# RELATIONSHIP BETWEEN WOMEN'S GOALS AND PREGNANCY RISK BEHAVIORS

by

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ABSTRACT

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Among adult women, ages of 18 and 24 years old, a high percentage of the pregnancies that occur are unplanned (Finer & Zolna, 2016; Guttmacher Institute, 2016) and unplanned pregnancies have been linked to a greater risk of negative health outcomes for mothers and their infants (Dott, Rasmussen, Hogue, & Reefhuis, 2010; Hellerstedt, Pirie, Lando, Curry, McBride, Grothaus, & Clark Nelson, 1998; Kost, Landry, & Darroch, 1998; Mosher, Jones, & Abma, 2012; Pulley, Klerman, Tang, & Baker, 2002; Sharma, Synkewecz, Raggio, & Mattison, 1994; Weller, Eberstein, & Bailey, 1987). Work among adolescents has found a link between adolescents' perception of the effect of pregnancy on their lives and academic goals and whether or not they were at risk of pregnancy/became pregnant (Bell, Glover, & Alexander, 2013; Gomez-Scott & Cooney, 2014; Jumping-Eagle, Sheeder, Kelly, & Stevens-Simon, 2008; Kogan et al., 2013; Luster & Small, 1994; Sipsma, Ickovics, Lewis, Ethier, & Kershaws, 2011). This work has not been extended into adults despite existing evidence that adult women's family planning behaviors may be influenced by the same consideration of how pregnancy will influence their lives. The current research investigated whether younger college women's perception of the effect pregnancy would have on their important goals predicted their family

planning behaviors, including: whether or not participants were abstinent in the last three months, perceptions of the effectiveness of contraceptive used at last sexual intercourse, scientifically-established effectiveness of that contraceptive, and how consistently women used contraceptives (how often they had sex without contraceptives) in the last three months.

Heterosexual female students, ages 18-24, from a large urban university completed the online Qualtrics survey ($N$ = 204; sexually-active over the last three months $n$ = 154). These young women did not have children and were not currently pregnant or trying to become pregnant. Women were asked to identify their important goals, assess the effect of pregnancy on their completion of this goal, and rate their motivation for completing each of these goals as part of the survey. These scores were used to calculate a score for the effect of pregnancy on their life goals. Women were also asked to provide information about whether they had had sex in the three months prior to the survey, what contraceptive they used at last sexual intercourse, how effective they believed this contraceptive option was for them, and the consistency of their contraceptive use over the last three months, their contraceptive self-efficacy, the availability of sexual partners, and their religiosity.

Among women who have been sexually-active in the last three months, analysis found that women for whom the effect of pregnancy on life goals was more positive tended to be less consistent contraceptive users in the three months prior to the survey. For sexually-active women, however, perceived effectiveness of their contraceptive option and scientifically established effectiveness of their contraceptive option were not predicted by the effect of pregnancy on important life goals in analyses, potentially due to the high rate of effective

contraceptive options used by this sample. Whether college women reported abstinence over the last 3 months was also not predicted by their score of the effect of pregnancy on their life goals, which may in part be due to the high number of participants (more than 90% reported access to insurance and effective contraceptive options).

Future work is needed to further investigate the dynamic between the perceived influence of pregnancy on life goals and consistency of contraceptive behaviors in college women, as well as how this assessment of life goals may influence general family planning behaviors in other groups of women and in men. Physicians, other medical providers, and sexual health educators, however, may do well to include healthy pregnancy planning, and information on pregnancy avoidance, based on how women view the role of pregnancy in their lives rather than strictly on whether they are currently trying to get pregnant or report the wish to have a scientifically-established effective contraceptive option to avoid pregnancy. This is particularly true if that effective option is one which the user can easily stop using.

Dedicated to my students.
Thank you for giving me a reason to show up every day, even on the worst days.

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Relationship Between Women's Goals and Pregnancy Risk Behaviors

Unintended pregnancies in the United States are incredibly common - with recent studies finding that 45% of pregnancies are unintended (Finer & Zolna, 2016; Guttmacher Institute, 2016). Unintended pregnancies, compared to pregnancies that are planned, have been linked to an increased chance for a variety of negative health risks for infants and their mothers.

Women with unintended pregnancies are at increased risk for behaviors that could potentially harm themselves or their children including: lower vitamin usage, higher caffeine consumption than women with intended pregnancies, they are more likely to use illicit drugs, and they are more likely to drink (Dott, Rasmussen, Hogue, & Reefhuis, 2010; Hellerstedt, Pirie, Lando, Curry, McBride, Grothaus, & Clark Nelson, 1998; Kost, Landry, & Darroch, 1998; Mosher, Jones, & Abma, 2012; Weller, Eberstein, & Bailey, 1987). Infants who result from unintended pregnancies are at increased risk of negative medical outcomes. They are at greater risk of being born preterm or having a lower birth weight (Mosher et al., 2012; Sharma, Synkewecz, Raggio, & Mattison, 1994). In fact, the more mistimed a birth is (the more a pregnancy that is wanted occurs earlier than is intended) the greater the odds are that the infant will have a low birth weight or will experience a preterm delivery (Pulley, Klerman, Tang, & Baker, 2002).

Women who plan to become pregnant, versus those that experience an unplanned pregnancy, tend to realize that they are pregnant earlier and are more likely to have preconception care (Dott et al., 2010; Kost et al., 1998; Mosher et al., 2012; Weller et al., 1987; Williams, Zapata, D'Angelo, Harrison & Morrow, 2012). Preconception care with a medical provider supplies women with the opportunity to discuss medications being used and health conditions that may negatively affect their pregnancy, as well as what chemicals that women

should not be exposed to (March of Dimes, 2018). Preconception care has also been linked to improved prenatal vitamin usage prior to conception and alcohol cessation prior to conception (de Weerd, Thomas, Cikot, Steegers-Theunissen, de Boo, & Steegers, 2002; Williams et al., 2012).

In addition to negative physical health outcomes, unplanned pregnancies have also been linked to worse mental health outcomes. Women who are not planning to become pregnant are more likely to initially have negative feelings about that pregnancy (Hulsey, Laken, Miller & Ager, 2000) and are more likely to have increased depressive symptoms (Lancaster, Gold, Flynn, Yoo, Marcus, & Davis, 2010). Greater risk of maternal depression and maternal anxiety have been linked to unintended pregnancies (Bouchard, 2005; Grussu, Quatraro, & Nasta, 2005; Leathers & Kelley, 2000; Nelson & O'Brien, 2012). There is evidence that these mood disturbances can continue to one year postpartum (Grussu et al., 2005).

Over the course of their life, more than half of women in the United States will experience an unintended pregnancy (Sonfield, Hasstedt, & Gold, 2014) and as noted above, approximately 45% of pregnancies in a given year among women ages 15-45 are unplanned (Finer & Zolna, 2016; Guttmacher Institute, 2016). This represents approximately 2.8 million pregnancies in 2011. For women between the ages of 18-19 years, approximately 76% of pregnancies are unplanned (approximately 305,000 in a year), and among 20 to 24-year-old women 59% of pregnancies are unplanned (approximately 878,000 in a year; Finer & Zolna, 2016). Due to the increased mental and physical health risks caused by unplanned pregnancies, Healthy People 2020 includes the goals of reducing the numbers of unplanned pregnancies and reducing the number of pregnancies experienced by women using reversible contraceptives in the United States (HealthyPeople.gov, 2018). Understanding, and decreasing, women's risk for

unintended pregnancy, or reducing the risks associated with unintended pregnancies, are important for improving infant and maternal outcomes. Yet, despite the evidence of the risks of unintended pregnancy and the proliferation of effective contraceptive methods (Daniels, Daugherty, & Jones, 2014; Daniels, Mosher, & Jones, 2013; Trussell, 2011), medical providers are clearly still struggling to assist women in preventing unintended pregnancies.

**The Experience of Pregnancy as a Part of Life**

Part of the difficulty in connecting the experience of pregnancy, pregnancy prevention behaviors, and women's intentions to become pregnant may be in the fact that researchers and medical providers often discuss and understand pregnancy as planned or unplanned. It is easy to become narrowly focused on this dichotomy, but it does not appear to be reflected in how women view pregnancies. For example, while the Guttmacher Institute (2016) reported that 45% of pregnancies in the United States are classified as unplanned, in actuality 27% of pregnancies are only mistimed rather than entirely unintended. For comparison, 18% are classified as unwanted. Among mistimed pregnancies, 13% are more than 5 years too early, while 55% were 2 years too early or less, and 32% are mistimed between 2-5 years (Pulley et al., 2002). A majority of the women who are classified as having an "unintended pregnancy" are reporting that they want these pregnancies, they were just conceived earlier than they planned.

The literature contains evidence that women's views of pregnancy are more complex than intended and unintended, wanted or unwanted, planned or unplanned. Trussell, Vaughan, and Stanford (1999) found that only 68% of the pregnancies that occurred when a woman *was* using contraceptives were classified as unintended pregnancies. This suggests that, despite reporting using contraceptives at the time of the pregnancy, some women still see this pregnancy as something they intended to do. (Again highlighting the difficulty that women experience in using

terms intended and unintended to describe a pregnancy.) Trussell et al. (1999) also noted that for women who reported they had an intended pregnancy resulting from a contraceptive failure, 90% were either happy or very happy about their pregnancy. Not necessarily the reaction you would expect if women did not want to become pregnant or viewed an unintended pregnancy as a bad or hazardous event.

When considering contraceptive behaviors, Mosher et al. (2012) found that, among women who were not using contraceptives at the conception of an unintended birth, 23% stated that they did not mind if they were pregnant. And among women, ages 25 years old to 45 years old, 23% have previously reported that they were okay with being pregnant and okay not being pregnant (McQuillan, Greil, & Shreffler, 2011), a category of pregnancy that is not clearly divisible into planned or unplanned. Women in this category may benefit from obstetrical and gynecological care, and preconception care, that is distinctly different from women who do not want to get pregnant at this time. It is not known if doctors are providing differentiated care for women in this category.

In Askelson, Losch, Thomas, and Reynolds' qualitative work, women discussed their complex feelings toward the experience of an unintended pregnancy. Women tend to note that they would feel ambivalent about an unintended pregnancy, and that it would impact their freedom and their finances, but they believed that babies are gifts and would focus on taking care of their children (2015). Again, this leads back to the question: How do women view pregnancy? Is it simply, "Yes. I want to get pregnant," or "No. I do not want to get pregnant?"

Rather than focusing solely on pregnancies as unplanned versus planned, a problematic divide, doctors and researchers need to consider pregnancy from the women's view of a pregnancy, and by extension a child, as a part of their current lives. This research has the

potential to allow for a more complex look at how women experience pregnancy, and how they view pregnancy's fit into their lives, rather than simply whether they are actively looking at becoming pregnant, successfully avoiding pregnancy, or accidently (maybe "accidentally") becoming pregnant. This could potentially help doctors and researchers educate young women and encourage family planning behaviors when they matter to women, not simply when women report that they are actively trying to get pregnant.

The adolescent literature offers a clear picture of the benefits of this work, through extensive research building an understanding of the relationship between academic goals, academic success, and contraceptive/pregnancy risk behaviors. Research with young adults, ages 18-24, on how pregnancy might fit into their important life goals is scarce, and less holistic with regards to the various aspects of their lives, even though young adults experience an incredibly high rate of unintended pregnancies (Finer & Zolna, 2016). Extending work on how pregnancy fits into women's lives into adulthood offers a potential for a more complex look at pregnancy planning and pregnancy avoidance behaviors.

**Adolescents' important goals and pregnancy.** The adolescent literature has created a complex picture of how pregnancy and associated risk factors fit into high school completion and adolescents' educational goals and experiences. Adolescents who experience a pregnancy are less likely to complete high school successfully or to pursue/complete higher education (Furstenberg, Brooks-Gunn, & Morgan, 1987; Gomez-Scott & Cooney, 2014; Gruber, 2012; Hofferth, Reid, & Mott, 2011). Hofferth, Reid, and Mott (2011) found that adolescent mothers receive around 2 years less education than women who delay childbearing until they are at least 30 years old. Adolescent mothers were also less likely to complete high school and were less likely to go to college, compared to women who give birth at age 30 or later.

The relationship between adolescent students' goals and their sexual risk behaviors tells a story about their motivation toward their goals. Adolescents' sexual initiation and sexual risk behavior have been linked to attitudes toward school, with more positive attitudes toward school linked to more protective adolescent behaviors, including abstinence and protected intercourse (Bonell et al., 2005). Adolescents who are high-risk for pregnancy, those who tend to not use contraceptives regularly and have multiple sexual partners, tend to have lower grade point averages (Luster & Small, 1994). Adolescents who view pregnancy as harmful to the achievement of their goal are more likely to take steps to avoid pregnancy (Jumping-Eagle, Sheeder, Kelley, & Stevens-Simon, 2008). Also, adolescents who feel positively about pregnancy, and are not in school, have a greater risk of becoming pregnant than adolescents who do not want a pregnancy and are in school (Sipsma, Ickovics, Lewis, Ethier, & Kershaw, 2011). Among students that do end up pregnant, adolescents who have abortions tend report that their career plans influenced their decision and they achieve higher educational goals, compared to those who continue a pregnancy (Bell, Glover, & Alexander, 2013; Gomez-Scott & Cooney, 2014). Students pursuit of goals has been linked to their pregnancy prevention behaviors over long periods of time. Previous longitudinal work exploring the relationship between life goal orientations and pregnancy prevention in adolescents has found evidence that conventional goal orientation at 16 years old is linked to pregnancy avoidance behaviors when 19 years old (Kogan et al., 2013). Conversely, uncertainty about the future has also been linked to ineffective contraceptive behaviors in adolescents, while having plans and goals increased contraceptive use (Chernick et al., 2015).

Not all adolescents view pregnancy as a negative option, and some adolescents are supportive of the idea of becoming pregnant or do not view pregnancy as an impediment to their

goals. Brückner, Martin, and Bearman (2004) found that 8% of adolescents in their study had positive feelings toward pregnancy, while 14% were ambivalent about it. Richards and Sheeder (2014) surveyed adolescent women without children and found that their goals and values would be considered mainstream (college and a good paying job). Their view of the effect of pregnancy on these goals was interesting, in that roughly half did not believe that getting pregnant would negatively influence their education, and 30% reported that it would positively influence their education. As expected if the perception of the effect of pregnancy on goals influences behaviors, adolescents in this study who viewed pregnancy as negatively influencing their 5-year goals were more likely to leave the surveying clinic with a prescription for an effective birth control option.

While this pattern of prescription birth control use is expected (given that prescribed birth control options are more effective for the average user [Trussell, 2011]), the idea that 30% of adolescents thought pregnancy would positively influence their goals suggests something important: Pregnancy is not viewed as universally undesirable to adolescents, as it is not viewed as something that would negatively influence their goals, even if those goals are mainstream (completion of education, marriage, etc.). In another study, Jumping-Eagle et al. (2008) found around 75% of adolescents who thought pregnancy would impede their goals planned to avoid pregnancy, compared to roughly 25% of those who thought that pregnancy would not impede their goals. Again, adolescents' views of pregnancy, and its effects on their goals, was linked to their contraceptive behaviors. And researchers suggest that adolescents who feel more positively about pregnancy are more likely to become pregnant (Sipsma et al., 2011).

The relationship between childbearing and goal attainment is complicated when exploring the opinions of childbearing among adolescents with children. While there are

adolescents with children who have noted that having children appeared to have a negative impact on their ability to attend school, others note that it positively impacted their education—perhaps giving them a reason to continue education (Herrman, 2006). Some adolescent mothers also reported a greater push toward career goals and that their personal behaviors, such as partying, were improved. They become more responsible after having a child (Herrman, 2006). And these adolescents may not be wrong in their assessment of their situation. Adolescents who continue their unintended pregnancies, rather than terminate them, tend to report lower levels of substance abuse and fewer sexual partners post-pregnancy, compare to those who terminate their pregnancies (Gomez-Scott & Cooney, 2014). Also, there is evidence that adolescents who have children, but who reported more impressive educational goals when they were pregnant with their first birth, tend to achieve more education than adolescents without these goals (Furstenberg et al., 1987).

**Young adults' important goals and pregnancy.** Despite the complex understanding of adolescents' experience of important life goals, and its relationship to sexual risk behaviors, that has been established in the literature, this understanding has not extended into the research on young adults. Limited research does suggest that women's goals should connect to their family planning behaviors, but little work exists to investigate that relationship specifically. It may be that due to complexities in potential goals in adulthood, work with adults does not reflect the same understanding we see in adolescents. Still some evidence does exist to support the theory that goals may influence sexual risk behaviors.

Hayford, Guzzo, Kusunoki, and Barber (2016) investigated how positively women (ages 18-20 with no children at the beginning of the study) viewed early childbirth. About 20% of this sample viewed an early pregnancy in a positive light. These researchers found that young women

who had viewed pregnancy more positively, and who felt that their friends approved them having children early, were more likely to become pregnant during the 30 months that the study took place. Men and women have also been found to be more likely to report they are willing to have unprotected sex IF they plan to become pregnant sometime in the next 3 years compared to when people did not want any more pregnancies (Foster, Higgins, Biggs, McCain, Holtby, & Brindis, 2012). Interest in becoming pregnant appears to be related to actually becoming pregnant, suggesting that adults are potentially meeting a goal, a goal to become pregnant. But this has not been placed in the context of goal completion.

Women do report that they consider life goals as an important influence when they are considering another pregnancy (Cutler, McNamara, Qasba, Kennedy, Lundsberg, & Gariepy, 2018), but this study did not investigate whether this linked more broadly to sexual risk and contraceptive behaviors. In Waggoner, Lanzi, and Klerman (2012) 34% of adolescent and adult women who reported that they did not want another child until a specific goal was achieved were using long acting contraceptives. Foster, Biggs, Ralph, Arons, and Brindis (2008) surveyed men and women seeking reproductive health services. They found that while 77% of those clients wanted to have a child eventually, 19% were delaying having a child to complete their education. Campo, Askelson, Spies and Losch (2012) found that, for those ages 18-30, women's perception of the severity of the consequences of an unintended pregnancy was associated with women's intention to use contraceptives during sexual activity, with greater severity being linked to greater intention. (Note that this study considered intention, not the effectiveness of use or actual use.) For comparison, women who are under 25 years of age and recently had a child, are less likely to consider education, career, or a stable job as important to achieve prior to having a child, when compared to older women (Tough, Vekved, & Newburn-Cook, 2012).

These findings certainly point to a relationship between women's goals and their pregnancy planning behaviors, regardless of whether those behaviors are for or against pregnancy. Researchers, however, need to account for the fact that adult women can both see pregnancy as something that can hinder one goal while assisting them in achieving another (or have no effect). Part of the challenge in assessing adult's life goals is that, while adolescents have a set of meaningful goals which society prescribes for them and which they are expected to achieve, adults do not have a specific set of prescribed goals that can be universally applied. Even narrowing it down to adults of childbearing years, ages 18-45, or young adults at most risk of an unplanned pregnancy, ages 18-24, still reveals for a variety of experiences that need to be accounted for and the potential for an innumerable number of goals.

For this reason, the first task in understanding the relationship between the research on pregnancy's perceived influence on life goals and a young women's contraceptive self-efficacy is to identify a subset of the population to investigate. The second task is to identify the pregnancy planning/risk behaviors of interest for this subset of the population. The third task is to identify an effective measure of life goals, which can potentially account for women's beliefs about the effect of pregnancy on these life goals.

***College women.*** Investigating the behaviors of young women in college offers a developmental stepping stone in building a research base for understanding adult women's perception of the effect of pregnancy on their important goals and how that may link to pregnancy avoidance behaviors. College women, ages 18-24, offer an age range of women who have recently left high school, allowing for considerations of growth and development between adolescents and college to be part of the consideration of interpreting research findings. Also,

there is extensive existing research on college students' contraceptive and sexual-risk behaviors to assist in contextualizing the findings.

Similar to high school being viewed as normative, college has become viewed as more normative. The Pew Research Center (2012) reported that 94% of parents (with at least 1 child under 18 years old) expect that their children will go to college. In 2016, 46% of high school students enrolled in a 4-year college immediately following graduation from high school (National Center for Education Statistics, 2018). And there is good reason for this high rate of college attendance, with The Pew Research Center (2012) reporting that the typical college graduate will earn $650,000 more than those with only a high school diploma. It should be noted, however, that only 56% percent of students will earn their degree within the first 6 years of beginning college or university (Desilver, 2014), suggesting that while the number of adults' who achieve a bachelor's degree is high there is also a high number who do not do so in a timely fashion, if at all.

Previous research has found that there is a relationship between college success and family planning behaviors. Young women who give birth in their early 20s tend to complete 1.1-1.3 fewer years of education, compared to women who give birth at age 30 or later (Hofferth et al., 2001). Giving birth in your early 20's is also linked to decreased odds of completing some college (Hofferth et al., 2001). Women who had their first child by the ages of 23-24 are less likely to earn their bachelor's degree, compared to women who have their children later (Toguchi Swartz, McLaughlin, & Mortimer, 2017). Likely linked with this decrease in educational attainment, early childbearing has been linked to decrease earnings in adults. Toguchi Swartz et al. (2017) found that earnings among young adult parents are lower than

earnings of those who do not have children. Research has also found that women who get pregnant during college are more likely to quit (Raley, Kim, Daniels, 2012).

