women but in fact with a higher power. Representative Todd Akin of Missouri said, “the female body has ways to try to shut the whole thing [conception] down” (KTVI-TV, St. Louis, Missouri, 2012), and Senator Richard Mourdock of Indiana said that even pregnancy from rape is something that “God intended,” (CBS News, 2012). Both of these public figures are voicing support for the idea that 40% of young people agreed with that the occurrence of a pregnancy depends on whether or not it is “your time” to get pregnant (Frost et al., 2012; Kaye et al., 2009). This fatalism may be related to low perceived susceptibility to pregnancy. Further research is needed to understand whether beliefs about the corollary statement (that one is protected from pregnancy when it is not “their time”) are as widely held.

Magical thinking regarding health issues is not limited to beliefs about conception. In addition to research about reliance on magical thinking as a mechanism for dealing with uncertainty in general (Shafir & Tversky, 1992), there are many documentations of its existence in the context of health provision especially (but not limited to) areas such as infertility (Bernstein, Brill, Levin & Seibel, 1992), AIDS/HIV (Nemeroff, 1995), cancer (Sand, Olsson & Strang, 2009), diabetes (Chao, Lao, Hao & Lin, 2012) organ donation (Sanner, 2001), and smoking (White, McKee & O'Malley, 2007). As with other bodily processes and diseases that

are complex and poorly understood by most people, thoughts about conception and pregnancy lend themselves to the use of heuristics: people use readily accessible, though loosely applicable, information to solve problems, which may lead them to misperceive risk. Women are not incorrect in thinking that their chances of becoming pregnant from one act of unprotected intercourse are low, which further complicates their understanding of their risk in this situation. The chance of pregnancy from one act of unprotected intercourse has been estimated at just 3.1% (Wilcox, Dunson, Weinberg, Trussell & Baird, 2001), though it is higher on days during the fertile window. Having sex with more frequency during a cycle increases the chance of conception, and, as previously mentioned, 85% of couples will conceive in a year if they do not use any contraceptive method (Trussell & Wynn, 2008).

Another primary factor contributing to women's perceived low risk of pregnancy was a belief in their own subfecundity, also substantiated by previous research (Downs et al., 2004; Jones et al., 2002; Jones et al., 2012; Kaye et al., 2009; Moore et al., 2011; Nettleman et al., 2007b; Polis & Zabin, 2012). Women who believed themselves at low risk were slightly less likely than the other women in our sample to have previously been pregnant (although previous abortion experience is likely underreported (Jones & Kost, 2007)). Lack of experience with pregnancy may have played a role in women underestimating their fecundity.

Other factors found in our data contributing to low perceived risk to pregnancy were self-described inattention to the possibility of pregnancy, and confidence in incorrect contraceptive use or a misunderstanding of contraception's mechanisms of action. As with magical thinking and the employment of heuristics, these misunderstandings may be related to low health literacy and innumeracy as well as misunderstandings of risk (Berkman, Sheridan, Donahue, Halpern & Crotty, 2011; Martensson & Hensing, 2012; Reyna, Nelson, Han & Dieckmann, 2009).

The Health Belief Model (HMB) is a useful framework for conceptualizing how women's perception of their own likelihood of becoming pregnant relates to their contraceptive decision-making and behavior. The HBM was designed to help understand the discrepancies between health knowledge and observed behaviors and:

hypothesizes that persons will not seek preventive care [...] unless they possess minimal levels of relevant health motivation and knowledge, view themselves as potentially vulnerable and the condition as threatening and are convinced of the efficacy of intervention, and see few difficulties in undertaking the recommended action. (Becker, Haefner, Kasl, Kirscht, Maiman & Rosenstock, 1977), p.29.

A revision of the original model proposed perceived susceptibility and seriousness of the “disease,” and a cost-benefit analysis of perceived benefits and barriers to preventive action, as modified by demographic and sociopsychological variables and informed by internal and external cues to action impacting the likelihood of an individual taking preventive health action (Becker & Maiman, 1975). While this framework was employed often in the ‘70s and ‘80s, its use waned until recently (Brown, Ottney & Nguyen, 2011; Hall, 2012; Lopez, Tolley, Grimes & Chen-Mok, 2009). Hall revised the model to include variables that have emerged since Katatsky (Katatsky, 1977) first adapted the framework to family planning, including pregnancy ambivalence, self-efficacy and locus of control (Hall, 2012).

Hall's work takes the specific example of Perceived Threat of Pregnancy and illustrates how it has been shown to interact with other constructs in the model (Cues to Action in the form a partner's beliefs and desires, Contraceptive Cost-Benefit Analysis in the form of perceived benefits of and barriers to contracepting, and Modifying and Enabling Factors, particularly psychological factors such as locus of control (Hall, 2012)). Tests of the validity of the model as specifically applied to contraceptive use found perceived susceptibility to pregnancy to be only weakly associated with contraceptive use; perceived seriousness of unintended pregnancy was

not associated with contraceptive use at all (Hester & Macrina, 1985). Brown et al.'s recent paper found significant associations with particular barriers and benefits (side effects and ease of use) that varied by demographic and structural conditions (Brown et al., 2011).

These findings point to the limitations of the HBM as a model for explaining contraceptive behaviors. We considered other models that have been used in this area, including the Theory of Planned Behavior and its adaptations (Ajzen, 1991; Jaccard, 2009; Lutz, 2011). However, Hall's adaptation of the HBM is uniquely applicable to these findings on perceptions of susceptibility to pregnancy among abortion patients because of the specific and primary place it affords the construct of the Perceived Threat of Pregnancy. Hall makes a strong argument for the adapted model's utility in describing contraceptive behaviors (Hall, 2012) and the results presented here provide more evidence to support its use in this context. We have placed our findings (Figure 1, bold text as well as bold outlines indicating our additions) within Hall's framework to show the complexity of one aspect of the model, Susceptibility. We also added unintended pregnancy as a possible outcome of nonuse and improper use, leading to the need to decide between terminating or not terminating.

[Insert Figure 1 approximately here]

While qualitative studies such as this cannot be used to actually test the validity of the domains of the model as applied to contraceptive use, they can be used to further elucidate people's understandings of motivations to use family planning, and to suggest domains which should be subject to further quantitative examination.

There are limitations to the study. Small, convenience samples such as this one are not meant to be able to be generalized either to abortion patients or to women in the United States. However, our sample is demographically similar to the profile of abortion patients nationally.

We only have women's perspectives on what their partners told them about possible impaired fecundity and contraceptive use (condoms and withdrawal); we do not know if this accurately represents what the men said, believed or did. Examining men's perceptions about their likelihood of causing a pregnancy would be useful on its own and would serve to highlight differences in partner perceptions on this subject. Additionally, a full exploration of women's perceived likelihood of pregnancy would include the voices of not just women experiencing unintended pregnancies and obtaining abortions, but those who gave birth, as well as women experiencing intended pregnancies and women who have not experienced a recent pregnancy. Furthermore, women's difficulty articulating their beliefs about this topic hinders our ability to draw more specific conclusions about widely held misperceptions or reasons why women hold these misperceptions. Lastly, factors affecting contraceptive use are complicated and wide-ranging (Jaccard, 2009). This analysis aims to describe one narrow but poorly-understood aspect of contraceptive use.

Low frequency of intercourse was a common reason for contraceptive nonuse in previous studies of abortion patients (25.6%) (Jones et al., 2002) and women experiencing unintended births (17%) (Mosher et al., 2012). We did not collect data on frequency of intercourse among our respondents, and only one woman in our sample specifically cited lack of frequent sexual activity as a reason for thinking that she had a low likelihood of becoming pregnant. Future work should explore women's perceptions of pregnancy risk based on their frequency of engaging in unprotected sexual intercourse. Additionally, the role of these respondents' partners in either deliberately misleading the respondents or through their own ignorance exposing their partners to risk points to the importance of including men in health education as well as the role of couples' communication.