Sexual activity, risky sexual behaviors, and unplanned pregnancies are documented among college students, with some negative effects on college completion found in the literature. Brunner Huber and Ersek (2009) found that 22.9% of the sexually-active college students at their public university reported that they were not using contraceptives. At another university, it was found that 30% of the students who requested a pregnancy test during a five-year period would test positive for pregnancy. Thirty-seven percent of the young women seeking a pregnancy test would report not using contraceptives during sexual activity. Fifty-seven percent of the women who tested positive for pregnancy reported that they would have an abortion (Sawyer, Pinciaro, Anderson-Sawyer, 1998). When looking at pregnancy, 1.9% of college students reported either getting pregnant or getting someone else pregnant in the last year (Buhi, Marhefka, & Hoban, 2010). Interestingly, 6.6% of African American students reported this, compared to 1.7% of white students, suggesting a potential normative or cultural difference between the two groups (Buhi et al., 2010).

Research findings with various subsamples of college students have found variations in sexual and reproductive activities depending on the sample. Oswalt and Wyatt's (2014) work with college students has found that just below 80% of them have been sexually-active in the last 12 months and those who are sexually-active average about 2 partners in that time. They also found that, in the last 12 months, 3.7% of these college students report an unplanned pregnancy. Raley et al. (2012) estimated that 3.4% of the dropouts that occur in the first 4 years of college occur due to pregnancy, while 9% of the drop outs at a 2-year college are estimated as due to

pregnancy. They do note that low effect of pregnancy in college drop outs is likely linked to pregnancy termination, which is underreported.

Abortion rates may be tied to post-secondary degree attainment. Women aged 20-24 also have the highest rate of abortion, compared to other age groups (Jerman, Jones, & Onda, 2016). Jerman et al. (2016) argued that the highest rate of abortion occurs among women who are pursuing a post-secondary degree. Abortion rates are relatively high among women with some college compared with college graduates or women with only a high school degree; whereas pregnancy rates are lower for women with some college (Jones, Darroch, & Henshaw, 2002). Among women having an abortion, 38% reported that they could not take care of a child right now because it would negatively influence their ability to obtain an education, and young women without children are more likely to report this reason as linked to their decision to have an abortion (Finer, Frohwirth, Dauphinee, Singh, & Moore, 2005).

Financial concerns have been linked to pregnancy and child avoidance in adult women (Aiken, Dillaway, & Mevs-Korff, 2015; Cutler et al., 2018; Finer et al., 2005; Foster et al., 2008). College students have ample reason to want to avoid pregnancy while in school. Pregnancy, infants, and children are documented as costly (Economic Policy Institute, 2016; Lino, Kuczynski, Rodriguez, & Schap, 2017; Tran, 2014; Truven Health Analytics, 2013), and college students already have a variety of financial concerns. At 4-year public institutions, for first-time students living at home with their family there is an average annual overall cost of $14,100. Once a person no longer lives with family, regardless of on-campus or off-campus living, this average cost rises to more than $23,000 (National Center for Education Statistics, 2018). And students without financial resources appear to pay a price in graduation rates. When considering the income gap in college completion, finances are known to make a difference. Far

fewer students who are classified as low socioeconomic status will graduate from college in the 8 years after high school completion, compared to students who can be classified as at least middle level socioeconomic status (National Center for Education Statistics, 2015).

Fifty-one percent of college students in one study of multiple institutions found it difficult or very difficult to pay for college (Hornak, Farrell, & Jackson, 2010). Among 4-year college students, between 11% and 19% of college students are not secure in their housing situation. Between 22% to 36% (depending on the sample being reviewed) of students report feeling hungry because they did not have enough money for food. Among 2 and 4-year college students, more than 50% report lower levels of food security (Broton & Goldrick-Rab, 2018). Among students who have reported difficulty paying for college, 90% missed study opportunities for classes to work (Hornak et al., 2010), suggesting that they are pushing themselves to meet their financial needs, which could potentially damage their education (as possibly reflected in the lower graduation rates).

It is important to note, however, that Tough et al. (2012) found that women who recently had a child and were under 25 years of age viewed financial security as less important, compared to older women having their first child. This study does not clarify, however, whether these attitudes are a result of having to raise a child with less financial security due to giving birth early (as found in Toguchi Swartz et al., 2017) or if women who get pregnant early are less concerned about their finances prior to pregnancy. Also, students who are wealthier, have wealthier partners, or come from wealthier and/or supportive families may be protected from the negative impact of pregnancy on their important college-related goals. Just as important, simply because someone is in college does not mean that the goals which are most important to them are college-related. Goals which are important to women, but are not college- related, may also be

seen as positively (or neutrally) impacted by pregnancy related behaviors. And this could influence their pregnancy risk behaviors. The current literature does not offer information on this.

College students do use a wide variety of contraceptive methods (Kienzler, 2016; Oswalt & Wyatt, 2014). The use of effective contraception among sexually-active college students in this age group is common, but not universal (Ingersoll, Ceperich, Nettleman, & Johnson, 2008; Kienzler, 2016; Kusseling, Wenger, & Shapiro, 1995), and they do not always use contraceptives consistently. Longitudinal work with female college students finds that they may change from reliable to unreliable contraceptive use when followed over time, and college students can be inconsistent contraceptive users, sometimes using effective contraceptives and sometimes not (Kusseling et al., 1995). Kusseling et al. (1995) noted that 19% of women in their study did not use a reliable contraceptive method and Ingersoll et al. (2008) noted that 18% of college aged contraceptive users in their studies were ineffective users.

Research literature on college students' contraceptive behaviors, their pregnancy behaviors, and the associated college completion outcomes provides a complex picture of pregnancy risk behaviors. There has been no in-depth exploration, however, of how college women view the relationship between their goals and the effect of pregnancy on those goals, and whether that can predict contraceptive behaviors among college-aged women, despite a recognition of the complexity of these relationships among adolescents in high school and the fact that attaining adulthood may change perceptions and pressures related to pregnancy behaviors. Using college students, with the documentation of their complex family planning behaviors, can further build on our understanding of adult women's risk of unplanned pregnancy.

**Protection from Pregnancy**

For women who are motivated to avoid pregnancy there are a variety of hormonal and non-hormonal contraceptive options that, when used appropriately, work well to prevent pregnancy (Trussell, 2011). Contraceptive use is documented as incredibly common. Among women surveyed from 2006-2008, researchers found that only 1% of sexually-active women reported that they had never used contraceptives (Mosher & Jones, 2010). Among sexually-active women, the appropriate use of effective contraceptives can act to lessen the risk of an unplanned pregnancy (Ranjit, Bankole, Darroch, & Singh, 2001; Trussell, 2011).

When investigating pregnancies from 1998 to 2002, 60% of women who had an unintended pregnancy were not using any contraceptive at time of pregnancy (Mosher et al., 2012), again pointing to contraceptive options' effectiveness. Mosher and Jones (2010) also found that only 7.3% of women who reported not using a contraceptive when having sex did not have an explanatory reason (such as current pregnancy, had not had intercourse in last 3 months), though they note that this actually amounts to 4.5 million people in the United States. While contraceptives have other uses, Melo, Peters, Teal, & Guiahi (2015) found in their qualitative work that the primary reason women gave for using contraceptives was to avoid pregnancy.

Women do have a variety of contraceptive options, barrier and hormonal, to choose from, and these contraceptives can vary in effectiveness based on the kind of contraceptive and the individual's or couple's ability to appropriately use that contraceptive (Trussell, 2011). While hormonal contraceptive options are considered among the most effective for the average user (Trussell, 2011), certain women may find the use of some contraceptives uncomfortable and a very small number are unable to use hormonal contraceptive options due to medical contraindications (Xu, Eisenberg, Madden, Secura, Peipert, 2014). Barrier methods and other

non-hormonal contraceptive methods can be effective when used appropriately (Trussell, 2011), however, meaning that even women who do not like hormonal contraceptives can find reasonably effective options if they use that option appropriately. Research suggests that women's contraceptive use is considered an individualized choice, with the correct method depending in part on the person who takes it (Kienzler, 2016; Melo et al., 2015). Research literature does support the idea, however, that people choose their contraceptives based, in part, on how effective they believe that contraceptive to be (Brown, Ottney, & Nguyen, 2011; Stanwood & Bradley, 2006). However, many women have difficulty accurately assessing the effectiveness of the various contraceptive options (Biggs & Foster, 2013), and this could potentially cost women who would otherwise want to use an effective option.

**Abstinence to avoid pregnancy.** Abstinence, as a part of life and a tool to avoid pregnancy, cannot be left out of the current conceptualization of pregnancy avoidance behaviors in the context of achievement of an individual's important goals. Abstinence is considered by some women as the only truly effective way to avoid pregnancy (Hodgson, Collier, Hayes, Curry, & Fraenkel, 2013) and it is the most effective way to avoid pregnancy (Trussell, 2011). Abstinent individuals can fall into multiple categories: previously sexually-active but currently abstinent, a virgin who may become sexually-active, and someone committed to maintaining their virginity at the current time (or permanently).

People report various reasons for abstinence. Adolescents that have never had vaginal sex report being concerned about contracting HIV/AIDS or other illnesses and having an accidental pregnancy (Blinn-Pike, 1999; Uecker, Angotti, & Regnerus, 2008). Previous work has found that about 9% of the adolescents reported using abstinence as a form of pregnancy prevention/family planning (Ott, Ofner, Tu, Katz, & Fortenberry, 2010). In the United States, higher levels of

religiosity has also been linked to a lower risk of early sexual intercourse in adolescents (Hull, Hennessy, Bleakley, Fishbein, & Jordan, 2011; Laflin, Wang, & Barry, 2008; Nonnemaker, McNeely, & Blum, 2003; Rostosky, Regnerus, & Wright, 2003). While adolescents do report religious or moral reasons for avoiding vaginal sex, research suggests that these reasons are less important than avoiding pregnancy and/or sexually transmitted illnesses (Abbott & Dalla, 2008; Blinn-Pike, 1999; Uecker et al., 2008). Among college students who are virgins, the reasons that were considered most important were the lack of an appropriate romantic partner and fear of becoming pregnant, though religiosity was found to be a potential influencer of this decision as well (Sprecher & Treger, 2015).

For sexually-active adolescents who are experiencing a period of abstinence after initial sexual activity, it has been found that long periods of abstinence were related to relationship quality over an extended period of time and participants' interest in sexual activity. Participants with long periods of sexual abstinence reported less sexual interest, lower quality of relationship, and being older adolescents (Ott et al., 2010). When considering 18-year-old women, 70% of women have had vaginal intercourse at some time. Looking at 22- to 24-year-old women, only 6% of women have not had vaginal intercourse at some point in their lives (Mosher, Chandra, & Jones, 2005), suggesting that periodic abstinence is likely more common than never having vaginal sexual intercourse by this age group. Current research does not shed light on whether abstinence, periodic or otherwise, may be linked to the effect of pregnancy on young women's important goals, though abstinence literature among adolescents supports this possibility (Bonell et al., 2005; Jumping-Eagle et al., 2008; Kogan et al., 2013).

**The necessity of contraceptive self-efficacy.** Contraceptive use during sex is often, if not always, a shared activity. Roughly half of college women report one partner being solely

responsible for contraceptives in their relationship, while the other half report that there is shared responsibility for contraceptives (Brunner Huber & Ersek, 2011). To further connect the relationship between pregnancy planning behaviors and how individuals view the influence of pregnancy on their important goals, it needs to be asked: How capable is an individual of negotiating/enforcing his/her contraceptive preferences if he/she is wishes to use contraceptives? Previous work has found that sexual partners can act as a barrier to women's successful contraceptive use (Hodgson et al., 2013; Ingersoll et al., 2008; Manlove, Ryan, & Franzetta, 2007; Mosher et al., 2012; Van Horne, Wiemann, Berenson, Horwitz, & Volk, 2009). When Mosher et al. (2012) investigated women who had an unintended pregnancy while not using birth control, they found that 8% reported that their male partner did not want to use his own birth control and 5.3% reported that her male partner did not want her to use birth control. And people are willing to have sex without protection in many cases. Among those who have access to birth control, 54% of those in their 20's have been found to be willing to have sex while not using birth control (Foster et al., 2012). Women who protect against pregnancy tend to have partners who are supportive of contraceptive use and are more likely to report refusing unprotected intercourse (Whitley & Hern, 1991).

Those with the ability to negotiate and/or enforce their contraceptive wishes, those with high contraceptive self-efficacy, have a greater chance of using contraceptives during sex or avoiding sexual activity altogether if contraceptives are not being used (Baugh & Davis, 2016; Levinson, Wan, & Beamer, 1998; Heinrich, 1993; Longmore, Manning, Giordano, & Rudolph, 2003). Accounting for the potential relationship between contraceptive behaviors and women's perceptions of the effect of pregnancy on current goals cannot be done without recognizing the

influence of contraceptive self-efficacy, and accounting for how that may influence women's contraceptive behaviors regardless of how motivated they may be to avoid pregnancy.

**Current Study**

The current work focuses on the effect of pregnancy on life goals for college women, ages 18-24 years old. Young adults, ages 18-24, experience a high rate of unintended pregnancies in the United States (Finer & Zolna, 2016) and unintended pregnancies are widely recognized as being a risk factor for negative health outcomes for both mother and child (Bouchard, 2005; de Weerd et al., 2002; Dott et al., 2010; Grussu et al., 2005; Hellerstedt et al., 1998; Hulsey Laken, Miller, & Ager, 2000; Kost et al., 1998; Lancaster et al., 2010; Leathers & Kelley, 2000; Mosher et al., 2012; Nelson & O'Brien, 2012; Pulley et al., 2002; Sharma et al., 1994; Weller et al., 1987; Williams et al., 2012). Existing literature offers a complex look at the relationship between adolescent educational goal achievement and their contraceptive and pregnancy risk behaviors and extending work on the relationship between important goals and pregnancy in young adults offers a potential to better place our current understanding of young adult's pregnancy as a part of their lives. Work with young adults, however, needs to address the fact that young adults can hold a variety of goals, some of which may be hindered by pregnancy or viewed as unharmed or supported by pregnancy, in a way that the work on adolescents has not completely addressed due to the focus on the nearly universal recognition of the importance of high school graduation.

The use of college students as the sample allowed for the current research to focus on the age ranges that experience the highest numbers of unintended pregnancies (Finer & Zolna, 2016), while simultaneously working with a group that has a close affinity high school adolescents, being recently high school adolescents themselves, and have a strong base of

existing research literature focused on their contraceptive behaviors to help contextualize the findings. The current study focused on young women specifically, since they have a different contraceptive decision-making process than young men. There are more extremely effective contraceptive options available for their use with or without permission from their partner (Trussell, 2011), some of which must be accessed using a medical provider and are required to have use begin well before their sexual activity.

To fully address the various prisms through which pregnancy planning/pregnancy risk can be assessed, four different measures of pregnancy planning behavior over the last 3 months were utilized: abstinence, the scientifically-established effectiveness of the contraceptive option used at last sexual intercourse, the woman's perceived effectiveness of the contraceptive option used at last sexual intercourse, and consistency of contraceptive use over the last three months. Each of these pregnancy risk factors tells a different part of the story, offers a different aspect of how women protect or put themselves at risk for pregnancy. For instance, abstinence over the course of the last 3 months will be investigated as this is the only 100% effective contraceptive option available to women (Trussell, 2011), and given that adolescents and college students are documented as remaining abstinent to avoid pregnancy (Abbott & Dalla, 2008; Blinn-Pike, 1999; Ott et al., 2010; Sprecher & Treger, 2015; Uecker et al., 2008), women may opt to practice abstinence if they view pregnancy as harmful to their existing goals. Previous research on the accurate recall of sexual health behaviors has found that three months is a period for which recall of sexual behaviors is accurate, and as such, it was selected for the current work (Brunner, Huber, Lyerly, Young, Dmochowski, Vick, & Scholes, 2014; Schroder, Carey, & Vanable, 2003).

Women who choose to be sexually-active report choosing contraceptives based partly on their effectiveness (Brown et al., 2011; Stanwood & Bradley, 2006). Given the assumption that women who choose effective contraceptives will not experience a pregnancy, it is possible that women who choose contraceptives that they believe are effective view pregnancy as having a negative effect on their life goals, contraceptive effectiveness needs to be considered. Women do not always choose the most effective contraceptive, however, and it is unknown if that is because they do not value effectiveness or if they view their contraceptive choice as very effective to them. Research supports the statement that women view contraceptive choice as individualized (Melo et al., 2015; Kienzler, 2016), and they may view certain contraceptives as effective for them which may be less effective than others. If this is the case, there is research to back up their view (Trussell, 2011). For instance, for the average male condom users, condoms have a yearly failure rate of about 18%. However, for the perfect condom user, male condom failure is about 2%. For women who have high levels of perceived self-efficacy with a particular style of contraceptive, their view of the effectiveness of that contraceptive for themselves may be higher than the general population of women. Other contraceptives, such as the contraceptive pill, show variations between those who use the contraceptive perfectly and those that use contraceptives (Trussell, 2011). For this reason, it was valuable for researchers to consider both the scientifically-established effectiveness for the average user and how effective women perceive a contraceptive option to be for themselves. These views are unlikely to match up perfectly, and they offer a slightly different view of the same underlying goal, for women who have reason to avoid pregnancy to be able to effectively do so while being sexually-active.

The final view of pregnancy risk behaviors that was viewed in the current study is consistency of contraceptive use over the last three months. Researchers have established that

whether or not participants used any form of contraceptive can change from one episode of vaginal sex to another (Glei, 1999; Manlove, Ryan, & Franzetti, 2007), and women under 25 are less likely to be consistent contraceptive users (Glei, 1999). Investigating contraceptive consistency's relationship to the effectiveness of goals provides meaningful information about whether there is a relationship between pregnancy planning behaviors and life goals. It can provide information about whether participants' who view the effect of important life goals on pregnancy as more negative may use contraceptive options more consistently.

Due to the focus on three different contraceptive behaviors women display when preventing, or failing to prevent, pregnancy, the role of contraceptive self-efficacy in the relationship between the effect of pregnancy on important goals and pregnancy risk behaviors requires inclusion in the current investigation. Higher levels of contraceptive-self efficacy have been linked to increased contraceptive use effectiveness in previous research (Baugh & Davis, 2016; Levinson et al., 1998; Longmore et al., 2003), and it offers a potential explanation as to why women who might otherwise be very motivated to avoid pregnancy due to their personal goals may fail to do so. Women may be motivated to avoid pregnancy, but lack the contraceptive self-efficacy needed to effectively identify and negotiate the use of contraceptives in a sexual situation. Including it as a potential moderator in the explanation of the relationship between contraceptive behaviors and young women's perception of the effect on pregnancy on life goals offered the potential for a clearer picture of how all three factors relate to one another.

**Constructing and assessing meaningful goals.** The challenge of assessing the effect of pregnancy on life goals for young college women in the current study, versus adolescents, is that there are a wide variety of goals, and goal conceptualizations, which college students at this age may have. Some work with college students has addressed this challenge by focusing on pre-

existing research-based conceptualizations of specific college-related goals (Shim & Ryan, 2012). There are two challenges to using this methodology in the current study. Using this methodological focus would place the pregnancy risk behaviors within the context of participants' educational settings only, missing out on potential goals outside of the academic setting. It also falls into the methodological flaw that is recognized by researchers working on assessing the influences of life goals and personal projects; it presupposes what individuals in a specific group value and deem as important because of that group membership, regardless of what the reality of the individual experience may be (Palys & Little, 1983).

In a work on life goals and personal projects, to avoid this methodological flaw, individuals self-identify various individualized goals they have for themselves, which they then personally assess based on the researchers' areas of interest (Frost, 2011; Frost & LeBlank, 2014; Jackson, Weiss, Lundquist, & Soderlind, 2002; Lecci, Karoly, Briggs, & Kuhn, 1994; Little, 1983a; Little, 1983b; Little, 2005; Little, 2015; McGregor & Little, 1998; Palys & Little, 1983; Piumatti, 2018; Salmela-Aro, Nurmi, Saisto, & Halmesmäki, 2001; Vroman, Chamberlain, & Warner, 2009). Allowing young women to identify, and evaluate, goals that they view as personally appropriate should allow for the most accurate assessment of the effect of pregnancy on life goals, as they can identify the life goals of value for them. Goals constructed and assessed using a methodology that involves goal elicitation from participants has been linked to life outcomes and health behaviors in previous research (Frost & LeBlanc, 2014; Salmela-Aro et al., 2001; Vroman et al., 2009). Using this method offered the most accurate assessment of goals that participants value at the time of the study.

Previous work with adolescents' life goals and pregnancy risk behaviors offers two relevant areas of goal assessment: motivation to achieve the goal and whether pregnancy would

have a positive or negative impact on the goal achievement. These areas logically carry over into adulthood. These two items should not be separated from each other, however, when conceptualizing the potential influence of pregnancy on life goals. Women who are very motivated toward a goal, and view pregnancy as a severe hindrance to the achievement of that goal, may be more likely to protect against pregnancy. Women who view pregnancy as only a minor hindrance, or even beneficial toward goal achievement, are likely to be less motivated to avoid a pregnancy, even if they are equally motived toward the achievement of their goal.