Survey questions should be included in relevant instruments that ask women to specify reasons why they think they were at risk of conceiving or not at risk of conceiving, with the response categories informed by what we present here. These data also reveal the difficulty that survey measures often have in attempting to accurately capture method use among women at risk of unintended pregnancy. More detailed contraceptive use questions are also needed to gain a greater understanding of exactly how people are using contraception to understand how user error is placing individuals at risk for an unintended pregnancy. Healthcare providers should be aware of women's beliefs regarding fecundity and the efficacy of contraception treated here so as to be able to address these topics with their patients. Broader public health campaigns can also be promoted to dispel myths and magical thinking. Further work is needed with men to understand men's beliefs about their ability to cause a pregnancy and to explore women's perceptions of how their bodies conceive and how contraceptives work. Additionally, minimal work has been done on the meanings of "seriousness" of consequences aspect of the Perceived Threat of Pregnancy (Bruckner et al., 2004; Campo et al., 2012); this concept could benefit from the kind of open-ended, in-depth exploration that "susceptibility" was subject to in this analysis. Finally, these data demonstrate the need for comprehensive sex education, greater awareness of reproductive health and better health literacy and numeracy in the United States.

Figure Caption

Figure 1: A Modified Health Belief Model Adding Specificity to the Perceived Threat of Pregnancy

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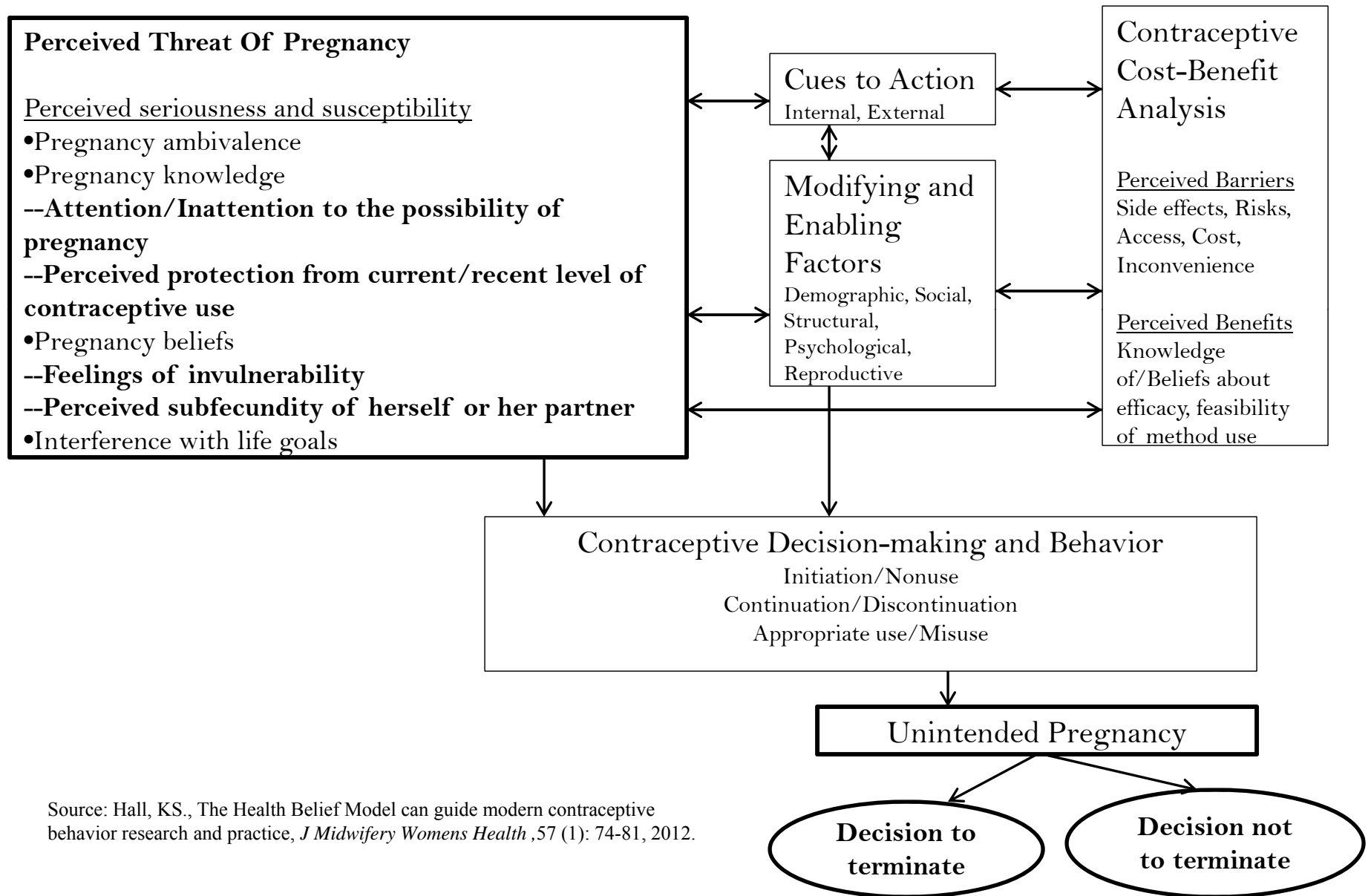
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Figure 1. A Modified Health Belief Model Adding Specificity to the Perceived Threat of Pregnancy