For this reason, the effect of pregnancy on important goals was defined in this specific work as: the relationship between a woman's motivation toward a specific goal and the magnitude and direction of a pregnancy's impact on the achievement of that goal. In this study, motivation toward the goal offered the baseline measure/conceptualization, and the perceived influence of pregnancy (very positive, very negative, or somewhere in-between) influenced the direction and magnitude with which an individual may view pregnancy as assisting or harming the achievement at the level that they are motivated to complete it. This allowed researchers to assess someone with conflicting goals, for instance someone who may be highly motivated toward a goal that would be harmed by pregnancy and only slightly motivated toward a goal that would be harmed by pregnancy, for the overarching effect of pregnancy on their goal achievement while still accounting for motivation toward each of those goals individually.

**Hypotheses.** Given existing literature on the relationship between women's important life goals and pregnancy risk behaviors, it was expected that:

***Hypothesis 1.*** Among women who have been sexually-active in the three months prior to their study completion, women's perception of the effect of pregnancy on life goals would predict their perception of the effectiveness of their contraceptive use at last sexual intercourse,

but that this relationship would be moderated by the women's self-efficacy with using contraceptives. For women with higher levels of contraceptive self-efficacy, those who perceive the effects of pregnancy as more negative on their life goals would be more likely to use contraceptives that they perceive as more effective at last sexual intercourse, compared to women who view the effect of pregnancy on their life goals as less negative.

***Hypothesis 2.*** Among women who have been sexually-active in the last 3 months prior to their study completion, perceptions of the effect of pregnancy on life goals would be related to the scientifically-established effectiveness of women's contraceptive use at last sexual intercourse, but this relationship would be moderated by women's self-efficacy using contraceptives. Among women with high levels of contraceptive self-efficacy, those who reported pregnancy would have a greater negative effect on their life goals would use more effective contraceptives, compared to those that viewed it as having a more positive effect on their life goals.

***Hypothesis 3.*** Among women who have been sexually-active in the three months three months prior to study completion, the perceptions of the effect of pregnancy on life goals would be related to the consistency with which they have used contraceptives over the last 3 months, after controlling for the number of times a woman had sex in the last 3 months. This relationship would be moderated by women's self-efficacy using contraceptives. For women with higher levels of contraceptive self-efficacy, those who perceived the effects of pregnancy on their life goals as more negative would use the contraceptives more consistently, compared to women who viewed the effect of pregnancy on their life goals as more positive.

***Hypothesis 4.*** After taking into consideration women's reported religiosity, and the availability of sexual partners in the last 3 months, women who viewed pregnancy as more likely

to negatively influence their life goals would have increased odds of reporting being abstinent in the last 3 months.

## Method

### Participants

Participants were 204 heterosexual women at the University of Wisconsin-Milwaukee, ages 18-24 ($M$= 20.29, $SD$ =1.66). Participants who were unable to use any sort of hormonal contraceptives were excluded from the study, as this limits the effectiveness of the contraceptive options available to them and lessens their contraceptive choice options (Trussell, 2011). To provide a similar baseline experience in planning a pregnancy, participants who had children, were pregnant, or were attempting to become pregnant at the time of the study were excluded. Women who were not heterosexual were also excluded from the analysis as their family planning needs and behaviors may vary (Burdette, Haynes, Hill, & Bartkowski, 2014; Mosher et al., 2012; Polis & Zabin, 2012). One participant was removed from analysis due to survey responses that were physiologically impossible, suggesting that this participant did not accurately complete the survey.

Racial/Ethnic identification in the sample was 68.1% white non-Hispanic, 8.8% Asian Pacific Islander, 7.8% Hispanic, 6.9% Biracial/Multiracial/Multiethnic identification, 5.4% African American/Black, 1.5% are Native American/Native Alaskan, 1% Middle Eastern, and 0.5% identified as other. Participants religious identification included 31.4% Catholic, 22.5% none, 21.6% Christian (not Catholic), 3.4% Agnostic, 3.4% Islamic, 2% Atheist, 1.5% Jewish, 1% Hindu, 0.5% Buddist, 0.5% Pagan/Neo-Pagan. Seven point eight percent of participants identified as other when asked for their religious identification. Three point nine percent of participants preferred not to identify their religion. One participant did not respond to the

religious identification question. Information on the division of racial/ethnic and religious identification based on sexual activity status can be found in Table 1.

Relationship status identification among women was 42.6% single, 35.8% dating, 19.1% in a committed relationship, 2.0% married, and 0.5% in an open relationship. Participants provided information on their estimated income. Thirty-one point nine percent of participants estimated that they have a take-home income of between $0-$850.00 a month, 22.1% stated their estimated take-home income was $851-$1,700, 12.3% reported a range of $1,701-$2,500, 2.9% from $2,501-3,500, 2.9% from $3,501-$4,200, 3.9% from $4,201-$5,000, .5% from $5,801-6,600, and 7.8% reported their monthly take-home income was greater than $6,600. An additional 15.7% reported that they did not know their monthly income estimate. Average student GPA was 3.39 (*SD* = 0.53). Twenty-two point one percent of participants were freshmen, 19.6% were sophomores, 26.0% were juniors, 22.1% were seniors, 8.3% were second year seniors, 1% were graduate students, and 1% identified as other. Information on the division of general demographic information across sexual activity status can be found on Table 2.

The Qualtrics survey was distributed through the University of Wisconsin-Milwaukee Sona System to female students. Recruitment for the study was done in courses in the Psychology Department, and participants who completed the study were eligible to receive extra credit for their participation in courses that accepts this form of extra credit.

**Materials and Measures**

**Inclusion criteria.** To confirm that participants meet study inclusion criteria, and to properly categorize women as abstinent (or not) in the last three months, the first page of the survey consisted of measures of sexual abstinence in the last three months, age, whether the participant is trying to become pregnant, is currently pregnant or has children, and have had/ will

have sex with men. Women were also asked if a medical provider told them that they cannot use any sort of hormonal contraceptive (question adjusted slightly from Kienzler, 2016). Inclusion questions in Appendix A.

**Additional demographics.** Participants were asked additional demographic questions including race/ethnicity, sexual orientation, marital status, religion, estimated net income, health insurance access, hormonal birth control access, and birth control information sources. These questions were previously utilized to gather demographic information in Kienzler (2016) and only adjusted slightly for the current work. Participants' GPA and year at university will also assessed. Additional demographic questions in Appendix B.

**Perceived difficulty getting pregnant.** Women were assessed for how difficult they believe it will be for them to get pregnant. They were asked, "How much do you agree with the following statement: If I was not using any birth control, was having vaginal sex regularly, and I wanted to get pregnant, it would be difficult or impossible for me to get pregnant." They were given a Likert-type scale from 1(strongly disagree) to 7(strongly agree). This question is formatted in a similar fashion to previous assessments of women's perceived infertility (Burdette et al., 2014; Higgins et al., 2012; Kinsella, Crane, Ogden, & Stevens-Simon, 2007; Polis & Zabin, 2012). This question was created specifically for added clarity with regards to participants' birth control use and the availability of the sexual partners, removing potential confusions that participants might experience.

**Relationship between pregnancy and goals.** To assess the effects of pregnancy on women's goal completion, participants goals were elicited and then these goals were assessed for specific outcomes of interest. Similar methodology to assess goals has been used in other studies (e.g. Frost, 2011; Frost & LeBlanc, 2014; Jackson et al., 2002; Lecci et al., 1994; Little, 1983a;

Little, 1983b; Little, 2005; Little, 2015; McGregor & Little, 1998; Palys & Little, 1983; Piumatti, 2018; Salmela-Aro et al., 2001; Vroman et al., 2009). In the current study there were multiple steps to establish the relationship between pregnancy and goals: important goals were elicited from the participants, the area(s) of their life that this goal falls into were determined, their motivations for those goals were assessed, the influence of pregnancy on the completion of these goals was assessed, and a final score for the perceived effect of pregnancy on important goals was calculated.

The first step of the method required having participants create a list of goals that they are currently working toward. Participants had the opportunity to list up to 20 goals. To elicit a list of important goals, a prompt was used, which included examples of potential important goals (Little, 1983b; Little, 2015; Palys & Little, 1983; Piumatti, 2018). This goal elicitation is similar to the personal project elicitation used in Personal Project Analysis methodology which is widely used methodology to assess individual's personal projects and goals (Frost, 2011; Frost & LeBlanc, 2014; Jackson et al. 2002; Lecci et al. 1994; Little, 1983a; Little, 2005; Little, 2015; McGregor & Little, 1998; Palys & Little, 1983; Piumatti, 2018; Vroman et al., 2009) and has been used previously to assess birth and family-related goals (Salmela-Aro et al., 2001). Goal elicitation prompt and goal identification task is in Appendix C.

Participants were encouraged to think about their life goals in five domains identified in Lecci et al. (1994). Examples of potential projects and goals were provided. Once goals were identified by participants, they were asked to identify what area of their life each goal would fit in. For each goal, participants were asked a question in this format, "Look at your choice for Goal 1. Select the areas of your life that you feel this goal fits into." Participants were then asked to identify which of the Lecci et al. (1994) domains they feel that this will fit into. Participants

had the following options: Academic life, Health, Leisure/relaxation activities, Family relationships, Relationships with friends. They could also select "Others" and list where they felt this goal fits. They could select all the goal categories that they believe applied for each goal they provided.

Once goals were identified, individual's motivation toward completing each goal was assessed. The scale assessing the participants' motivation to complete each goal from Piumatti (2018) was used. Piumatti reported this subscale was developed from a larger scale described in Little, 2005. (The full version of the scale is available in Little, 1983b). Use of these items as a scale achieved a Cronbach's alpha of .84 in previous work (Piumatti, 2018), and achieved a Cronbach's alpha of .81 in the current work.

In addition to assessing each goal on the motivation to complete that goal and categorizing each goal, the effect of pregnancy on each goal was assessed. Participants were asked, "If you had an unplanned pregnancy and birth while working toward this goal, how would that influence your ability to complete this goal?" It was answered on a Likert-type scale from 1 (Very Negative) to 4 (Not Positive or Negative/ No Impact) to 7 (Very Positive). Appendix D contains the effect of pregnancy questions.

***Calculating an overall score.*** To analyze the effect of pregnancy on a goal, a single variable was calculated for analysis. To create a single variable from Piumatti's (2018) motivation measures for each goal and the score for the question assessing the effect of pregnancy on each of these goals, a specific scoring process was followed.

First, Piumatti's (2018) three motivation scale items were summed for each goal. Then, each of the scores for the participants' assessment of the effect of pregnancy on each individual goal was rescored as follows: 1 was rescored as -3, 2 to -2, 3 to -1, 4 to 0, 5 to 1, 6 to 2, and 7 to

3. This rescoring was done so that the final score would accurately reflect the positive or negative influence that the pregnancy had on each goal. For each individual goal, the motivation questions' sum was multiplied by this rescored answer for that specific goal. This final score for each individual goal was then averaged together for each participant to represent the influence of pregnancy on important goals. This average was the participant's score of the effect of pregnancy on their goals.

**Effectiveness of contraceptive used.** To measure the effectiveness of contraceptives used at last sexual intercourse two steps needed to occur. First, the types of contraceptives that participants used at last sexual intercourse was identified. Once the contraceptives that participants used was identified, the effectiveness of participants' contraceptive use at last sexual intercourse was assessed in two ways: the participant's perceived effectiveness of their contraceptive option and the scientifically-established effectiveness of their contraceptive option.

***Identifying the contraceptives used.*** To identify the contraceptive options women used at last sexual intercourse, women were asked, "What type of birth control did you use the last time you had vaginal sex?" Participants selected from the following options: none, birth control pill, cervical cap, condoms, female condoms, diaphragm, hormonal arm implant, hormonal IUD/Mirena, non-hormonal IUD (copper IUD), hormonal patch, hormonal shot, natural family planning, Plan B, spermicide, sponge, sterilization (yourself), sterilization (your partner), withdrawal, vaginal ring, none and other. Women who selected other were offered a place to list the contraceptive they used. This question was adjusted slightly from one previously used in Kienzler (2016).

Participants were also asked two additional questions, "Please mark **ALL of the types of birth control YOU HAVE EVER USED**. (Check all that apply.)" Participants could respond

with all the contraceptive options listed above in the previous question, except none or other, and could select all of the options that apply to them. And they were asked "What type of birth control would you **prefer** to use to prevent pregnancy? (Please pick one option you like best. You do not need to have used this option before.)" (This third question was used in Kienzler, 2016.) For this question, women were able to select from options which were identical to the options from the contraceptive used at last sexual intercourse question.

These two additional questions serve two purposes. These two questions provided additional information about women's contraceptive preferences and history, which was informative about the sample. These two questions also allowed for the creation of additional distractor items to obscure the hypotheses in the current study. Participants needed to assess the contraceptive that they used at last sexual intercourse for its perceived effectiveness so that this information could be used in the analyses. To obscure the hypotheses, participants were asked to assess any contraceptives that they stated they would prefer to use to prevent pregnancy.

***Perceived effectiveness of contraception.*** Women's perceptions of the effectiveness of each contraceptive option they identified using at last sexual intercourse or reported preferring to use to prevent pregnancy was assessed. For each contraceptive option the participant identified, participants was asked, "If **YOU** were having vaginal sex regularly for a year, and using the ***CONTRACEPTIVE OPTION OF INTEREST*** during that time, how likely do you think it is that you would become pregnant in that time?" They responded on a Likert-type scale of 1 (very unlikely) to 7 (very likely). This acted as their assessment of the perceived effectiveness of each option for the participants themselves.

Two additional questions were asked for each contraceptive option participants identify. These questions provided additional information about the participants and acted as additional

distractor items to make it more difficult for participants to identify the hypotheses in the current study. Women were asked, "Based on what you know, if 100 women used ***CONTRACEPTIVE OPTION OF INTEREST*** and had vaginal sex regularly, how many do you think would get pregnant during a single year?" Participants had a space to provide an open answer to this question. They were also asked, "If the **AVERAGE** WOMAN was having vaginal sex regularly for a year, and using the ***CONTRACEPTIVE OPTION OF INTEREST*** during that time, how likely do you think it is that the average woman would become pregnant in that time?" Participants responded to this question using a Likert-type scale from 1 (very unlikely) to 7 (very likely).

These effectiveness questions were structured to fit the way that contraceptive effectiveness is determined in the research literature. Contraceptive effectiveness is defined as the likelihood that an individual will get pregnant in 1 year of using that contraceptive method (Trussel, 2011). As none of the women are currently pregnant or have children, we asked them specifically about assessing their chances of BECOMING pregnant in the future while using the contraceptive of interest to determine their view of the effectiveness of the contraceptive. As an additional advantage, using the effectiveness of contraceptives over the course of a year allowed for a longer future view, with greater time for contraceptive failure to occur. Also, a standard way of communicating contraceptive effectiveness is the percentage of women who will become pregnant over the course of a year using a specific type of contraceptive, which was the basis for the question that asked women to identify the number of women, out of 100, that would become pregnant in a year (Trussell, 2011). Appendix E contains the effectiveness of contraceptive used identification questions described above.

***Scientifically-established effectiveness of contraception.*** Post-survey the participants reported contraceptive options at last sexual intercourse assessed for their scientifically-established effectiveness based on the effectiveness of the contraceptive options for the average contraceptive user as reported in the literature. Trussell (2011) provided a numerical assessment of the effectiveness of each contraceptive option available, providing its effectiveness for the average user and for the perfect user. Their numerical assessment of each contraceptive option is based on the percentage of women that would become pregnant in a year if they were sexually-active and used this contraceptive during that same time frame. For each participant in the current study, the average user effectiveness for each contraceptive option the woman reports using at last vaginal intercourse was identified. The numerical assessment of the average user's ability using this contraceptive was used as the scientifically-established effectiveness of the contraceptive for each participant. Women who use dual methods received a score of average user effectiveness for the most effective option they use.

**Religiosity.** Participants' level of religiosity was assessed using two questions. First participants were asked, "How often do you attend religious services or events for your religious community or for your religious beliefs?" Participants were also asked, "How often do you pray, read religious texts, or incorporate religious activities/beliefs into your everyday life?" Participants responded on a scale of 1 (Never) to 5 (Very Often). These questions, while created specifically for the population of interest in the current study, were based on the standard questions assessing religious beliefs in the existing research on religious beliefs and sexual activity/abstinence. (Abbott & Dalla, 2008; Byers, Henderson, & Hobson, 2009; Hull et al., 2011; Landor & Simons, 2014; McQuillan et al., 2011; Sprecher & Treger, 2015; Trinh, Ward, Day, Thomas, & Levin, 2014; Uecker et al., 2008; Williams & Thompson, 2013).

**Vaginal sex in the last 3 months.** The number of times that women had sex in the last 3 months was assessed. Participants were asked, "Think about the last 3 months. How often did you have vaginal sex during that timeframe? Please provide a number." The response was open-answer.

**Consistency of contraceptive use.** The consistency of participants' contraceptive use in the last 3 months was assessed. Participants were asked, "Think about the last 3 months. How many times did you have vaginal sex WITHOUT using any birth control? Please provide a number." Participants were able to enter the exact number of times this occurred and if participants stated a range the lowest number was used to be conservative. Participants were also asked, "Think about the last 3 months. How many times did you have vaginal sex WITHOUT using any type of hormonal birth control or condoms? Please provide a number." This provided additional information about the contraceptive use within the sample, providing more details about the consistency of contraceptive use with what are widely considered the more effective contraceptive options. Also, this additional question acted as a distractor question, so that participants would have more difficulty deducing the exact hypotheses being analyzed in the current study.

**Availability of a sexual partner.** The availability of sexual partners during the past 3 months was established. Participants were asked, "Please state how much you agree with the following statement: During the last 3 months it was difficult to find someone I would want to have sex with." Participants responded on a Likert-type scale where 1 (strongly disagree) to 7 (strongly agree).

**Self-efficacy using contraceptives.** Participants' self-efficacy using contraceptives was measured using Levinson's (1986) Contraceptive Self-Efficacy Scale (CSE Scale). This 15-item

scale was developed to measure adolescent women's self-efficacy negotiating (Heinrich, 1993; Levinson, 1986; Levinson, Wan, & Beamer, 1998). The CSE scale has been described as follows, "The CSE scale measures the strength of a sexually-active teenage woman's conviction that she should and can control sexual and contraceptive situations to achieve a contraceptively protected priority (Levinson et al., 1998, p.774)." This scale contains four factors which relate to women's efficacy in using contraceptives (Levinson, 1986) which are parts of the experience of contraceptive self-efficacy. According to Levinson (1986, p.356) these four factors contribute to our understanding of contraceptive self-efficacy: "(a) conscious acceptance of sexual activity by planning for it (i.e., thinking and talking about sex and seeking contraception), (b) assumption of responsibility for the direction of sexual activity and for using contraception, (c) assertiveness in preventing sexual intercourse in an involved situation, and (d) strong feelings of sexual arousal." Research has since confirmed the appropriateness of the use of this scale with college women and minority groups when investigating women's self-efficacy using contraceptives (Baugh & Davis, 2016; Levinson, 1998; Levinson et al., 1998; Heinrich, 1993).

An example question from the scale was, "Sometimes I just go along with what my date wants to do sexually because I don't think I can take the hassle of trying to say what I want." These questions were answered on a Likert-type scale of 1 (not at all true of me), 2 (slightly true of me), 3 (somewhat true of me), 4 (mostly true of me), 5 (completely true of me). Items were scored per the instructions in Levinson (1998). The scale was adjusted slightly, changing the wording boyfriend to man or male partner, to more accurately reflect potential array of experiences for the current sample while maintaining focus in on individual's interactions with men/male partners.

Previous use of the CSE scale has found that the measure has content validity, face validity, and Cronbach's alphas of .73 and .83 (Hovsepian, Blais, Manseau, Otis, & Girard, 2010; Levinson, 1986), while Levinson (1998) stated that it has previously had .73 or higher Cronbach's alphas in their investigations. The current study found a Cronbach's alpha of .79.

**Procedure**

The survey materials were distributed through Qualtrics. Participants accessed the survey link through the participants' Sona survey account. During recruitment, and in recruitment materials, participants were directed to the Sona system and informed that there would be initial pre-screening questions to determine if they are eligible to complete the survey.

After selecting the link on the Sona page participants received informed consent. Immediately after consenting, prospective participants answered the inclusion questions in the prescreening to determine eligibility to complete the survey. This first page also determined whether participants would take the version of the survey for participants who had sexually abstinent in the last 3 months prior to completing the survey, have never had vaginal sexual intercourse with a man prior to completing the survey, or the version of the survey for participants who have been sexually-active in the last three months prior to completing the survey. If the participant taking the survey was eligible, as determined by the first page prescreening, they were able to complete the survey for extra credit immediately after answering these questions. Women who failed to meet the inclusion criteria were taken to a message at the end of the survey. This message thanked the participants for their interest and informed them that they are not eligible to complete the study.

Eligible participants were directed to the main body of the survey. To provide participants with some guidance on how far along they were in the survey page numbers started

at 1 on this page and will inform them of the number of pages remaining. Those page numbers were used in this document for the remainder of the procedure to help explain the order of materials provided. On the first page, participants answered the general demographic questions that do not involve contraceptive use. After identifying their religion in the demographic section, participants answered the religiosity questions.

Participants provided information about their contraceptive use on the next page. This survey page included demographic questions that are specific to contraceptive use (current health insurance, access to affordable hormonal contraceptive choices, contraceptive information). After demographic questions about contraceptive use were answered, participants' perception of their difficulty in getting pregnant was assessed. Sexually-active participants then identified the types of birth control they have ever used, the types of birth control they used at most recent vaginal intercourse, and the types of birth control they preferred to use to prevent pregnancy. (These three questions were used to generate the survey questions for the sixth page, questions were participants rated the effectiveness of the contraceptive options that they provided here.) Participants who have been abstinent were only asked to identify the types of birth control they prefer to use to prevent pregnancy, they were not asked about previous contraceptive use. Participants who report being sexually-active in the last three months were then assessed for the number of times they have had vaginal intercourse in the 3 months prior to survey completion and contraceptive consistency for the last 3 months. Finally, all participants were then asked about the availability of sexual partners.

The third page of the main survey document provided participants with the Contraceptive Self-Efficacy Scale. The fourth page provided the instructions for participants to identify and list their goals. On this page participants listed their goals. The remainder of the

assessment of the participants' life goals was provided further down in the survey (once participants committed to their goals).

The fifth page of the main survey contained the second half of the measure of perceived effectiveness of participants' contraceptive use. This portion of the questions included participants' ratings of how effective they believed each of contraceptive options they had previously identified as used at last sexual intercourse or as their preference to prevent pregnancy. The sixth page included the motivation toward each goal portion of the assessment of the effect of pregnancy on life goals. Participants were also asked to identify the category of life each goal falls into. The final page of the survey included the final portion of the measurement of the influence of pregnancy on life goals, where participants report their perceived effect of an unplanned pregnancy on the completion of each of their goals. At the bottom of this page they were instructed to click to the next page to complete the survey and collect their extra credit.

**Statistical Analyses**

Summaries of each analysis of a hypothesis, including related criterion and predictor variables, are provided in Table 3.

**Perceived effect of pregnancy on goals and contraception.** Three different analyses were used to explore whether there is a relationship between women's perception of the effect of pregnancy on their important goals and each of three contraceptive behaviors of interest (perceived contraceptive effectiveness, scientifically-established contraceptive effectiveness, and consistency of usage), and whether, as hypothesized, those relationships were moderated by women's contraceptive self-efficacy. Only women who were sexually-active in the last three months were included in these analyses.

***Perceived effectiveness of contraception.*** The relationship between students' perception of the effect of pregnancy on life goals and the women's perception of the effectiveness of the contraceptive they used at last sexual intercourse, and whether this relationship is moderated by contraceptive self-efficacy was tested using a hierarchical regression analysis (hypothesis 1). This hierarchical regression analysis used women's score of the effectiveness of the contraceptive at last sexual intercourse as the criterion variable. The predictors in this analysis were: women's calculated score for the effect of pregnancy on goals, women's score on the Contraceptive Self-Efficacy Scale, and the interaction between these two variables. These predictor variables were centered in the analysis to limit issues of multicollinearity.

***Scientifically-established effectiveness of contraception.*** A multinomial logistic regression was used to investigate the relationship between the scientifically-established effectiveness of contraception (per Trussell, 2011) and women's perception of the effect of pregnancy on their life goals, and whether that relationship is moderated by contraceptive self-efficacy (hypothesis 2). The predictors in the model were women's scores of the effect of pregnancy on life goals, their contraceptive self-efficacy, and the interaction between the two. These predictor variables were centered in the analysis to limit issues of multicollinearity.

The criterion variable in this model contains four categories. These categorizations are based on the effectiveness/types of contraceptives that participants reported using at last sexual activity. Category 1 was the most effective contraceptive options (all physician prescribed options except those in Category 2), Category 2 contained the slightly less effective hormonal contraceptive options (birth control pills and vaginal rings), Category 3 included condoms (effective barrier option), and Category 4 were the two ineffective options participants selected

(withdrawal and none). Category 1, the group containing the most effective hormonal contraceptive options, was used as the comparison group in the multinomial analysis.

Multinomial analysis was selected, rather than a regression analysis, due to the fact that participants' scientifically-established contraceptive effectiveness was more polarized than expected. Women either used extremely effective contraceptives, very effective contraceptives (hormonal or barrier), or very ineffective/no contraceptives. Contraceptive options that fell between these options were largely unselected. This created some concerns about the appropriateness of opting to treat this option as continuous, given the nonexistence of the data between the two polarized extremes. For this reason, the change was made to treat this as a clearly categorical outcome, rather than a continuous outcome.

***Contraceptive consistency.*** A hierarchical regression analysis was used to explore whether there is a relationship between women's perception of the effect of pregnancy on their important goals and the consistency with which they have used contraceptives in the last three months (hypothesis 3). This analysis contained the identical predictor variables as the other hierarchical regression analysis: effect of pregnancy on goals, contraceptive self-efficacy, and the interaction between these two predictor variables. These predictor variables were centered in the analysis to limit issues of multicollinearity. The criterion variable was the number of times the participants reported having sex in the last three months without using any type of birth control.

Hypothesis 3, and initial analysis plans, included the number of times participants had sex as a control variable, but this variable was removed from the analysis once data were collected. The variable violated assumptions of homoscedasticity, normality, and potentially, linearity. The concerns that it violated the assumption of linearity was supported by its lack of a

significant correlation with the outcome of interest, consistency of contraceptive use in the last three months, $r = .04$, $p = .59$. Given that it was not crucial to the analysis as a control variable, it was not correlated to the outcome of interest, and it potentially negatively impacted the effectiveness and parsimony of the model, it was removed from the statistical analysis.

**Perceived effect of pregnancy on goals and abstinence.** A logistic regression analysis was used to determine the relationship between women's perception of the effect of pregnancy on their goals and whether or not they have maintained abstinence in the last 3 months. The outcome in this analysis was whether or not women report being sexually-active in the last three months. The predictor in this analysis was women's calculated score of their perception of the effect of pregnancy on their life goals. Women's score on the availability of sexual partners was also included in the analysis as a control variable.

Religiosity was initially included in the analysis as a control variable, in addition to our current control variable of the availability of sexual partners. It was removed from the model, however, after initial analysis found it to be violating the assumption of linearity in the logit.

**Additional analyses.** Correlations were completed between participants report of the perceived effectiveness of the contraceptive they used at last sexual intercourse and the scientifically-established effectiveness. An initial correlation was done between the two variables. Then to address the concerns noted earlier in this statistical analysis section that the scientifically-established effectiveness of the contraceptive lacking central scores, and only having scores from the ends of the spectrum, correlations between the perceived contraceptive effectiveness and the scientifically-established contraceptive effectiveness were calculated for each end of the spectrum. One correlation for effective options was completed for the most

effective options (physician prescribed contraceptives) and one correlation for less effective/ineffective options (condoms, withdrawal, none).

## Results

### Reported Sexual Health Information, Access, Informants, and Preferences.

Of the 204 women in the sample, 154 reported having had vaginal sex in the last 3 months (75.49%). Fifty women (24.51%) reported that they did not have sex in the last three months. When asked about whether they have ever had sex with a man, 37 women in the sample reported that they have never had sex (18.14%).

When asked to list any birth control that they have ever previously used, 62.3% of women have used the birth control pill and 38.2% percent of women have previously used Plan B. Among other effective hormonal contraceptive options, 11.3% of women have used the hormonal arm implant, 11.3% report having used the hormonal shot, 10.3% a hormonal IUD, 3.9% the non-hormonal/copper IUD, 3.4% the vaginal ring, and 2% report using a hormonal patch. Among barrier methods, 69.1% report previously using condoms, .5% of women used the cervical cap, 0.5% the female condom, 0.5% reported using a sponge, and 0.5% report having used a diaphragm. Two percent of women report previous use of spermicide. One half a percent report partner sterilization as a previous birth control method used. Withdrawal has been used by 28.9% of women. Two point nine percent of women report using natural family planning previously and 2% of women report having had sex without using any type of birth control when asked to list birth control options. Participants had a mean score on their contraceptive self-efficacy measure of 74.20 (*SD* = 9.07; Median = 75; Mode = 80), from a potential range of self-efficacy scores of 18 to 90, suggesting a reasonably high mean contraceptive self-efficacy score for this sample.

A vast majority of women reported that they have access to health insurance (93.1%), and report that they knew they have access to affordable contraceptive options (89.7%). Also, a vast majority of women list physicians and/or medical providers as a source of contraceptive information (92.6%) and a lot of young women report their mother or maternal guardian (52.0%) as a source of contraceptive information. When considering consistency of contraceptive use among women who have been sexually-active in the three months prior to the survey, 71.4% reported never having sex without using contraception during that time. Among women who have been sexually-active in the three months prior to completing the survey, 8.44% reported that they had sex without using contraception 10 times or more during those three months. Table 4 contains additional demographics on health insurance information, contraceptive self-efficacy, and contraceptive preferences, with comparisons based on participants' sexual activity status. Table 5 contains additional details on participants' sources of contraceptive information.

**Life Goals for College-aged Women**

Overall, women reported an average of 7.65 important goals (*SD* = 3.57), with a range of one goal to 20 goals. The range of scores for women's perception of the effect of pregnancy on important goals was from -63 to 63, with a mean score of -16.63 (*SD* = 22.16). Among this sample of women, 13.2% had a positive score (suggesting that pregnancy could positively influence their important life goals) for the perception of the effect of pregnancy on life goals and 2.5% had a score of zero (suggesting a neutral effect of pregnancy on life goals). When asked to categorize each of their life goals, 22.96% of goals reported were related to the participating women's academic life, 9.62% of the goals were related to health, 11.67% of goals were related to leisure activities, 8.27% of goals were related to family relationships, 5.58% to relationships with friends, 13.02% reported that their goal was related to another category, and

28.86% of goals were categorized as multiple goal categories. In total, 1,559 goals were reported by the sample of women.

Among women who have been sexually-active in the three months prior to the survey, women reported an average of 7.65 important goals (*SD* = 3.47) and a range of 1 to 20 goals. The range of scores for women's perception of the effect of pregnancy among sexually-active women was from -63 to 63, with a mean of -15.95 (*SD* = 23.40). Women who have been sexually-active in the three months prior to the survey, 13.0% had a positive score for the effect of pregnancy on their life goals and 3.2% had a zero score for the effect of pregnancy on life goals. Among women who had not been sexually-active in the last three months prior to completing the survey, they reported an average of 7.66 goals (*SD* = 3.87) and a range of one goal to 20 goals. Women who have not been sexually-active in the last three months had a score range of -51 to 31.20 for their perception of the effect of pregnancy on life goals. Their average score was -18.72 (*SD* = 17.86). Women who had not been sexually-active in the three months prior to the survey, 14.0% had a positive score for the effect of pregnancy on their life goals.

Among women who had ever been sexually-active prior to the survey, women reported an average of 7.55 important goals (*SD* = 3.43). Women in this group had a range in the number of goals from 1 to 20. The range of scores for women's perception of the effect of pregnancy among women who have ever been sexually-active was -63 to 63. Their average score was -16.53 (*SD* = 23.03). Among women who had ever been sexually-active prior to the survey, 13.2% had a positive score for the effect of pregnancy on their life goals and 3.0% had a neutral score. Among women who had never been sexually-active, women reported an average of 8.11 important goals (*SD* = 4.14). Women who have never been sexually-active had a range in number of goals from 3 to 20. Among women who have never been sexually-active, the average

score for their perception of the effect of pregnancy on their important goals was -17.07 (*SD* = 17.98). They had a range of scores from -51 to 31.20 for this measure. Among women who had never been sexually-active prior to the survey, 13.5% had a positive score for the effect of pregnancy on their life goals. Participants appear to largely believe their contraceptive was effective, with a mean perceived effectiveness score of 2.05 (*SD* = 1.55; range of 1 to 7).

**Sexually-Active Women**

Sexually-active women were asked to identify what contraceptives they used at last sexual intercourse. Of the sexually-active women, 46.8% reported using the birth control pill as their most effective contraceptive option at last sexual intercourse, 15.6% used condoms, 10.4% reported using the hormonal arm implant, 10.4% reported using the hormonal IUD, 3.9% reported using the hormonal shot, 2.6% reported using withdrawal, 1.9% reported using a non-hormonal IUD, and 0.6% reported using the vaginal ring. Of the sexually-active women, 7.8% reported using no contraceptive option at last sexual intercourse.

**Life goals and perceived contraceptive effectiveness.** It was hypothesized that the perception of the effect of pregnancy on life goals would be related to women's perceptions of the influence of pregnancy on life goals, but that this relationship would be moderated by women's contraceptive self-efficacy. The overall hierarchical regression model testing this hypothesis was significant and explained 4.8% (Adjusted $R^2$) of the variability in the perceived effectiveness scores, $F(3,150) = 3.57$, $p = .016$.

The first step in the model, including contraceptive self-efficacy (centered) and the perception of the effect of pregnancy on important goals (centered), was significant and explained 4% of the variability (Adjusted $R^2$), $F(2,151) = 4.20$, $p = .017$. In this step in the model, contraceptive self-efficacy significantly predicted the perceived effectiveness of the

contraceptive that the women used at last sexual intercourse, $B$ = -0.03, $t$ = -2.33, $p$ = .021. For every one-point rise in women's self-efficacy score, the model predicted that women will report a 0.03 drop in women's perception of their risk of pregnancy using the contraceptive they used at last sexual intercourse. (Higher scores equal higher perceived likelihood of getting pregnant.) The perception of the effect of pregnancy on important life goals was not a significant predictor of the perception of the effectiveness of contraceptive at last sexual intercourse in this step in the model, $B$ = .01, $t$ = 1.73, $p$ = .085.

When the interaction term was added to the model in the second step it did not add significantly to the model, so no moderation was found , $R^2change$ = .014, $Fchange(1,150)$ = 2.27, $p$ = .134. In this block in the model, contraceptive self-efficacy is a significant predictor, $B$ = -0.03, $t$ = -2.15, $p$ = .034, continuing the same relationship between contraceptive self-efficacy and perceived contraceptive effectiveness seen in the last step. Interestingly, in this block the effect of pregnancy on important life goals was a significant predictor of the women's perception of the effectiveness of the contraceptive used at last sexual intercourse, $B$ = 0.01, $t$ = 2.01, $p$ = .046. As this change is due to the collinearity between the added interaction variable and it was not significant in previous steps, and the current work's intention is to determine if the effect of pregnancy on life goals could potentially influence effectiveness of contraceptives used, this variable will be treated as not significant in the remainder of the work. This is done to maintain a conservative interpretation of the findings. The interaction was not a significant predictor, $B$ = -.001, $t$ = -1.51, $p$ = .134. Table 6 displays the additional statistical information, such as standardized betas and zero-order correlations, for both steps of this analysis.

**Life goals and established contraceptive effectiveness.** A multinomial logistic regression analysis was used to investigate the hypothesis that the perceived effect of pregnancy

on important life goals would predict the scientifically-established effectiveness of contraceptive choice at last sexual intercourse, but that this relationship would be moderated by contraceptive self-efficacy. Categories for the multinomial regression were established based on the scientifically-established effectiveness of most effective contraceptive used at last sexual intercourse by participants. The categories were: most effective doctor prescribed contraceptive options (all doctor prescribed options selected except pill and vaginal ring, $n = 41$), less effective hormonal contraceptive options group (birth control pill and vaginal ring, $n = 73$), condoms group ($n = 24$), and ineffective contraceptive/no contraceptive group (withdrawal and none, $n = 16$). The most effective hormonal contraceptives group acted as a comparison group in this analysis.

The overall model was significant and explains 11.8% of the variability (Nagelkerke Pseudo $R^2 = .118$), $\chi^2(9, N = 154) = 17.65$, $p = .039$. The deviance goodness-of-fit test was not significant, $\chi^2$ (447, $N = 154$) = 361.54, $p = .999$. The Pearson goodness-of-fit test was significant, $\chi^2$ (447, $N = 154$) = 500.43, $p = .041$.

Likelihood Ratio testing, considering the -2 log likelihoods between the reduced and final model, found that the participant's contraceptive self-efficacy score (centered) significantly contributed to the final model, $\chi^2$ (3, $N = 154$) = 9.67, $p = .022$. Participants' score of the effect of pregnancy on their life goals (centered) did not significantly contribute to the final model, $\chi$ (3, $N = 154$) = 5.21, $p = .157$. The interaction between these two predictors also did not significantly contribute to the model, $\chi^2(3, N = 154) = 6.79$, $p = .079$.

When comparing participants who used ineffective/no contraceptives to participants that used the most effective doctor prescribed contraceptive options, contraceptive self-efficacy significantly changed the odds of group membership. Women who reported higher levels of

contraceptive self-efficacy had decreased odds of being in the ineffective/no contraceptive groups and increased odds of being in the most effective contraceptive groups, *Exp(B)* = 0.91, *Wald* = 7.33, *p* = .007. The perceived effect of pregnancy on life goals did not change the odds of group membership, *Wald* = 1.31, *p* = .252. The interaction between the perceived effect of pregnancy on life goals and contraceptive self-efficacy was not significant, there is no evidence of contraceptive self-efficacy acting as a moderator, *Wald* = 2.04, *p* = .153.

The other two groups, less effective hormonal contraceptive options group and condoms group did not have any significant findings. Table 7 displays the additional statistical information for this analysis.

**Life goals and consistency of contraceptive effectiveness.** A hierarchical regression analysis was used to explore the hypothesis that the perception of the effect of pregnancy on important goals would predict the consistency with which women used contraceptives in the last three months, but that this relationship would be moderated by contraceptive-self efficacy. The overall hierarchical regression model was significant, and explained 4.1% of the variability in the criterion (Adjusted $R^2$), $F(3,150) = 3.17$, $p = .026$. The first step in the model, containing the predictor variables contraceptive self-efficacy (centered) and the perceived effect of pregnancy on important goals (centered), was significant, $F(2, 151) = 4.76$, $p = .01$. Students' perception of the effect of pregnancy on their life goals significantly predicted reported consistency of contraceptive use over the last three months, $B = .04$, $t = 2.46$, $p = .015$.Contraceptive self-efficacy did not add significantly to the model, $B = -0.08$, $t = -1.87$, $p = .064$.

The second step in the model included the interaction term, which did not add significantly to the model, Adjusted $R^2change = 0.00$, $Fchange(1,150) = 0.06$, $p = .812$. With the interaction term added to the model, contraceptive self-efficacy was not significant, *B* = -

0.08, $t$ = -1.88, $p$ = 0.06. There was also no significant interaction between contraceptive self-efficacy and the perception of the effect of pregnancy, offering no support for a moderator, $B$ = .000, $t$ = 0.24, $p$ = .812

Women's perception of the effect of pregnancy was significant in this step as well, $B$ = 0.04, $t$ = 2.35, $p$ = .02. Women who perceived the effect of pregnancy as more positive were more likely to report a higher number of vaginal sex acts without the use of birth control. This relationship can be seen in Figure 1, which provides a scatterplot displaying the relationship between the number of times participants failed to use contraceptives in the last three months and the perception of the effect of pregnancy on life goals. Table 8 displays additional statistical details of this regression model.

**Sexually-Active vs. Abstinent Women and Goals**

A logistic regression analysis was used to investigate the final hypothesis in the current study, that after controlling for the availability of sexual partner, participants' perceptions of the effect of pregnancy on important goals would predict whether or not participants reported being abstinent in the last three months. The overall logistic regression model was significant, $\chi^2(2, N = 204) = 56.51$, $p$ <.001. The overall model explained 36% of the variability in participants' reports of abstinence in the last three months (Nagelkerke $R^2$ = .360). The Hosmer and Lemeshow goodness-of-fit test was not significant, $\chi^2(8, N = 204) = 3.13$, $p$ = .926. The overall model correctly predicted women who said yes to having vaginal sex in the last three months 92.2% of the time, and women who said no 48.0% of the time. The overall percentage correct was 81.4%.

This logistic regression contained two blocks, one containing the control variable and the second adding the predictor variable. The first block contains the control variable, the availability of sexual partners in the last 3 months (this variable has a square root

transformation). The second block added the perceived effect of pregnancy on important life goals. The first block added significantly to the model, $\chi^2(1, N = 204) = 56.51$, $p < .001$. The square root of the score for the availability of sexual partners over the last three months significantly changed the odds of an individual being sexually-active in the last 3 months, Wald = 45.238, $p < .001$.

The second block in the model did not add significantly to the model, $\chi^2(1, N = 204) = 0.00$, $p = .987$. In this final block of the model, the effect of pregnancy on life goals did not significantly change the odds of reporting being sexually-active, *Wald* = 0.00, $p = .987$). The square root transformation of the availability of sexual partners during the last three months did change the odds of reporting being abstinent, *Wald* = 44.72, $p < .001$. For every 1 point increase in participants square root transformation of their partner availability (partners were viewed as less available as this score increases), participants had an increased odds of reporting that they had been abstinent in the last three months by a factor of 8.77. Table 9 displays additional statistical details of this logistic regression model.

**Perceived vs. Scientifically-established Contraceptive Effectiveness.**

Sexually-active women were asked to rate the likelihood that they would become pregnant in the next year if they had vaginal sex regularly and exclusively used the most effective option that they used at last sexual intercourse. They rated the likelihood of becoming pregnant on a Likert-type scale of 1 (very unlikely) to 7 (very likely). Table 10 displays the percentage of women in each perceived effectiveness category that used a specific contraceptive option.