Source: Hall, KS., The Health Belief Model can guide modern contraceptive behavior research and practice, *J Midwifery Womens Health*, 57 (1): 74-81, 2012.

Table 1. Characteristics of In-Depth Interview Respondents

		Total Sample (n=49)	% of Total	Perceived Low Risk of Pregnancy (n=32)	% of Total
Age					
	18-19	5	10%	4	13%
	20-24	25	51%	17	53%
	25-29	8	16%	4	13%
	30-34	9	18%	5	16%
	35+	2	4%	2	6%
		49	100%	32	100%
Race					
	White	23	47%	16	50%
	Black	5	10%	3	9%
	Hispanic*	17	35%	11	34%
	API	2	4%	1	3%
	AI/AN	1	2%	1	3%
	Other	1	2%	0	0%
		49	100%	32	100%
Religion					
	Protestant	8	16%	5	16%
	Catholic	19	39%	13	41%
	Jewish	0	0%	0	0%
	Other+	10	20%	5	16%
	None	12	24%	9	28%
		49	100%	32	100%
Education					
	0-8th	0	0%	0	0%
	9-11th	4	8%	2	6%
	High school/GED	7	14%	5	16%
	Some college	31	63%	20	63%
	College grad	7	14%	5	16%
		49	100%	32	100%
Poverty status					
	Lower (below 250%)	32	65%	18	56%
	Higher (250% +)	17	35%	14	44%
		49	100%	32	100%
Parity					
	0	24	49%	18	56%
	1	7	14%	6	19%
	2	9	18%	4	13%
	3+	9	18%	4	13%
		49	100%	32	100%
Gravidity	1 (index pregnancy)	17	35%	14	44%
	2	10	20%	6	19%
	3+	22	45%	12	38%
		49	100%	32	100%
Previous Abortion					
	Yes	20	41%	11	34%
	No	29	59%	21	66%
		49	100%	32	100%
Perceived likelihood of becoming pregnant					
	Low	32	65%	32	100%
	Unclear	8	16%		
	High	5	10%		
	Not asked	4	8%		
		49	100%		

+ Includes Christian/non-denominational, "Natural," 7th Day Adventist

* Includes a Hispanic/Lebanese