Women's perception of the likelihood of becoming pregnant was correlated with the scientifically-established risk of the average user becoming pregnant using this contraceptive

over the course of a year. There was a significant positive correlation between women's perception of their contraceptive effectiveness and the scientifically-established effectiveness of that contraceptive for the average user, $r = .627$, $p < 0.001$. Participants who used options with increased risk of pregnancy were more likely to report perceiving their risk of becoming pregnant as higher.

The data were divided into categories of effective hormonal contraceptive options ($n = 114$) and less effective contraceptive options ($n = 40$), and additional correlations were run. For effective contraceptive options, there was a significant correlation between participants perceived contraceptive effectiveness and the scientifically-established effectiveness of the contraceptive option, $r = .186$, $p = .047$. Among participants who used the more effective options, there was a weaker correlation between contraceptive effectiveness and pregnancy risk (when compared to all of the sexually-active women), but the correlation is still significant. Women who report using a contraceptive option with increased risk of getting pregnant for the average user are more likely to report a greater perceived risk of getting pregnant themselves while using that contraceptive option.

For less effective contraceptive options, there was also a significant correlation between scientifically-established risk of pregnancy for the last contraceptive option used and the perceived effectiveness of that contraceptive option, $r = .546$, $p < .001$. For this group, women who report using a contraceptive option with an increased scientifically-established risk of pregnancy for the average user also are more likely to report a greater perceived risk of pregnancy, compared to those who had a decreased scientifically-established risk of pregnancy.

## Discussion

Similar to previous findings with adolescents (Brückner et al., 2004; Jumping-Eagle et al., 2008; Richards & Sheeder, 2014), not all of the young college women in this study felt that pregnancy would negatively impact their important goals. This may be counterintuitive given the financial obligations of college and pregnancy (Aiken et al., 2018; Economic Policy Institute, 2016; Finer et al., 2005; Foster et al., 2008; Hornack et al., 2010; Lino et al., 2017; National Center for Education Statistics, 2015; 2018; Tran, 2014). In the current study, 13.2% had scores that suggested that overall pregnancy could be viewed as having a positive influence on their life goals.

As expected, there were subsamples of women in the current study who were at various levels of risk for an unintended pregnancy. Importantly, women selected for this sample all reported that they were not pregnant, trying to become pregnant, and did not have children, so any action that increased their risk of pregnancy would theoretically result in an unintended pregnancy for these participants. As no contraceptive is completely effective, 75.49% of the women in this study had been at least at slight risk of an unplanned pregnancy in the last three months, as they all had sex. Also, among those that are sexually-active, 10.4% used either withdrawal as their most effective birth control at last sexual intercourse (which is a very ineffective method) or did not use a method of birth control at last sexual intercourse. When considering consistency of contraceptive use over the last 3 months for this group of women, only 71.4% of sexually-active women report always using contraceptives during sex in the last three months. Inconsistent contraceptive use is hardly a surprise, as previous research has documented that more than 54% of people in their 20's were willing to have sex without using birth control (Foster et al., 2012). While there are compelling reasons to believe that young

women in college would choose not to become pregnant (cost of pregnancy, time from education and career development, etc.), there are various levels of risk that college-aged women appear to still be willing to take.

Also consistent with previous findings with adolescents (Bell et al., 2013; Gomez-Scott & Cooney, 2014; Jumping-Eagle et al. 2008; Kogan et al., 2013; Luster & Small, 1994; Sipsma et al., 2011), the current study does suggest that there is a relationship between women's perception of the effect of pregnancy on their important life goals and their pregnancy avoidance behaviors, specifically, the consistency of contraceptive behaviors among young college students. Women's perception of the effect of pregnancy on important goals was found to be related to women's reported consistency of contraceptive use in the last 3 months. Women whose scores suggested that the overall effect of pregnancy on their important goals was more positive were likely to report a higher number of episodes of sex without contraceptives, compared to those whose scores suggest a more negative effect. These findings also align with previous work that has found that people report they are more willing to have unprotected sex if they would like a child in the next 3 years (Foster et al., 2012) and research which has reported that women who perceive pregnancy as more positive appear to experience an increased rate of pregnancy (Rocca, Harper, Raine-Bennett, 2013). Women's attitudes about pregnancy, and how pregnancy fits into their lives, does seem to offer a potential explanation of women choosing to take actions which put them at greater risk of what would have been previously defined as an unplanned pregnancy.

In contrast to the findings about contraceptive consistency, one of the key findings was the lack of relationship between the participants' perception of the effect of pregnancy on their life goals and BOTH the perception of the effectiveness of the contraceptive used at last sexual

intercourse and the scientifically-established effectiveness of the contraceptive used at last sexual intercourse. It had been expected that participants' perception of the effect of pregnancy on important goals would predict both of these outcomes.

The finding that participants' perception of the effect of pregnancy on their life goals did not predict the perceived effectiveness of the contraceptive option or the scientifically-established effectiveness of the contraceptive option might be, in part, an artifact of using college students as a sample, as this group will largely (but not universally) choose effective contraceptive options (Brunner Huber & Ersek, 2009; Ingersoll et al. 2008; Kienzler, 2016; Kusseling et al., 1995; Oswalt & Wyatt, 2014). This sample certainly showed a preference, though not an overwhelming preference, for effective contraceptive options. In other populations, with fewer women who choose to use scientifically-established effective contraceptive options, a relationship between the perception of the effect of pregnancy on life goals may exist.

Women's perception of the effect of pregnancy on life goals was also not found to be related to whether or not they were abstinent in the last 3 months. The lack of a relationship between sexual abstinence in the last three months and perceived effect of pregnancy on important goals may also have been, at least in part, due to the participants' widely reported availability of effective hormonal contraceptive options and the high level of access that this sample had to health insurance. Also, most students' in this university have access to the university health center and pharmacy for pregnancy prevention information and tools. Participants who choose not to remain abstinent in this setting can take steps to avoid pregnancy, such as consistent use of highly effective contraceptive methods, without remaining abstinent. Given the wide availability of effective contraceptive options for this sample of women, there

may be little to no pressure to remain abstinent as a way to avoid pregnancy if an attractive sexual partner is available.

**Continuing to Reconsider Unplanned vs. Planned Pregnancy**

The relationship between contraceptive consistency and the perception of the effect of pregnancy on important goals again challenges the idea of pregnancies being strictly planned and unplanned. While all women in this study report that they are not currently trying to become pregnant or currently pregnant, those who used contraceptives less consistently were also likely to be those with higher scores on the effect of pregnancy on their life goals. Those acts of unprotected sex could, theoretically, result in a child which is unplanned. Yet, that pattern does not suggest a child that would be viewed as a serious disruption to what women plan to do. After all, Trussel et al. (1999) noted that only 68% of the pregnancies that occurred when a woman is using contraception were classified as unintended by those experiencing the pregnancy. And 90% of those that had an intended pregnancy resulting from contraceptive failure were happy or very happy about becoming pregnant (Trussell et al., 1999). It is possible that the relationship between the perception of the effect of pregnancy on a woman's life goals and their contraceptive consistency could offer a potential partial explanation of these findings. This finding regarding consistency of use, to some extent, could also potentially relate to previous findings that 23% of women ages 25-45 (just older than our current sample) report being okay with getting pregnant and being okay with not getting pregnant (McQuillan et al. 2011) and work with Askelson et al. (2015) who noted that there are women who are ambivalent about whether or not they want to become pregnant.

It may be that a proportion of women who use contraceptives inconsistently feel positively about pregnancy. Or conversely, women who have difficulty with using contraceptives

consistently react to that fact by feeling more positively about pregnancy as a coping mechanism. After all, Ersek, Huber, Thompson, and Warren-Findlow (2011) noted that in their sample 39% of the university women surveyed were dissatisfied with their contraceptive because it was difficult to remember to take and 14% reported that it was inconvenient to take. And there is evidence that women will report having sex, even when they know that they have missed oral contraceptive pills. Brunner Huber et al. (2006). found that 26.4% of contraceptive users who missed contraceptive pills prior to or after their placebo week (potentially making their contraceptives ineffective) still had sexual intercourse on those days, despite the fact this increased their risk of pregnancy. How unintended a pregnancy is under these circumstances can certainly be considered debatable, but it could be that difficulty avoiding contraceptive failure leads to more positive feelings towards pregnancy.

Ultimately, treating every pregnancy as either planned or unplanned, regardless of the context surrounding women's view of conception PRIOR to the act of conception, may be leaving out an entire area of preconception care and pregnancy avoidance care that may be needed. Certainly, previous work by Stones, Stulberg, and Kottenstette (2017) found that women in Chicago, IL, when asked what they wanted from their care, indicated more information on pregnancy planning (rather than strictly pregnancy avoidance information). Adopting these broader educational practices, focused on a more complex view of pregnancy's role in women's lives, has the potential to be beneficial to both pregnant women and to women avoiding pregnancy.

**The Role of Contraceptive Self-Efficacy & Perceptions of Effectiveness**

In the current study, higher levels of contraceptive self-efficacy were linked to increased perceived contraceptive effectiveness and increased likelihood of using a scientifically-

established contraceptive effectiveness when comparing those using withdrawal or no contraceptives to those using the most effective physician prescribed contraceptives. This mirrors previous work, which has previously established that contraceptive self-efficacy appears to be a critical piece of effective contraceptive use, with those with higher levels of contraceptive self-efficacy having improved pregnancy avoidance outcomes (Baugh & Davis, 2016; Heinrich, 1993; Levinson et al., 1998; Longmore et al., 2003). Contraceptive self-efficacy did not predict the consistency of contraceptive use, however, suggesting a certain variation in women's sexual experiences that could come from changes between sexual experiences, such as changes in sexual partner (we do not have information on how this varied in three months in the current study), in a way that is not yet captured in the research. One might have expected for higher levels of contraceptive self-efficacy to predict fewer episodes of sex without contraception, as women should be better at negotiating the use of contraceptives. Why this relationship did not bear out is not established.

Increasing contraceptive self-efficacy for women may assist them in improving the effectiveness of their contraceptive choices, and by and large, women do seem to be aware of the effectiveness of the contraceptives that they use. The current work found a moderate correlation between women's beliefs about the effectiveness of their contraceptive option used at last sexual intercourse and the scientifically-established effectiveness of their contraceptive option. When considering only the effective contraceptive options there was a noticeably weaker correlation between the perception of the risk of pregnancy and the scientifically-established risk of pregnancy for the same risk of pregnancy for the effective contraceptive options. This may be due to the high number of participants who used oral contraceptive pills at last sexual intercourse (46.8%). Oral contraceptives effectiveness is in part based on the effectiveness of the person

taking the contraceptive, as it needs to be taken at the same time every day. Participants may be aware (or unaware) of how effective they are at taking that contraceptive, which may vary from what one would expect from the average user. This may explain this weaker correlation for this specific group.

There are a couple of cautions with interpreting the correlational findings between the perception of the effectiveness of the contraceptive option and the scientifically-established effectiveness of the contraceptive option for the average user. First, women may perceive certain contraceptive options as more effective for them than for the average user. For instance, women who remember to take their pill at the same time every day, or who see themselves as very good at using condoms, may see their use of this contraceptive as more effective for them than for the average user. They are not necessarily wrong about this, as calculations for average user effectiveness can vary based on these types of behavior. These correlations also only provide us with information about how women view the effectiveness of a contraceptive that they already use. If women are not using effective contraceptives, it may be because they do not recognize that there are other contraceptive options- ones that they are not using- that are more effective in preventing pregnancy. We know that there was a moderate, positive correlation between the perceived chances of getting pregnant and the scientifically-established risk of getting pregnant for this sample, but these findings do not provide additional details about the discrepancies between the perception of the effectiveness of the contraceptive option and the scientifically-established effectiveness for the average user.

**Future Work**

The current study, perhaps due to its focus on young college women in an area with lots of contraceptive access points, had a high number of participants using effective or very effective

birth control, per scientifically-established levels. This made it difficult to accurately investigate the potential relationship between the effect of pregnancy on life goals and the effectiveness of the contraceptive options provided. Future work will need to be done with other samples of women to determine whether, for at least some subgroups of women, the perception of the effect of pregnancy on life goals influences their effective contraceptive use, abstinence, or consistency of contraceptive usage. Beginning these steps by considering 2-year college students, rather than the 4-year college students, could be beneficial, as 2-year college students have a higher percentage of students that drop-out due to pregnancy, compared to 4-year institutions (Raley et al., 2012). This offers evidence that their contraceptive behaviors may be substantially different, and the factors that influence those behaviors may vary for another group that has a clear set of developmental steps after adolescents. Also, while focusing on effective contraceptive use, it would be helpful to find a way of conceptualizing the added protection that many people may try to have by being dual method users. The current study only focused on the most effective option used at last sexual intercourse, not by any additional protections that may have been accessed by women's choice to use dual methods.

Future work with college students should certainly include a focus on consistent contraceptive use, as well as access to effective contraceptives. While many students both were using scientifically-established effective birth control and felt that they were using effective contraceptives, women noted that they were not consistent contraceptive users over the three months prior to their completion of the study. Understanding the relationship between their perceptions of the effect of pregnancy on their goals and their contraceptive consistency, whether one can be identified as causing the other, offers another important area to understand the type of choices that students make. Adult women having unprotected sex was previously found to be

associated with, “increasing age, being married, establishment of trust, recent experience of intimate partner violence, contraceptive side effects, infrequent sexual intercourse, and decreased arousal and pleasure due to contraceptive use” in a review of the literature by Paterno and Jordan (2011). Expanding on how the findings of the current study fit into the complexity of what we already know about consistent contraceptive use will need to be done in future work.

Future work is also needed to understand the experiences of young college women with positive feelings toward pregnancy during college. Tough et al. (2012) noted that women viewed security in a relationship, being ready to be responsible for a child, and feeling as if they have control of their life as the three most important things when deciding the timing of a child. Seeing if these factors influenced women’s view that pregnancy would positively influence their goals would further elucidate why college women would view pregnancy as positive towards their goals. Also, future work is needed to investigate why contraceptive self-efficacy does not appear to predict the consistency of college women’s contraceptive use, despite contraceptive self-efficacy’s clear relationship to other positive pregnancy prevention outcomes.

Understanding women’s feelings about not using contraceptives consistently (any discomfort or guilt) would add to our understanding of the relationship between pregnancy avoidance behaviors and how perceptions of pregnancy may influence behaviors. Also, should women with positive beliefs about the effect of pregnancy become pregnant, understanding if the act of becoming pregnant changes their perception of the influence of pregnancy on their lives (before and/after the birth of the child) would also be informative to understand young women’s experience of pregnancy and pregnancy planning behavior. It may be that becoming pregnant may change women’s perception of the influence of pregnancy on their lives, even prior to the infant arriving simply after reconsideration of their situation.

There are also potentially different ways to measure/conceptualize/categorize important goals which could offer different perspectives on the relationship between important goals and family planning behaviors. The current conceptualization of the process is based on existing literature establishing important goals, but the way that conceptualization is linked to the effect of pregnancy risks is novel. While there is every reason to believe that this has effectively measured this conceptualization, further work could focus on various conceptualizations of factors which are important to women's lives, how those items may be related to pregnancy and whether those factors appear to influence pregnancy avoidance behaviors. The current study offers only one perspective of the effect of pregnancy, paying particular attention to important goals. It is possible that other effects of pregnancy, not related to specifically to participants' goals, need to be accounted for.

The additional expense of research that does not rely on retrospective reporting, but rather is longitudinal in nature, may be warranted now that there is evidence of a link between the perception of the effect of pregnancy on important life goals and women's contraceptive consistency. The use of a three month recall period for contraceptive behaviors was carefully selected, as it is a relatively short period of time that increases its overlap with existing participant goals and limits the chances of errors in recalling sexual behavior while still allowing the behavior reported to be representative (Schroder et al., 2003). However, there is still a risk of error, as behaviors that are frequent (which not using contraceptives during sex was for some participants) may not be accurately reported and the fact that behaviors that do not happen frequently (also potentially having sex without using contraceptives) may feel as if they happened more recently for some participants (Schroder et al., 2003). Longitudinal work requires a larger commitment of time and resources, but giving the current findings and existing

supporting literature, the use of this type of work in the future may be beneficial to our understanding of the consistent use of contraceptives in young adults.

Lastly, but incredibly importantly, the role of men's feelings about pregnancy- and the place it holds in their lives- also needs to be accounted for in future research. Men also have potential reasons to believe that pregnancy would influence their ability to effectively complete important goals, but there is no information about how their important goals relate to pregnancy avoidance behaviors. Women who are not currently trying to get pregnant are certainly not taking the actions that put them at-risk of pregnancy by themselves. A better understanding of the placement that men have for pregnancy in their lives, and with regards to their important goals, and how that influences their pregnancy avoidance behaviors needs to be explored in the current literature.

**Conclusion**

Women's perception of the effect of pregnancy on life goals does offer a potential explanation to why women, even those in groups that tend to use very effective contraceptives, fail to use contraceptives every time they have sex. Failure to use effective contraceptives at every act of vaginal intercourse increases the risk of pregnancy. While future research into this topic is needed to flush out the relationship between contraceptive consistency and women's perception of the effect of pregnancy on their goals and lives, existing literature suggests that physicians, other medical providers, and sexual health educators may do well to include healthy pregnancy planning, in addition to pregnancy avoidance behaviors.

The decision to include discussions of healthy conception and pregnancy likely needs to be made based on how women view the role of pregnancy in their lives rather than strictly on whether they are currently trying to get pregnant. While research is needed to bear this out, it is

possible that education on healthy pregnancy behaviors, and a recognition of how complex feelings toward becoming pregnant are, may act as a buffer to protect the health of pregnancies. Certainly, future research recognizing the complexities of family planning behaviors, even in groups where a pregnancy might traditionally be viewed as harmful to women's overall goals, could positively impact family planning education. This could lead to a reduction in negative physical and mental health outcomes for women and their infants, even among those pregnancies that might have been traditionally classified as unintended.

If nothing else, medical providers, sexual health educators, and researchers should not focus on only the effectiveness of contraceptive options, but women's ability and willingness to consistently use contraceptives, especially among subgroups that tend to use highly effective contraceptive options. Focusing only on contraceptive effectiveness at last sexual intercourse, and not on consistency of contraceptive use over a period of time, is not providing a complete picture of contraceptive behaviors.

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Table 1.

*Racial/Ethnic & Religious Demographics across Sexual Activity Status*

| | Sex with Man Ever | | Vaginal Sex Last 3 Months | | Sample |
|---|---|---|---|---|---|
| | Yes (81.86%) | No (18.14%) | Yes (75.49%) | No (24.51%) | (*N* = 204) |
| Religion (%) | | | | | |
| Agnosticism | 3.6 | 2.7 | 3.2 | 4.0 | 3.4 |
| Atheism | 2.4 | 0 | 1.9 | 2.0 | 2.0 |
| Buddhism | 0.6 | 0 | 0.6 | 0 | 0.5 |
| Catholic | 33.5 | 21.6 | 33.8 | 24.0 | 31.4 |
| Hinduism | 0.6 | 2.7 | 0.6 | 2.0 | 1.0 |
| Islam | 0.6 | 16.2 | 0.6 | 12.0 | 3.4 |
| Judaism | 1.8 | 0 | 1.3 | 2.0 | 1.5 |
| Paganism/Neo-Paganism | 0.6 | 0 | 0.6 | 0 | 0.5 |
| Christian (Not Catholic) | 21.6 | 21.6 | 22.7 | 18.0 | 21.6 |
| None | 22.2 | 24.3 | 22.7 | 22.0 | 22.5 |
| Prefer not to answer | 4.8 | 0 | 3.9 | 4.0 | 3.9 |
| Other | 7.2 | 10.8 | 7.1 | 10.0 | 7.8 |
| Race/Ethnicity (%) | | | | | |
| African American/ Black | 4.8 | 8.1 | 5.2 | 6.0 | 5.4 |
| Asian/Pacific Islander | 6.0 | 21.6 | 5.8 | 18.0 | 8.8 |
| Hispanic | 7.8 | 8.1 | 7.8 | 8.0 | 7.8 |
| Native American/ Native Alaskan | 1.2 | 2.7 | 0.6 | 4.0 | 1.5 |
| White, Non-Hispanic | 71.9 | 51.4 | 72.7 | 54.0 | 68.1 |
| Middle Eastern | 0 | 5.4 | 0 | 4.0 | 1.0 |
| Bi/Multi | 7.8 | 2.7 | 7.1 | 6.0 | 6.9 |
| Other | 0.6 | 0 | 0.6 | 0 | 0.5 |

Table 2.

*General Demographics across Sexual Activity Status*

| | Sex with Man Ever | | Vaginal Sex Last 3 Months | | Sample |
|---|---|---|---|---|---|
| | Yes (81.86%) | No (18.14%) | Yes (75.49%) | No (24.51%) | (*N* = 204) |
| Age (*M*) | 20.40 (*SD* = 1.70) | 19.81 (*SD* = 1.41) | 20.37 (*SD* = 1.67) | 20.04 (*SD* = 1.63) | 20.29 (*SD* = 1.66) |
| GPA (*M*) | 3.35 (*SD* =.55) | 3.56 (*SD* = .39) | 3.35 (*SD* = 0.56) | 3.52 (*SD* = 0.40) | 3.39 (*SD* = 0.53) |
| Year in School (%) | | | | | |
| Freshmen | 19.8 | 32.4 | 19.5 | 30.0 | 22.1 |
| Sophomores | 21.0 | 13.5 | 20.8 | 16.0 | 19.6 |
| Juniors | 25.1 | 29.7 | 27.3 | 22.0 | 26.0 |
| Seniors | 22.8 | 18.9 | 23.4 | 18.0 | 22.1 |
| 2nd Year Seniors | 9.6 | 2.7 | 7.8 | 10.0 | 8.3 |
| Graduate Students | 1.2 | 0 | 0.6 | 2.0 | 1.0 |
| Other | 0.6 | 2.7 | 0.6 | 2.0 | 1.0 |
| Est. Income (%) | | | | | |
| $0-850 | 31.7 | 32.4 | 31.8 | 32.0 | 31.9 |
| $851-1700 | 24.0 | 13.5 | 24.0 | 16.0 | 22.1 |
| $1701-2500 | 12.0 | 13.5 | 13.0 | 10.0 | 12.3 |
| $2501-3500 | 3.6 | 0 | 3.2 | 2.0 | 2.9 |
| $3501-4200 | 3.6 | 0 | 3.2 | 2.0 | 2.9 |
| $4201-5000 | 3.6 | 5.4 | 3.9 | 4.0 | 3.9 |
| $5001-5801 | 0 | 0 | 0 | 0 | 0 |
| $5801-6600 | 0 | 2.7 | 0 | 2.0 | 0.5 |
| Greater than $6600 | 7.2 | 0 | 6.5 | 12.0 | 7.8 |
| Unknown | 14.4 | 21.6 | 14.3 | 20.0 | 15.7 |
| Relationship Status (%) | | | | | |
| Single | 35.3 | 75.7 | 29.9 | 82.0 | 42.6 |
| Dating | 40.1 | 16.2 | 43.5 | 12.0 | 35.8 |
| Married | 2.4 | 0 | 2.6 | 0 | 2.0 |
| Committed Relationship | 26.1 | 8.1 | 23.4 | 6.0 | 19.1 |
| Open Relationship | 0.6 | 0 | 0.6 | 0 | 0.5 |

Table 3.
*Statistical Analyses- Predictors and Outcomes*

| Hypothesis | Analysis | Variables |
|---|---|---|
| Hypothesis 1 | Hierarchical Regression | Criterion: Perceived Contraceptive Effectiveness<br>Predictors: (1) Effect of Pregnancy on Goals'*<br>(2) Contraceptive Self-efficacy*<br>(3) Interaction between Predictors** |
| Hypothesis 2 | Multinomial Logistic Regression | Criterion: Trussell's Contraceptive Effectiveness<br>Predictors: (1) Effect of Pregnancy on Goals*<br>(2) Contraceptive Self-efficacy*<br>(3) Interaction between Predictors** |
| Hypothesis 3 | Hierarchical Regression | Criterion: Consistency of Contraceptive Use<br>Predictors: (1) Effect of Pregnancy on Goals*<br>(2) Contraceptive Self-efficacy*<br>(3) Interaction between Predictors ** |
| Hypothesis 4 | Logistic Regression | Criterion: Whether Sexually Active (Last 3 months)<br>Control: (1) Sexual Partner Availability<br>Predictor: (1) Effect of Pregnancy on Goals |

*Note.*

*Variables centered to limit multicollinearity.

**Created with centered variables.

Table 4.

*Health Information Across Sexual Activity Status*

| | Sex with Man Ever | | Vaginal Sex Last 3 Months | | Sample |
|---|---|---|---|---|---|
| | Yes (81.86%) | No (18.14%) | Yes (75.49%) | No (24.51%) | (*N* = 204) |
| Has Insurance (%) | 92.8 | 94.6 | 92.9 | 94.0 | 93.1 |
| Affordable Hormonal Birth Control Access (%) | 93.4 | 73.0 | 93.5 | 78.0 | 89.7 |
| Contraceptive Self-Efficacy (*M*) | 74.59 (*SD* = 9.18) | 72.41 (*SD* = 8.40) | 74.62 (*SD = 9.41)* | 72.88 (*SD* = 7.87) | 74.20 (*SD* = 9.07) |
| Pregnancy Prevention Contraceptive Preference (%) | | | | | |
| None | 1.8 | 0 | 1.9 | 0 | 1.5 |
| Pill | 50.9 | 56.8 | 51.3 | 54.0 | 52.0 |
| Condoms | 24.6 | 59.5 | 23.4 | 54.0 | 30.9 |
| Female Condoms | 0 | 2.7 | 0 | 2.0 | 0.5 |
| Hormonal Arm Implant | 14.4 | 8.1 | 14.3 | 10.0 | 13.2 |
| Hormonal IUD | 16.8 | 2.7 | 16.9 | 6.0 | 14.2 |
| Non-Hormonal IUD | 7.2 | 2.7 | 6.5 | 6.0 | 6.4 |
| Hormonal Shot | 5.4 | 8.1 | 5.2 | 8.0 | 5.9 |
| Natural Family Planning | 1.8 | 10.8 | 1.3 | 10.0 | 3.4 |
| Plan B | 4.8 | 5.4 | 4.5 | 6.0 | 4.9 |
| Sterilization (yourself) | 1.2 | 0 | 1.3 | 0 | 1.0 |
| Sterilization (partner) | 0.6 | 0 | 0.6 | 0 | 0.5 |
| Withdrawal | 5.4 | 2.7 | 5.2 | 4.0 | 4.9 |
| Vaginal Ring | 1.2 | 2.7 | 1.3 | 2.0 | 1.5 |

Table 5.

*Contraceptive Informants across Sexual Activity Status*

| | Sex with Man Ever | | Vaginal Sex Last 3 Months | | Sample |
|---|---|---|---|---|---|
| | Yes (81.86%) | No (18.14%) | Yes (75.49%) | No (24.51%) | (*N* = 204) |
| Doctor or Health Care Provider (%) | 94.0 | 86.5 | 93.5 | 90.0 | 92.6 |
| Significant Other/ Sexual Partner (%) | 5.4 | 0 | 5.2 | 2.0 | 4.4 |
| Mother/ Female Guardian (%) | 48.5 | 67.6 | 48.7 | 62.0 | 52.0 |
| Father/ Male Guardian (%) | 2.4 | 0 | 2.6 | 0 | 2.0 |
| Sister (%) | 15.0 | 13.5 | 14.9 | 14 | 14.7 |
| Brother (%) | 0.6 | 2.7 | 0.6 | 2.0 | 1.0 |
| Aunt (%) | 4.8 | 5.4 | 5.2 | 4.0 | 4.9 |
| Uncle (%) | 0.6 | 0 | 0.6 | 0 | 0.5 |
| Female Cousin (%) | 7.2 | 2.7 | 7.1 | 4.0 | 6.4 |
| Best Friend (%) | 19.8 | 21.6 | 18.8 | 24.0 | 20.1 |
| Friend (%) | 27.5 | 21.6 | 25.3 | 30.0 | 26.5 |
| Books (%) | 4.8 | 5.4 | 4.5 | 6.0 | 4.9 |
| Internet (%) | 46.1 | 40.5 | 44.8 | 46.0 | 45.1 |
| Other (%) | 0 | 2.7 | 0 | 2.0 | 0.5 |

Table 6.

*Perceived Contraceptive Effectiveness and Life Goals Regression Model*

| | *B* | *S.E.* | *β* | *t* | *Sig.* | *zero-order* | *partial* | *part* |
|---|---|---|---|---|---|---|---|---|
| Step 1 | | | | | | | | |
| Constant | 2.05 | 0.12 | | 16.77 | .000 | | | |
| Contraceptive Self-Efficacy | -0.03 | 0.01 | -0.18 | -2.33 | .021* | -.184 | -.186 | -.184 |
| Effect of Pregnancy On Life Goals | 0.01 | 0.01 | 0.14 | 1.73 | .085 | .136 | .139 | .137 |
| Step 2 | | | | | | | | |
| Constant | 2.05 | 0.12 | | 16.84 | .000 | | | |
| Contraceptive Self-Efficacy | -0.03 | 0.01 | -0.17 | -2.15 | .034* | -.184 | -.172 | -.169 |
| Effect of Pregnancy On Life Goals | 0.01 | 0.01 | 0.16 | 2.01 | .046* | .136 | .162 | .159 |
| Interaction | -0.00 | 0.00 | -0.12 | -1.51 | .134 | -.108 | -.122 | -.119 |

*Note.* The outcome of interest in this analysis was the participants' perceived effectiveness of the contraceptive they used at last sexual intercourse. Contraceptive self-efficacy and the perception of the effect of pregnancy on life goals were centered in this analysis to limit concerns about multicollinearity. The interaction term was created with these centered variables.

Only sexually-active participants were used in this analysis.

*$p < .05$.

Table 7.

*Scientifically-established Effectiveness Multinomial Logistic Regression Model*

| | *B* | *S.E.* | *Wald* | *df* | *Sig.* | Exp(*B*) |
|---|---|---|---|---|---|---|
| Pill & Ring Category (47.4% of participants) | | | | | | |
| Intercept | 0.59 | 0.20 | 8.44 | 1 | .004 | |
| Contraceptive Self-Efficacy | -0.01 | 0.02 | 0.35 | 1 | .554 | 0.99 |
| Pregnancy Effect on Goals | -0.01 | 0.01 | 0.94 | 1 | .332 | 0.99 |
| Interaction | 0.00 | 0.00 | 3.35 | 1 | .067 | 1.00 |
| Condoms Category (15.6% of participants) | | | | | | |
| Intercept | -0.61 | 0.28 | 4.63 | 1 | .031 | |
| Contraceptive Self-Efficacy | -0.05 | 0.03 | 2.90 | 1 | .088 | 0.95 |
| Pregnancy Effect on Goals | -0.02 | 0.01 | 1.44 | 1 | .231 | 0.98 |
| Interaction | 0.00 | 0.00 | 0.28 | 1 | .595 | 1.00 |
| Withdrawal & None Category (10.4% of participants) | | | | | | |
| Intercept | -1.17 | 0.35 | 10.99 | 1 | .001 | |
| Contraceptive Self-Efficacy | -0.09 | 0.03 | 7.33 | 1 | .007** | 0.91 |
| Pregnancy Effect on Goals | 0.01 | 0.01 | 1.31 | 1 | .252 | 1.01 |
| Interaction | 0.00 | 0.00 | 2.04 | 1 | .153 | 1.00 |

*Note.* The outcome of variable was the scientifically-established effectiveness of the contraceptive option used at last sexual intercourse. The contraceptives used at last sexual intercourse were divided into categories based on its effectiveness. The comparison category in the multinomial logistic regression included all those who used the most effective physician prescribed contraceptives (26.6% of participants). This category includes all of the most effective physician prescribed contraceptive options. The pill and the ring are not included in this category, as they have been scientifically-established as less effective for the average user than other hormonal contraceptive options.

Contraceptive self-efficacy and the perceived effect of pregnancy on goals were centered in the analysis to assist in avoiding concerns of multicollinearity. The interaction term was created with these centered variables.

Sexually-active participants only were used in this analysis.

**$p < .01$

Table 8.

*Consistency of Contraceptive Use and Life Goals Regression Model*

| | *B* | *Std. Error* | *β* | *t* | *sig.* | *zero-order* | *partial* | *part* |
|---|---|---|---|---|---|---|---|---|
| Step 1 | | | | | | | | |
| Constant | 1.97 | 0.41 | | 4.88 | .000 | | | |
| Contraceptive Self-Efficacy | -0.08 | 0.04 | -0.15 | -1.87 | .064 | -.147 | -.150 | -.147 |
| Effect of Pregnancy On Life Goals | 0.04 | 0.02 | 0.19 | 2.46 | .015* | .194 | .196 | .194 |
| Step 2 | | | | | | | | |
| Constant | 1.97 | 0.41 | | 4.88 | .000 | | | |
| Contraceptive Self-Efficacy | -0.08 | 0.04 | -0.15 | -1.88 | .062 | -.147 | -.152 | -.149 |
| Effect of Pregnancy On Life Goals | 0.04 | 0.02 | 0.19 | 2.35 | .020* | .194 | .189 | .186 |
| Interaction | 0.00 | 0.00 | 0.02 | 0.24 | .812 | .041 | .019 | .019 |

*Note*. The outcome of interest in this regression was how consistently participants used contraceptives over the last 3 months. Contraceptive self-efficacy and the perception of the effect of pregnancy on life goals were centered in this analysis to limit concerns about multicollinearity. The interaction term was created with these centered variables for Contraceptive Self-Efficacy and the Effect of Pregnancy on Life Goals.

Sexually-active participants only were used in this analysis.

*$p < .05$.

Table 9.

*Abstinent vs. Sexually-active and Important Goals Logistic Regression*

| | *B* | *S.E.* | *Wald* | *df* | *sig.* | *Exp(B)* |
|---|---|---|---|---|---|---|
| Block 0 | | | | | | |
| Constant | -1.13 | 0.16 | 47.77 | 1 | .000 | 0.33 |
| Block 1 | | | | | | |
| Availability of Partners | 2.17 | 0.32 | 45.28 | 1 | .000*** | 8.76 |
| Constant | -4.49 | 0.57 | 62.53 | 1 | .000 | 0.01 |
| Block 2 | | | | | | |
| Availability of Partners | 2.17 | 0.32 | 44.77 | 1 | .000*** | 8.77 |
| Perception of Pregnancy Effect | 0.00 | 0.01 | 0.00 | 1 | .987 | 1.00 |
| Constant | -4.49 | 0.58 | 60.35 | 1 | .000 | 0.01 |

*Note.* Yes (was sexually active) is zero and no (was not sexually active) is one in this logistic regression. The availability of partners has a square root transformation. Higher scores on this item suggest increased difficulty finding a partner in the last three months.

*** $p < .001$.

Table 10.

*Category of Birth Control Use by Perceived Likelihood of Pregnancy*

| | Perceived Likelihood of Becoming Pregnant | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 (Very Unlikely) | 2 | 3 | 4 | 5 | 6 | 7 (Very Likely) |
| Category 1 (%) | | | | | | | |
| Arm implant | 17.1 | 6.5 | 0 | 0 | 0 | 0 | 0 |
| Hormonal IUD | 15.8 | 4.3 | 9.1 | 16.7 | 0 | 0 | 0 |
| Non-Hormonal IUD | 1.3 | 4.3 | 0 | 0 | 0 | 0 | 0 |
| Hormonal Shot | 5.3 | 2.2 | 9.1 | 0 | 0 | 0 | 0 |
| Category 2 (%) | | | | | | | |
| Pill | 48.7 | 56.5 | 45.5 | 50.0 | 0 | 0 | 20 |
| Vaginal Ring | 0 | 2.2 | 0 | 0 | 0 | 0 | 0 |
| Category 3 (%) | | | | | | | |
| Condoms | 11.8 | 15.2 | 36.4 | 16.7 | 25 | 16.7 | 20 |
| Category 4 (%) | | | | | | | |
| None | 0 | 6.5 | 0 | 0 | 50 | 66.7 | 60 |
| Withdrawal | 0 | 2.2 | 0 | 16.7 | 25 | 16.7 | 0 |
| *n* of Women | 76 | 46 | 11 | 6 | 4 | 6 | 5 |

*Note.* Only women who were sexually active in the last 3 months are included in this table.

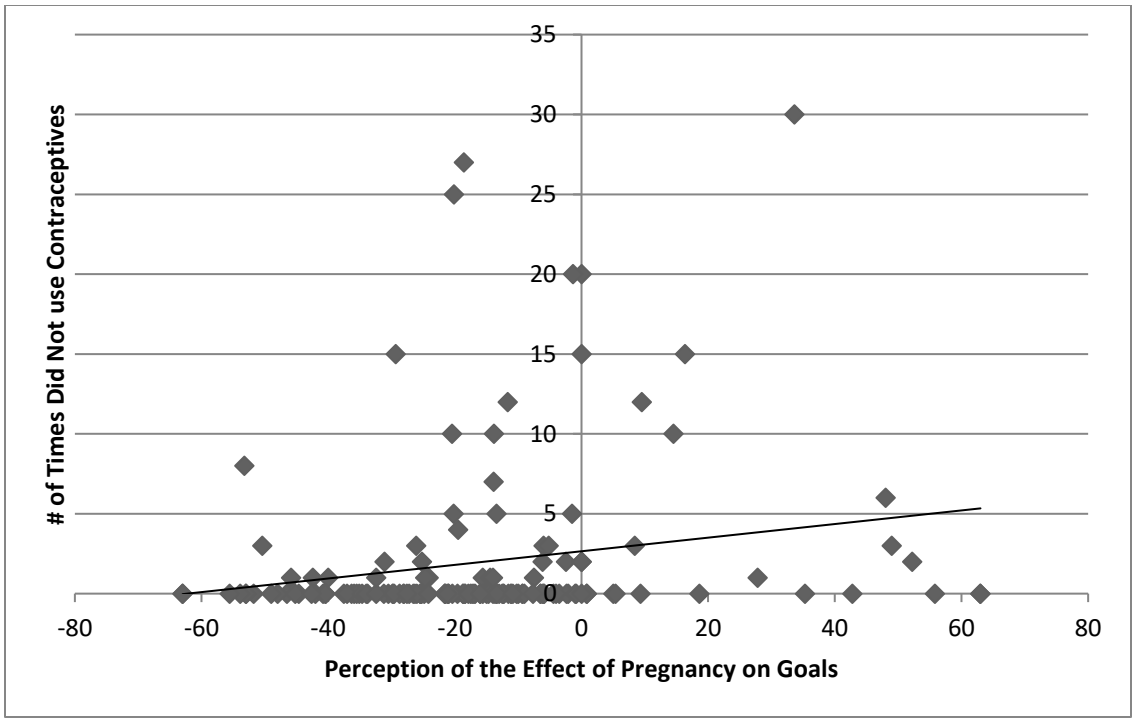


Figure 1. This scatterplot provides a visual display of the relationship between women's perception of the effect of pregnancy on goals and the number of times that sexually-active women did not use contraception during the last 3 months. A lower score on the perception of the effect of pregnancy on important goals implies that women perceive the effect of pregnancy on their goals as more harmful than those with higher scores.

Women's negative scores on their perception of the effect of pregnancy on goals suggest that pregnancy would overall have a negative effect on women's completion of their important goals. Women's positive scores on their perception of the effect of pregnancy on their goals suggest that pregnancy would have an overall positive effect on women's completion of their important goals. A score of zero suggests a neutral effect.

# Appendices

## Appendix A: Inclusion Criteria

**To provide you with the correct survey items, and to determine if you are eligible to complete this survey, we need answers to the following questions. If you do not wish to answer these questions, we completely understand, but you will not be able to complete the survey. Thank you!**

In the last 3 months, have you had vaginal intercourse (vaginal sex) with a man?
- Yes
- No

Are you currently pregnant?
- Yes
- No

Are you currently trying to get pregnant?
- Yes
- No

Do you have children?
- Yes
- No

How old are you?
- 18 years old
- 19 years old
- 20 years old
- 21 years old
- 22 years old
- 23 years old
- 24 years old
- 25 years old or older

Have you ever been told by a healthcare provider that it is not safe for you to use hormonal birth control? (Examples of hormonal birth control options include birth control pills, arm implants, IUDs, Plan B, birth control shots.)
- Yes
- No
- Unsure
- I cannot use certain types of hormonal birth control

Have you had vaginal sex with a man in the past?
- Yes
- No

If you have vaginal sex in the future, is it possible that you will have sex with a man?

- Yes
- No
- Unknown

.

**Appendix B: Additional Demographics**

**Please select the answers that best describe you.**

Race/Ethnicity (Check All That Apply)

- African American/ Black
- Asian/ Pacific Islander
- Hispanic
- Native American/ Native Alaskan
- White Non-Hispanic
- Middle Eastern
- Other (Please list)_____
- Prefer not to answer this question.

What sexual orientation do you identify as?

- Asexual
- Bisexual
- Heterosexual
- Homosexual, Gay, or Lesbian
- Other _____ *(open answer)*
- Pansexual
- Prefer not to answer

Choose the relationship status you feel best describes your current romantic relationship. If you are seeing more than one person, pick the best description of your most important romantic relationship.

- Single
- Dating
- Engaged
- Married
- Committed Relationship (Not Married)
- Open Relationship

Religion (Check All That Apply)

- Agnosticism
- Atheism
- Buddhism
- Catholic
- Hinduism
- Islam
- Judaism
- Paganism/ Neo-Paganism
- Protestant Christian
- None
- I prefer not to answer this question.
- Other (Please List)

_____

Religion (Check All That Apply)

- Agnosticism
- Atheism
- Buddhism
- Catholic
- Hinduism
- Islam
- Judaism
- Paganism/ Neo-Paganism
- Protestant Christian
- None
- I prefer not to answer this question.
- Other (Please List)

_____

Please estimate the take-home income for your household from the last month. (Roommates and others who do not assist you in paying personal bills [i.e., your groceries, your share of utilities/rent] do not need to be included in your estimate.)

- $0- $850
- $851- $1,700
- $1,701-$2,500
- $2,501-$3,500
- $3,501-$4,200
- $4,201-$5000
- $5001-$5800
- $5801-$6600
- Greater than $6600
- Unknown

What was your GPA (high school or college) at the end of last semester? Please provide a number.

_____

This GPA was earned in:

- College
- High School
- Other (Please Describe) _____

What is your current year in college?

- Freshman
- Sophomore
- Junior
- Senior
- Senior Year 2
- Graduate Student
- Other (Please Describe) _____

Do you currently have health insurance?

- Yes
- No
- I don't know

Do you have access to affordable hormonal birth control choices?
(Examples of hormonal birth control options include birth control pills, arm implants, IUDs, Plan B, birth control shots.)

- Yes
- No
- I don't know

Where do you go for information on birth control? (Check all that apply.)

- Doctor or another healthcare provider
- Significant Other/ Sexual Partner
- Mother/ Female Guardian
- Father/ Male Guardian
- Sister
- Brother
- Aunt
- Uncle
- Male Cousin
- Female Cousin
- Best Friend
- Friends
- Books
- Internet
- Other_____

**Appendix C: Identifying Goals**

In order to understand what women in college value, we would like to know what important goals you are working toward. Think about what is going on in your academic life, your career goals, health (physical and mental), leisure/relaxation activities, family relationships and relationships with friends. What important goals do you have for yourself?

Examples of goals that you might list include:
-planning a wedding
-buying a home
-finishing my bachelor's degree
-finding a specific job
-starting at a graduate or professional school
-saving money for travel
-losing weight
-learning another language
-meeting a new romantic partner
-making more friends

YOU DO NOT HAVE TO USE THESE EXAMPLES. These are just to help you brainstorm your personal goals.

Please list **ANY Goals** here. Only list 1 goal per goal space. You DO NOT need to use all of the spaces. We simply wanted to make sure you had enough space to list all of your goals, so we included a lot of space.

Goal 1:
*Open Space for Answer.*

Goal 2:
*Open Space for Answer.*

Goal 3:
*Open Space for Answer.*

Goal 4:
*Open Space for Answer.*

Goal 5:
*Open Space for Answer.*

Goal 6:
*Open Space for Answer.*

Goal 7:
*Open Space for Answer.*

Goal 8:
*Open Space for Answer.*

Goal 9:
*Open Space for Answer.*

Goal 10:
*Open Space for Answer.*

Goal 11:
*Open Space for Answer.*

Goal 12:
*Open Space for Answer.*

Goal 13:
*Open Space for Answer.*

Goal 14:
*Open Space for Answer.*

Goal 15:
*Open Space for Answer.*

Goal 16:
*Open Space for Answer.*

Goal 17:
*Open Space for Answer.*

Goal 18:
*Open Space for Answer.*

Goal 19:
*Open Space for Answer.*

Goal 20:
*Open Space for Answer.*

**Appendix D: Assessing the Goal and Pregnancy**

**You stated your 1st goal was:** *Qualtrics allows for the Open answer that the participant gave above for their 1st goal to appear in this space.*
If you had an unplanned pregnancy and birth while working toward this goal, how would that influence your ability to complete this goal?

1 (Very Negative)
2
3
4 (Not Positive or Negative/ No Impact)
5
6
7 (Very Positive)

**You stated your 2nd goal was:** *Qualtrics allows for the Open answer that the participant gave above for their 2nd goal to appear in this space.*
If you had an unplanned pregnancy and birth while working toward this goal, how would that influence your ability to complete this goal?

1 (Very Negative)
2
3
4 (Not Positive or Negative/ No Impact)
5
6
7 (Very Positive)

**You stated your 3rd goal was:** *Qualtrics allows for the Open answer that the participant gave above for their 3rd goal to appear in this space.*
If you had an unplanned pregnancy and birth while working toward this goal, how would that influence your ability to complete this goal?

1 (Very Negative)
2
3
4 (Not Positive or Negative/ No Impact)
5
6
7 (Very Positive)

**You stated your 4th goal was:** *Qualtrics allows for the Open answer that the participant gave above for their 4th goal to appear in this space.*
If you had an unplanned pregnancy and birth while working toward this goal, how would that influence your ability to complete this goal?

1 (Very Negative)
2
3
4 (Not Positive or Negative/ No Impact)
5
6
7 (Very Positive)

**You stated your 5th goal was:** *Qualtrics allows for the Open answer that the participant gave above for their 5th goal to appear in this space.*
If you had an unplanned pregnancy and birth while working toward this goal, how would that influence your ability to complete this goal?

1 (Very Negative)
2
3
4 (Not Positive or Negative/ No Impact)
5
6
7 (Very Positive)

**You stated your 6th goal was:** *Qualtrics allows for the Open answer that the participant gave above for their 6th goal to appear in this space.*
If you had an unplanned pregnancy and birth while working toward this goal, how would that influence your ability to complete this goal?

1 (Very Negative)
2
3
4 (Not Positive or Negative/ No Impact)
5
6
7 (Very Positive)

**You stated your 7th goal was:** *Qualtrics allows for the Open answer that the participant gave above for their 7th goal to appear in this space.*
If you had an unplanned pregnancy and birth while working toward this goal, how would that influence your ability to complete this goal?

1 (Very Negative)
2
3
4 (Not Positive or Negative/ No Impact)
5
6
7 (Very Positive)

**You stated your 8th goal was:** *Qualtrics allows for the Open answer that the participant gave above for their 8th goal to appear in this space.*
If you had an unplanned pregnancy and birth while working toward this goal, how would that influence your ability to complete this goal?

1 (Very Negative)
2
3
4 (Not Positive or Negative/ No Impact)
5
6
7 (Very Positive)

**You stated your 9th goal was:** *Qualtrics allows for the Open answer that the participant gave above for their 9th goal to appear in this space.*
If you had an unplanned pregnancy and birth while working toward this goal, how would that influence your ability to complete this goal?

1 (Very Negative)
2
3
4 (Not Positive or Negative/ No Impact)
5
6
7 (Very Positive)

**You stated your 10th goal was:** *Qualtrics allows for the Open answer that the participant gave above for their 10th goal to appear in this space.*
If you had an unplanned pregnancy and birth while working toward this goal, how would that influence your ability to complete this goal?

1 (Very Negative)
2
3
4 (Not Positive or Negative/ No Impact)
5
6
7 (Very Positive)

**You stated your 11th goal was:** *Qualtrics allows for the Open answer that the participant gave above for their 11th goal to appear in this space.*
If you had an unplanned pregnancy and birth while working toward this goal, how would that influence your ability to complete this goal?

1 (Very Negative)
2
3
4 (Not Positive or Negative/ No Impact)
5
6
7 (Very Positive)

**You stated your 12th goal was:** *Qualtrics allows for the Open answer that the participant gave above for their 12th goal to appear in this space.*
If you had an unplanned pregnancy and birth while working toward this goal, how would that influence your ability to complete this goal?

1 (Very Negative)
2
3
4 (Not Positive or Negative/ No Impact)
5
6
7 (Very Positive)

**You stated your 13th goal was:** *Qualtrics allows for the Open answer that the participant gave above for their 13th goal to appear in this space.*
If you had an unplanned pregnancy and birth while working toward this goal, how would that influence your ability to complete this goal?

1 (Very Negative)
2
3
4 (Not Positive or Negative/ No Impact)
5
6
7 (Very Positive)

**You stated your 14th goal was:** *Qualtrics allows for the Open answer that the participant gave above for their 14th goal to appear in this space.*
If you had an unplanned pregnancy and birth while working toward this goal, how would that influence your ability to complete this goal?

1 (Very Negative)
2
3
4 (Not Positive or Negative/ No Impact)
5
6
7 (Very Positive)

**You stated your 15th goal was:** *Qualtrics allows for the Open answer that the participant gave above for their 15th goal to appear in this space.*
If you had an unplanned pregnancy and birth while working toward this goal, how would that influence your ability to complete this goal?

1 (Very Negative)
2
3
4 (Not Positive or Negative/ No Impact)
5
6
7 (Very Positive)

**You stated your 16th goal was:** *Qualtrics allows for the Open answer that the participant gave above for their 16th goal to appear in this space.*
If you had an unplanned pregnancy and birth while working toward this goal, how would that influence your ability to complete this goal?

1 (Very Negative)
2
3
4 (Not Positive or Negative/ No Impact)
5
6
7 (Very Positive)

**You stated your 17th goal was:** *Qualtrics allows for the Open answer that the participant gave above for their 17th goal to appear in this space.*
If you had an unplanned pregnancy and birth while working toward this goal, how would that influence your ability to complete this goal?

1 (Very Negative)
2
3
4 (Not Positive or Negative/ No Impact)
5
6
7 (Very Positive)

**You stated your 18th goal was:** *Qualtrics allows for the Open answer that the participant gave above for their 18th goal to appear in this space.*
If you had an unplanned pregnancy and birth while working toward this goal, how would that influence your ability to complete this goal?

1 (Very Negative)
2
3
4 (Not Positive or Negative/ No Impact)
5
6
7 (Very Positive)

**You stated your 19th goal was:** *Qualtrics allows for the Open answer that the participant gave above for their 19th goal to appear in this space.*
If you had an unplanned pregnancy and birth while working toward this goal, how would that influence your ability to complete this goal?

1 (Very Negative)
2
3
4 (Not Positive or Negative/ No Impact)
5
6
7 (Very Positive)

**You stated your 20th goal was:** *Qualtrics allows for the Open answer that the participant gave above for their 20th goal to appear in this space.*
If you had an unplanned pregnancy and birth while working toward this goal, how would that influence your ability to complete this goal?

1 (Very Negative)
2
3
4 (Not Positive or Negative/ No Impact)
5
6
7 (Very Positive)

**Appendix E: Effectiveness of Contraceptive Used**

Please mark **ALL of the types of birth control YOU HAVE EVER USED**. (Check all that apply.)

- None
- Birth Control Pill
- Cervical Cap
- Condoms
- Female condoms
- Diaphragm
- Hormonal Arm Implant
- Hormonal IUD/Mirena
- Non-Hormonal IUD (Copper IUD)
- Hormonal Patch
- Hormonal Shot
- Natural Family Planning
- Plan B
- Spermicide
- Sponge
- Sterilization (yourself)
- Sterilization (your partner)
- Withdrawal
- Vaginal Ring

What type of birth control did you use the last time you had vaginal sex? (Check all that apply.)

- None
- Birth Control Pill
- Cervical Cap
- Condoms
- Female condoms
- Diaphragm
- Hormonal Arm Implant
- Hormonal IUD/ Mirena
- Non-Hormonal IUD (Copper IUD)
- Hormonal Patch
- Hormonal Shot
- Natural Family Planning
- Plan B
- Spermicide
- Sponge
- Sterilization (yourself)
- Sterilization (your partner)
- Withdrawal
- Vaginal Ring
- Other _____

What type of birth control would you **prefer** to use to prevent pregnancy? (Please pick the one option you like best. You do not need to have ever used this type before.)

- None
- Birth Control Pill
- Cervical Cap
- Condoms
- Female condoms
- Diaphragm
- Hormonal Arm Implant
- Hormonal IUD/ Mirena
- Non-Hormonal IUD (example: Copper IUD)
- Hormonal Patch
- Hormonal Shot
- Natural Family Planning
- Plan B
- Spermicide
- Sponge
- Sterilization (yourself)
- Sterilization (your partner)
- Withdrawal
- Vaginal Ring
- Other _____

## Based on your previous selections, we would like to know your thoughts on the birth control options you have heard of.

(*The only options that will appear below will be the options that women report that they have used at last vaginal intercourse or prefer to use to prevent pregnancy.)*

***If the participant selected Birth Control Pill:***
Based on what you know, if 100 women used the **Birth Control Pill** and had vaginal sex regularly, how many do you think would get pregnant during a single year? _____ *(open answer).*

If the **AVERAGE WOMAN** was having vaginal sex regularly for a year, and using the **Birth Control Pill** during that time, how likely do you think it is that the average woman would become pregnant in that time?

1 Very Unlikely
2
3
4
5
6
7 Very Likely

If **YOU** were having vaginal sex regularly for a year, and using the **Birth Control Pill** during that time, how likely do you think it is that you would become pregnant in that time?

1 Very Unlikely
2
3
4
5
6
7 Very Likely

***If the participant selected Cervical cap:***
Based on what you know, if 100 women used the **Cervical Cap** and had vaginal sex regularly, how many do you think would get pregnant during a single year? _____ *(open answer).*

If the **AVERAGE WOMAN** was having vaginal sex regularly for a year, and using the **Cervical Cap** during that time, how likely do you think it is that the average woman would become pregnant in that time?

1 Very Unlikely
2
3
4
5
6
7 Very Likely

If **YOU** were having vaginal sex regularly for a year, and using the **Cervical Cap** during that time, how likely do you think it is that you would become pregnant in that time?

1 Very Unlikely
2
3
4
5
6
7 Very Likely

***If the participant selected condoms:***
Based on what you know, if 100 women used **Condoms** and had vaginal sex regularly, how many do you think would get pregnant during a single year? _____ *(open answer).*

If the **AVERAGE WOMAN** was having vaginal sex regularly for a year, and using **Condoms** during that time, how likely do you think it is that the average woman would become pregnant in that time?

1 Very Unlikely
2
3
4
5
6
7 Very Likely

If **YOU** were having vaginal sex regularly for a year, and using **Condoms** during that time, how likely do you think it is that you would become pregnant in that time?

1 Very Unlikely
2
3
4
5
6
7 Very Likely

***If the participant selected Female Condom:***
Based on what you know, if 100 women used **Female Condoms** and had vaginal sex regularly, how many do you think would get pregnant during a single year? _____ *(open answer).*

If the **AVERAGE WOMAN** was having vaginal sex regularly for a year, and using **Female Condoms** during that time, how likely do you think it is that the average woman would become pregnant in that time?

1 Very Unlikely
2
3
4
5
6
7 Very Likely

If **YOU** were having vaginal sex regularly for a year, and using **Female Condoms** during that time, how likely do you think it is that you would become pregnant in that time?

1 Very Unlikely
2
3
4
5
6
7 Very Likely

***If the participant selected Diaphragm:***
Based on what you know, if 100 women used **Diaphragms** and had vaginal sex regularly, how many do you think would get pregnant during a single year? _____ *(open answer).*

If the **AVERAGE WOMAN** was having vaginal sex regularly for a year, and using **Diaphragms** during that time, how likely do you think it is that the average woman would become pregnant in that time?

1 Very Unlikely
2
3
4
5
6
7 Very Likely

If **YOU** were having vaginal sex regularly for a year, and using **Diaphragms** during that time, how likely do you think it is that you would become pregnant in that time?

1 Very Unlikely
2
3
4
5
6
7 Very Likely

***If the participant selected Hormonal Arm Implant:***
Based on what you know, if 100 women used the **Hormonal Arm Implant** and had vaginal sex regularly, how many do you think would get pregnant during a single year? _____ *(open answer).*

If the **AVERAGE WOMAN** was having vaginal sex regularly for a year, and using the **Hormonal Arm Implant** during that time, how likely do you think it is that the average woman would become pregnant in that time?

1 Very Unlikely
2
3
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5
6
7 Very Likely

If **YOU** were having vaginal sex regularly for a year, and using the **Hormonal Arm Implant** during that time, how likely do you think it is that you would become pregnant in that time?

1 Very Unlikely
2
3
4
5
6
7 Very Likely

***If the participant selected Hormonal IUD:***
Based on what you know, if 100 women used the **Hormonal IUD** and had vaginal sex regularly, how many do you think would get pregnant during a single year? _____ *(open answer).*

If the **AVERAGE WOMAN** was having vaginal sex regularly for a year, and using the **Hormonal IUD** during that time, how likely do you think it is that the average woman would become pregnant in that time?

1 Very Unlikely
2
3
4
5
6
7 Very Likely

If **YOU** were having vaginal sex regularly for a year, and using the **Hormonal IUD** during that time, how likely do you think it is that you would become pregnant in that time?

1 Very Unlikely
2
3
4
5
6
7 Very Likely

***If the participant selected Non-Hormonal IUD (Copper IUD):***
Based on what you know, if 100 women used the **Non-Hormonal IUD (Copper IUD)** and had vaginal sex regularly, how many do you think would get pregnant during a single year? _____ *(open answer).*

If the **AVERAGE WOMAN** was having vaginal sex regularly for a year, and using the **Non-Hormonal IUD (Copper IUD)** during that time, how likely do you think it is that the average woman would become pregnant in that time?

1 Very Unlikely
2
3
4
5
6
7 Very Likely

If **YOU** were having vaginal sex regularly for a year, and using the **Non-Hormonal IUD (Copper IUD)** during that time, how likely do you think it is that you would become pregnant in that time?

1 Very Unlikely
2
3
4
5
6
7 Very Likely

***If the participant selected Hormonal Patch:***
Based on what you know, if 100 women used the **Hormonal Patch** and had vaginal sex regularly, how many do you think would get pregnant during a single year? _____ *(open answer).*

If the **AVERAGE WOMAN** was having vaginal sex regularly for a year, and using the **Hormonal Patch** during that time, how likely do you think it is that the average woman would become pregnant in that time?

1 Very Unlikely
2
3
4
5
6
7 Very Likely

If **YOU** were having vaginal sex regularly for a year, and using the **Hormonal Patch** during that time, how likely do you think it is that you would become pregnant in that time?

1 Very Unlikely
2
3
4
5
6
7 Very Likely

***If the participant selected Hormonal Shot:***
Based on what you know, if 100 women used the **Hormonal Shot** and had vaginal sex regularly, how many do you think would get pregnant during a single year? _____ *(open answer).*

If the **AVERAGE WOMAN** was having vaginal sex regularly for a year, and using the **Hormonal Shot** during that time, how likely do you think it is that the average woman would become pregnant in that time?

1 Very Unlikely
2
3
4
5
6
7 Very Likely

If **YOU** were having vaginal sex regularly for a year, and using the **Hormonal Shot** during that time, how likely do you think it is that you would become pregnant in that time?

1 Very Unlikely
2
3
4
5
6
7 Very Likely

***If the participant selected Natural Family Planning:***
Based on what you know, if 100 women used **Natural Family Planning** and had vaginal sex regularly, how many do you think would get pregnant during a single year? _____ *(open answer).*

If the **AVERAGE WOMAN** was having vaginal sex regularly for a year, and using **Natural Family Planning** during that time, how likely do you think it is that the average woman would become pregnant in that time?

1 Very Unlikely
2
3
4
5
6
7 Very Likely

If **YOU** were having vaginal sex regularly for a year, and using **Natural Family Planning** during that time, how likely do you think it is that you would become pregnant in that time?

1 Very Unlikely
2
3
4
5
6
7 Very Likely

***If the participant selected Plan B:***
Based on what you know, if 100 women used **Plan B** and had vaginal sex regularly, how many do you think would get pregnant during a single year? _____ *(open answer).*

If the **AVERAGE WOMAN** was having vaginal sex regularly for a year, and using **Plan B** during that time, how likely do you think it is that the average woman would become pregnant in that time?

1 Very Unlikely
2
3
4
5
6
7 Very Likely

If **YOU** were having vaginal sex regularly for a year, and using **Plan B** during that time, how likely do you think it is that you would become pregnant in that time?

1 Very Unlikely
2
3
4
5
6
7 Very Likely

***If the participant selected Spermicide:***
Based on what you know, if 100 women used **Spermicide** and had vaginal sex regularly, how many do you think would get pregnant during a single year? _____ *(open answer).*

If the **AVERAGE WOMAN** was having vaginal sex regularly for a year, and using **Spermicide** during that time, how likely do you think it is that the average woman would become pregnant in that time?

1 Very Unlikely
2
3
4
5
6
7 Very Likely

If **YOU** were having vaginal sex regularly for a year, and using **Spermicide** during that time, how likely do you think it is that you would become pregnant in that time?

1 Very Unlikely
2
3
4
5
6
7 Very Likely

***If the participant selected Sponge:***
Based on what you know, if 100 women used **Sponges** and had vaginal sex regularly, how many do you think would get pregnant during a single year? _____ *(open answer).*

If the **AVERAGE WOMAN** was having vaginal sex regularly for a year, and using **Sponges** during that time, how likely do you think it is that the average woman would become pregnant in that time?

1 Very Unlikely
2
3
4
5
6
7 Very Likely

If **YOU** were having vaginal sex regularly for a year, and using **Sponges** during that time, how likely do you think it is that you would become pregnant in that time?

1 Very Unlikely
2
3
4
5
6
7 Very Likely

***If the participant selected sterilization (yourself):***
Based on what you know, if 100 women used **sterilization for themselves** as birth control and had vaginal sex regularly, how many do you think would get pregnant during a single year? _____ *(open answer).*

If the **AVERAGE WOMAN** was having vaginal sex regularly for a year, and used **sterilization for themselves** as birth control during that time, how likely do you think it is that the average woman would become pregnant in that time?

1 Very Unlikely
2
3
4
5
6
7 Very Likely

If **YOU** were having vaginal sex regularly for a year, and used **sterilization for yourself** as birth control during that time, how likely do you think it is that you would become pregnant in that time?

1 Very Unlikely
2
3
4
5
6
7 Very Likely

***If the participant selected Sterilization (your partner):***
Based on what you know, if 100 women's **sexual partners were sterilized** as birth control and had vaginal sex regularly, how many do you think would get pregnant during a single year?
_____ *(open answer).*

If the **AVERAGE WOMAN** was having vaginal sex regularly for a year, and **her sexual partner(s) was sterilized** as birth control, how likely do you think it is that the average woman would become pregnant in that time?

1 Very Unlikely
2
3
4
5
6
7 Very Likely

If **YOU** were having vaginal sex regularly for a year, and **your partner(s) was sterilized**, how likely do you think it is that you would become pregnant in that time?

1 Very Unlikely
2
3
4
5
6
7 Very Likely

***If the participant selected Withdrawal:***
Based on what you know, if 100 women used **Withdrawal** and had vaginal sex regularly, how many do you think would get pregnant during a single year? _____ *(open answer).*

If the **AVERAGE WOMAN** was having vaginal sex regularly for a year, and used **Withdrawal** during that time, how likely do you think it is that the average woman would become pregnant in that time?

1 Very Unlikely
2
3
4
5
6
7 Very Likely

If **YOU** were having vaginal sex regularly for a year, and used **Withdrawal** during that time, how likely do you think it is that you would become pregnant in that time?

1 Very Unlikely
2
3
4
5
6
7 Very Likely

***If the participant selected Vaginal Ring:***
Based on what you know, if 100 women used the **Vaginal Ring** and had vaginal sex regularly, how many do you think would get pregnant during a single year? _____ *(open answer).*

If the **AVERAGE WOMAN** was having vaginal sex regularly for a year, and using the **Vaginal Ring** during that time, how likely do you think it is that the average woman would become pregnant in that time?

1 Very Unlikely
2
3
4
5
6
7 Very Likely

If **YOU** were having vaginal sex regularly for a year, and using the **Vaginal Ring** during that time, how likely do you think it is that you would become pregnant in that time?

1 Very Unlikely
2
3
4
5
6
7 Very Likely

***If the participant selected None:***
Based on what you know, if 100 women **did not take any action to prevent pregnancy** and had vaginal sex regularly, how many do you think would get pregnant during a single year?
_____ *(open answer).*

If the **AVERAGE WOMAN** was having vaginal sex regularly for a year, and **did not take any action to prevent pregnancy** during that time, how likely do you think it is that the average woman would become pregnant in that time?

1 Very Unlikely
2
3
4
5
6
7 Very Likely

If **YOU** were having vaginal sex regularly for a year, and **did not take any action to prevent pregnancy** during that time, how likely do you think it is that you would become pregnant in that time?

1 Very Unlikely
2
3
4
5
6
7 Very Likely

***If the participants selected OTHER for their use at last sexual intercourse:***

You noted that you had experience with a birth control option not on our list, which you listed as *Participants listed other birth control option.*
We would love to know more information about that option. Please complete the next three statements about that birth control option.

Based on what you know, if 100 women used this birth control option and had vaginal sex regularly, how many do you think would get pregnant during a single year? _____ *(open answer).*

If the **AVERAGE WOMAN** was having vaginal sex regularly for a year, and using this birth control option during that time, how likely do you think it is that the average woman would become pregnant in that time?

1 Very Unlikely
2
3
4
5
6
7 Very Likely

If **YOU** were having vaginal sex regularly for a year, and using this birth control option during that time, how likely do you think it is that you would become pregnant in that time?

1 Very Unlikely
2
3
4
5
6
7 Very Likely

# Sarah Elizabeth Kienzler
## Curriculum Vitae

### EDUCATION

**UNIVERSITY OF WISCONSIN-MILWAUKEE**
**Dissertator, Doctor of Philosophy in Experimental Psychology**
Focus: Health & Social Psychology
Minors: Psychopathology; Quantitative Methods
Dissertation: "Relationship between women's goals and pregnancy risk behaviors"
Dissertation Committee: Diane Reddy, PhD (Committee Chair); Raymond Fleming, PhD; Susan Lima, PhD; Marcellus Merritt, PhD.; Robin Ridley, PhD
Graduation: May, 2019

**Master of Science in Psychology**
Thesis: "Social referent influences on hormonal contraceptive decisions"
Thesis Committee: Diane Reddy, PhD (Committee Chair); Raymond Fleming, PhD.; Susan Lima, PhD
Degree Conferred: May 20, 2016, GPA: 4.0/4.0

**ILLINOIS STATE UNIVERSITY**
**Bachelor of Science**
Major: Psychology
Minor: Sociology
Graduated: May 10, 2008, summa cum laude

### TEACHING INTERESTS

**Interested in teaching these courses as Face-to-Face, Online, or Blended:**

- Psychological Research Methods
- Social Psychology
- Statistics for Psychology
- Introduction to Psychology
- Health Psychology
- Psychology of Women's Health
- Health of Underrepresented and Diverse Groups

## RESEARCH INTERESTS

- Social Influences on Health Behaviors
- Health Decisions Within the Context of Personal Lives and Experiences
- Influence of Medical Mistrust on Health Decision Making
- Psychology of Women's Health
- Health Disparities
- Teaching and Learning Science

## PUBLICATIONS

Fleming, R., **Kienzler, S**., Stoiber, L., Fleming, R., Pedrick, L., & Reddy, D. (2018). Randomized controlled trials of U-Pace instruction: Outcomes in two gateway courses. *Journal of Computer Assisted Learning.* doi: 10.1111/jcal.12286

Fleming, R., Pedrick, L., Stoiber, L., **Kienzler, S.,** Fleming, R. R., & Reddy, D. M. (2018). Increasing undergraduate success: A randomized controlled trial of U-Pace instruction. *Online Learning Journal, 22*(3), 175-191. doi:10.24059/olj.v22i3.1317

Fleming, R., Barth, D, Weber, N., Pedrick, L.E., **Kienzler, S.E**., & Reddy, D.M. (2017). Effect of U-Pace Instruction on academic success, learning, and perceptions in younger and older undergraduates. *American Journal of Distance Education (online),* 1-13.

Fleming, R., Stoiber, L.C., Pfeiffer, H.M., **Kienzler, S.E.**, Fleming, R.R., Pedrick, L.E., Barth, D.J., & Reddy, D.M. (2016). Using U-Pace instruction to improve the academic performance of economically disadvantaged undergraduates. *Journal of Computer Assisted Learning, 32*(4), 304-313. doi:10.1111/jcal.12133

* Publication won the 2016 Research & Scholarship Award from The National University Technology Network (NUTN).

## PUBLICATIONS IN PREPARATION

**Kienzler, S.,** Reddy, D.M., Weiland, S., & Pfeiffer, H. (2019). Competing advice, medical mistrust, and hormonal contraceptive decision-making: An experimental investigation. Planned submission to *Contraception.*

**Kienzler, S.,** Reddy, D.M., & Weiland, S. (2019). Perceived effect of pregnancy on life goals and contraceptive choices: An investigation in university women.

## RESEARCH PRESENTATIONS

**Kienzler, S.,** Weiland, S., Peterson, M., & Reddy, D. (2018, May). *Lower self-efficacy communicating with physicians predicted women's contraceptive experiences*. Poster session presented for the Association for Psychological Science 30th Annual Convention, San Francisco, CA.

**Kienzler, S.,** Reddy, D., & Pfeiffer, H. (2017, March). *Social referents influence women's hormonal contraceptive decisions?* Invited Ed Talk presented for the Planned Parenthood of Wisconsin's 2017 Safe Healthy Strong Conference, Milwaukee, WI.

**Kienzler, S.,** Reddy, D., & Pfeiffer, H. (2017, March). *Social influences and medical mistrust in the hormonal contraceptive decision-making process*. Poster session presented for the Association for Women in Psychology Conference, Milwaukee, WI.

Pfeiffer, H., Reddy, D., & **Kienzler, S.** (2017, March). *Perceived belonging among male and female U.S. military service members*. Poster session presented for the Association for Women in Psychology Conference, Milwaukee, WI.

**Kienzler, S.**, Reddy D., & Pfeiffer, H. (2016, May). *Social referents' influence on hormonal contraceptive use*. Poster session presented at Association for Psychological Science 28th Annual Convention, Chicago, IL.

Barth, D., Reddy, D., Fleming, R., Stoiber, L., & **Kienzler, S.** (2016, April). *A study of the impact of open textbooks on student performance.* Poster session presented at Office of Professional and Instructional Development Conference, Green Lake, WI.

**Kienzler, S.** (2016, April). *Social referents and hormonal contraceptive decision making in adult women.* Talk presented at University of Wisconsin-Milwaukee Association of Graduate Students in Psychology 18th Annual Research Symposium, Milwaukee, WI.

Fleming, R., Reddy, D., Stoiber, L., **Kienzler, S.**, Pfeiffer, H., & Fleming, R.R. (2015, May). *U-Pace instruction produced greater learning than conventional instruction in a randomized controlled trial*. Poster session presented at Association for Psychological Science 27th Annual Convention, New York, NY.

**Kienzler, S**., Pfeiffer, H., Stoiber, L., Fleming, R., & Reddy, D. (2015, April). *Value of proactive e-mail support in facilitating student academic success.* Poster session presented at Office of Professional and Instructional Development Conference, Green Lake, WI.

Stoiber, L., **Kienzler, S.**, Pfeiffer, H., Di Paolo, M., Fleming, R., & Reddy, D. (2015, April). *Measuring actual change to inform course/institutional assessment.* Poster session presented at Office of Professional and Instructional Development Conference, Green Lake, WI.

Reddy, D. M., Pedrick, L. E., Fleming, R., **Kienzler, S. E.**, Stoiber, L. C., Barth, D. J., Pfeiffer, H. M., & Fleming, R. R. (2014, November). *U-Pace instruction: Paving the way to college success*. Talk presented at WICHE Cooperative for Educational Technologies Annual Meeting, Portland, OR.

**Kienzler, S**., Stoiber, L., Fleming, R., Pfeiffer, H., & Reddy, D. (2014, November). *Proactive e-mail responding to learning analytics.* Poster session presented at WICHE Cooperative for Educational Technologies Annual Meeting, Portland, OR.

## TEACHING-RELATED PRESENTATIONS

**Kienzler, S.** (2018, August). *Many students and just you: Engaging your students in large classes and lectures.* Invited Workshop presented to the University of Wisconsin-Milwaukee 2017 Graduate Teaching Assistant Orientation, Milwaukee, WI.

Reddy, D., Schroeder, C., Gore, D., & **Kienzler, S**. (2018, April). *Raising students' success in an online introductory course.* Presentation for the University of Wisconsin System Spring Conference on Teaching and Learning, Madison, WI.

**Kienzler, S.** (2017, August). *Many students and just you: Engaging your students in large classes and lectures.* Invited Workshop presented to the University of Wisconsin-Milwaukee 2017 Graduate Teaching Assistant Orientation, Milwaukee, WI.

**Kienzler, S.** (2017, April). "*I'm not trained for this": When students disclose personal struggles*. Workshop presented for the University of Wisconsin System Spring Conference on Teaching & Learning, LaCrosse, WI.

**Kienzler, S.** (2017, January). *Setting the Tone: Creating large lecture courses where students talk.* Birds-of-a-Feather session presented for the University of Wisconsin-Milwaukee 2017 Teaching and Learning Symposium, Milwaukee, WI.

Reddy, D. & **Kienzler, S.** (2014, August). *Increasing student success through proactive coaching/amplified assistance.* Training presented for the Academic Success Coaches' Flex Degree Workshop, Milwaukee, WI.

## AWARDS

**Graduate Student Travel Award,** UW-Milwaukee; *May, 2017*

- Awarded financial travel support from UW-Milwaukee. Presented health research at the Association for Psychological Science 30th Annual Convention, San Francisco, CA.

**Department of Psychology Summer Research Fellowship**, UW-Milwaukee; *Summer 2017*

- Selected for summer research funding from among Psychology Department Graduate Students in a department-wide competition.

**Chancellor's Graduate Student Award**, UW-Milwaukee; *Fall 2013-Spring 2015*

- Award provided to students in order to obtain high-quality, competitive graduate students to perform research at UW-Milwaukee.
- Received upon admission to UW-Milwaukee.

## NOMINATIONS

**Above and Beyond the Call Nominee**, 2018 University of Wisconsin-Milwaukee Student Excellence Awards; *Spring 2018*

- Nominated to University-wide student competition for excellence supporting other students.

## TEACHING EXPERIENCE

**UNIVERSITY OF WISCONSIN-MILWAUKEE**

**Introduction to Psychology**
Lecturer; *Fall 2018; Spring 2019*
**AND** Associate Lecturer; *Previous Position; Fall 2016-Spring 2018*

- Teaching 6th semester of this course currently, taught over the last 2 ½ years.
- Independently instruct a diverse group of 150-300 national and international students, from a variety of majors, in a broad overview of psychology, including multiple divisions of psychology, in a face-to-face setting.
- Independently designed and implemented all parts of the course to scaffold students' skills, and to allow for self-reflection on their learning, as they build to a broader understanding of psychology as a research science.

- Tie course content back to psychological research studies, and types of research design, to support students' understanding of psychology as a science.
- Created all lecture materials, including a variety of applied examples and in-class activities, to facilitate students' interaction with the materials- rather than strictly lecturing on content- so to better develop their understanding of concepts.
- Developed quizzes for challenging sections of course content that allow students to apply concepts with real world research and applied examples. Students' have the opportunity to retake these quizzes. Allows the students the opportunity for self-reflection on learning, and receive assistance from the instructor or the tutor, so they can develop an understanding of the material. Rather than never grasping the content.
- Assess and advise struggling students, providing them feedback on study skills and specific content.
- Advised passionate psychology students on structuring their courses and research interests to support graduate degree work when requested. (Two exceptional students- one studying in the medical field rather than psychology- requested inclusion in my current lab, Reddy lab, and were recruited.)
- Develop accurate assessments of students' mastery of course materials, including active application of psychological skills. Assessments include students' progress toward the UW Shared Learning Goals selected for the course.
- Supervise course grader during their course assessment duties and while proctoring examinations.

**Undergraduate Research**

Reddy Lab Supervisor; *Fall 2017 to Present*

Instructor: Diane Reddy, PhD

- Currently completing 4th semester supervising undergraduates in the Reddy Health Psychology Lab.
- Co-develop all Reddy Lab research projects, recruit students for the lab, and guarantee consistent research opportunities for undergraduate students.
- Guide undergraduate students in the creation of their own research hypotheses focusing on social influences on contraceptive health behaviors and writing APA proposals for those projects. I provide scaffolding, constructive criticism, and skill building to support their development throughout the entire research process.
- Identify opportunities and enable undergraduate students in applying for conventions, creating poster presentations, and writing publications for journal articles. (Previous student poster was presented at the Association for the Psychological Sciences 30th Annual Convention.)
- Guide undergraduate students in completing lab-wide research projects developed by me, while again providing scaffolding of skills, constructive criticism, and skill building to support their development throughout the process

- Ensure effective development of ethical research behavior:
    - Ensuring students complete Human Subjects Research Training.
    - Require students to consider each aspect of research development from an ethical standpoint, and to critically consider all research from an ethical stance.
- Mentored psychology students on structuring their courses and research interests to support graduate degree work.

**Introduction to Psychology Online, *U-Pace****
Teaching Assistant Coordinator; *Fall 2014; Fall 2016; Fall 2017*
Teaching Assistant; *Fall 2013; Spring 2019*
Instructor: Diane Reddy, PhD

- 4 semesters spent instructing this course. (Course only given in once a year.) Currently instructing again.
- Provide weekly, individualized, proactive support to each student based on their performance on mastery-based course assessments, per the *U-Pace* instructional approach.
- Trained other teaching assistants in *U-Pace* instructional approach, course expectations, and how to provide students with individualized, proactive support.
- Co-developed writing assessments with instructor and U-Pace grant lab manager for future research on the instructional approach. Grade writing assessments based on established rubrics.
- Selected replacement psychology textbook for course, developed and recorded new online lectures for the established course book.
- Updated mastery-based assessments to reflect changes in the course materials from the newly developed online lectures and the new textbook.

***U-Pace* is an evidence-based instructional approach developed at University of Wisconsin-Milwaukee to improve student outcomes in introductory courses. I was a project assistant on the grant used to research *U-Pace* approach outcomes (see **U-Pace Project Assistant** below) and am an author on research related to the topic (see **Publications** above).

**Psychological Statistics**
Teaching Assistant; *Fall 2018*
Instructor: Jennifer Kunz, PhD

- Facilitated discussion sections during which psychology undergraduate students solve statistical problems individually and in small groups, while guiding students through these activities.
- Facilitated students educating each other during discussion as they developed their statistical skills.

- Ensured students developed detailed breakdowns of the statistical problems that they completed during discussion section which they can use to tackle novel statistical challenges.
- Instructed students in the use of Statistical Package for the Social Sciences (SPSS) during computer lab.
- Graded and provided feedback to students on their performance on quizzes and homework assignments. Focused on students' self-reflection on their learning to assist in improvement of basic statistical skills that they will need to continue to succeed in the course.

**Research Methods in Psychology,**
Teaching Assistant Coordinator; *Spring 2018*
Instructor: Marcellus Merritt, PhD

- Taught 2 semesters of this upper-level psychology course, acted as Teaching Assistant Coordinator 2nd semester.
- Assisted the instructor in coordinating the lecture content that the instructor provided with the teaching assistants' APA research instruction.
- Ensured all teaching assistants had access to the necessary course materials and updated course materials from previous semesters as necessary.
- Evaluated teaching assistants' performance and provided feedback for potential improvement in instruction.
- Provided lecture when instructor was required to be absent.
- Maintained course teaching assistant activities identical to those of a regular teaching assistant for a single discussion a week. (See below under Teaching Assistant, *Spring 2017*.)

Teaching Assistant; *Spring 2017*
Instructor: Marcellus Merritt, PhD

- Instructed discussion sections (of roughly 12 students each) on how to write APA-style lab reports, locate peer-reviewed journal articles, types of sources, and assisted students in writing three lab reports over the course of the semester.
- Facilitated student discussion and critical analysis of key journal articles for each lab report.
- Facilitated student group's development of each section of the lab report by providing students with an outline of each section, and then providing assistance and feedback as the students work together to develop each outline into a paper section.
- Graded three APA-style lab reports over the course of the semester for each student, providing ample feedback for student improvement and encouraged student reflection on their learning as the semester progressed.

**Personality**

Teaching Assistant; *Spring 2014*

Instructor: Molly O'Connor, MS (Later PhD)

- Facilitated four discussion classes a week where students actively applied personality theory to real-world examples and existing research problems.
- Graded and provided detailed feedback to students on their homework assignments, so as to lead to improvement in their understanding of personality theory.

## ADDITIONAL RESEARCH EXPERIENCE

**UNIVERSITY OF WISCONSIN-MILWAUKEE**

***U-Pace* Project Assistant**; *Summer 2014-Spring 2016*

Supervisor: Diane Reddy, PhD

- Assisted with data collection, data analysis, and results presentation for the research and experimental investigations of the *U-Pace* instructional approach.
- Co-wrote and presented publications and presentations on this instructional approach.
- Evaluated the validity of survey instruments and scales developed and/or adapted to assess instructional outcomes and student educational experiences.
- Solicited universities nation-wide for participation in educational research.

*U-Pace Grant Project was funded by the U.S. Department of Education.

**U-Pace Grant Project won the Western Interstate Commission for Higher Education Cooperative for Educational Technologies' 2014 WCET Outstanding Work Award.

**ILLINOIS STATE UNIVERSITY**

**Advanced Undergraduate Research Assistant;** *Spring 2008*

Supervisor: Alycia Hund, PhD

- Led data collection on perseveration in school-aged children using a card sorting task.
- Presented poster and spoke at the Illinois State University Undergraduate Research Symposium about completed Honors Research Project for Undergraduate Capstone Project.

**Undergraduate Research Assistant;** *Fall 2007*

Supervisor: Alycia Hund, PhD

- Collected and recorded data on attention, cognitive flexibility, memory, and perseveration in children and adults.

**Undergraduate Research Assistant;** *Fall 2006-Spring 2007*

Supervisor: Adena Meyers, PhD

- Assisted in providing adults with domestic violence group counseling. Also, provided additional assistance to the children's group when needed. Work was done with *For Children's Sake*, a program to provide assistance to domestic violence survivors.
- Required review of research materials on domestic violence and completing a 40-hour domestic violence training.

## RELATED PROFESSIONAL EXPERIENCE

**McLean County Health Department Family Case Manager**; *October 2008-July 2013*

Bloomington, IL

Supervisor: Laura Beavers

**MarcFirst Substitute Direct Support Professional**; *January 2008-March 2009*

Bloomington-Normal, IL

Supervisor: Varied, dependent on home.

**Office of Disability Concerns Personal Aid**; *October 2004-May 2006*

Illinois State University, Normal, IL

Supervisor: No direct supervisor.

## SERVICE ACTIVITIES

Textbook Adoption Project for Psych 101, **Volunteer Lecture Content Creator**; *Summer 2017*

- Collaborated with other Introduction to Psychology instructors at the University of Wisconsin-Milwaukee to create a unified set of course materials (e.g. syllabi, exam questions, writing assessments…) that can be utilized by new or continuing instructors when developing their course.
- Collaborated with another instructor on a set of lecture slides that can be utilized with the textbook adopted by the department.

Association for Psychological Science Student Research Award, **Reviewer**; *March 2017*

- Reviewed students' research based on reward criteria.

Association for Psychological Science RISE Research Award, **Reviewer**; *April 2017*

- Reviewed students' research based on the reward criteria.

## ADDITIONAL SKILLS

Statistical Package for the Social Sciences (SPSS); Microsoft Office; Qualtrics; SurveyMonkey; Brightspace Desire2Learn; SAS Statistical Package

## PROFESSIONAL AFFILIATIONS

**Student Affiliate,** Association for Women in Psychology; *March 2017-December 2018*
**Graduate Student Affiliate**, Association for Psychological Science; *February 2016-Present*
**Graduate Student Affiliate**, American Psychological Association; *March 2014-Present*