Young Adults' Attitudes to Contraception Mediate their Likelihood of Use

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ABSTRACT

Whereas 91% of unwed mothers are under 21 years, researchers and health policy advisers hope to unpack the association between a woman's wish to avoid becoming pregnant and the intention to use birth control, a relation we hypothesized to be mediated by various attitudes to contraceptive use (including cost, ease of use, extra planning, even morality). In total, 22 potential mediators were evaluated using the Relationship Dynamics and Social Life Study – consisting of 1003 Michigan women aged 18-20 years from Caucasian, African, and Hispanic American backgrounds. Results showed a significant relation between avoiding pregnancy and contraceptive use; when divided by ethnic background, the negative association was higher for African Americans compared to Caucasians, and higher still for Hispanics. This relation was mediated by each of: premarital sex is OK if attracted; faster recovery following pregnancy if young; birth control involves too much planning; it's a hassle to use birth control; and marital relations improve with the advent of children. When divided by ethnicity, we unexpectedly uncovered several suppressor variables, following whose extraction improved the original association. Implications for researchers and health professionals, as well as directions for future research, are outlined.

Keywords: *Contraception, Pregnancy avoidance, Young adults, Mediation.*

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Highlights of this paper

- Young adults' decision to use contraception so as to avoid pregnancy is mediated by their attitudes concerning the obstacles to contraception use.

1. INTRODUCTION

Women's wider access to contraceptives has been found to enhance health and well-being across a host of domains (Garbers *et al.*, 2013; Sonfield *et al.*, 2014; Aiken *et al.*, 2015; Obare *et al.*, 2018). Women using contraceptives typically do so to maximize their education and career goals, and to support themselves financially in ways unavailable with a child under their care (Frost and Lindberg, 2013). Conversely, failure to use contraceptives is the leading cause of unintended pregnancy in the United States (Finer and Henshaw, 2006; Frost and Darroch, 2008; Sedgh *et al.*, 2015; Center for Disease Control, 2018); wherein unintended pregnancies comprise 90% of all adolescent pregnancies (Jaskiewicz and McAnarney, 1994; Klein, 2005). Indeed, the consequences of teen pregnancy and its outcomes have been widely studied (Kirby, 2002; Skinner *et al.*, 2009; Guilamo-Ramos *et al.*, 2018). For example, women who become pregnant in their adolescent years are likely to have additional children during the subsequent decade (Coley and Chase-Lansdale, 1998). Since 2005, the incidence of teen pregnancy saw a rise shortly following a sizable drop in 2005 (Sipsma *et al.*, 2011) but recent years have witnessed a drop in the adolescent birth rate for 2017 to 18.8 births per 1000 women aged 15-19 years (7% lower since 2016 and 64% lower since 1991; see (Martin *et al.*, 2018)). Still, the United States in 2010 boasted the highest teen birthrate among developed nations, at 625 000 or 57 for every 1000 women (Kost and Henshaw, 2014). The present study seeks a deeper understanding of the mechanism behind a young woman's intention to avoid pregnancy yet still engage in unprotected sex.

A mixed profile of results has emerged when considering the link between adolescents' contraceptive use and desire for pregnancy. Whereas many studies assume that a woman's desire to have a baby is a precursor for pregnancy (Sipsma *et al.*, 2011) the relation is arguably more complicated. Previous research has identified that women use pregnancy to both provide purpose to their life (Geronimus, 1991; Merrick, 1995; Rosengard *et al.*, 2004) and to provide them with someone they can love (Corcoran *et al.*, 1997). Conversely, one would expect the desire to avoid pregnancy as a chief motivating factor for using some form of contraceptive (Zabin *et al.*, 1993; Higgins *et al.*, 2012) however, Jones *et al.* (2002) see also Foster, Higgins *et al.* (2012) reported 20% of emerging adults who did not desire pregnancy refrained from contraceptive use. The precise mechanism, writes Jaccard *et al.* (2003) may involve a young woman's positive attitude towards pregnancy, thus offering a catalyst for lower contraceptive use. In support, they present evidence to show that increasingly perceived positive outcomes from pregnancy corresponded with a higher percentage of pregnancy one year later. Sipsma *et al.* (2011) too found pregnancy rates doubled over an 18-month period if a woman desired pregnancy. Unger *et al.* (2000) reported that the degree of positivity women associated with pregnancy depended on the types of consequences (good or bad) that pregnancy would expectantly deliver. Skinner *et al.* (2009) explained that the perceived cost-benefit ratio of contraceptive use in pregnancy regulation primarily determined its use among adolescents aged 14-19 years. Earlier research emphasized the role that unwanted side effects of contraceptives have on a woman's decision to either use or forego contraceptives during sex (Rogel *et al.*, 1980). However, a woman's uncertainty regarding desires to become pregnant is especially salient as a predictor of contraceptive use (Fischer *et al.*, 1999; Davies *et al.*, 2006; Frost *et al.*, 2007) when compared to other factors. So too, a woman's misgivings surrounding both the risks and inconveniences of contraceptive use should be considered in her decision to protect herself from pregnancy. Bryant (2009) showed that women intent on maintaining their contraceptives had more positive attitudes to contraceptive use compared to both nonusers and intermittent users. The literature has been informed chiefly by studies from other nations, since various obstacles to contraceptive use pose a significant threat to women's health

around the globe (see (Casterline *et al.*, 2003; Nagase *et al.*, 2003; Nalwadda *et al.*, 2010)). As a result, this opens a useful avenue (viz. attitudes or obstacles to contraception) when considering underlying mechanisms in the relation between pregnancy avoidance and birth control.

1.1. Present Study and Hypotheses

The present study examined the relation between young women's intended contraceptive use and their attitudes towards pregnancy. The push to determine the mechanics underlying this link remains especially salient following the determination by DiCenso *et al.* (2002) that leading interventions (encouraging either abstinence or contraceptive use) neither delayed the initiation of intercourse nor encouraged the use of birth control. Our linear regression models will initially assess the link between pregnancy avoidance and contraceptive use; however, mediation analyses will qualify this link to determine whether a young woman's attitudes or obstacles to contraception explain the aforementioned association.

2. METHOD

2.1. Participants and Survey

Data were derived from the *Relationship Dynamics and Social Life Study* (Barber *et al.*, 2015) which took place over a four-year period (2008-2012) within Genesee County, Michigan. Young women (N = 1003) aged 18, 19, and 20 years were sampled from both low and medium socio-economic backgrounds and represented racial backgrounds from Caucasian, African, and Hispanic-American groups. The racial profile was distributed as follows: Caucasian (n = 599, 60.1%), African (n = 292, 29.3%), Hispanic (n = 81, 8.1%), Other/Biracial (n = 24, 2.4%). Within the full sample, 60.3% were currently employed at 25.6 hours/week (83.5% said they were employed at least once in the past); and 28.4% had graduated from high school.

Eligible women completed the survey via face-to-face, computer-assisted, or web-based interviews, with questions that ranged from attitudes towards pregnancy, marriage, and abortion; to those concerning romantic relationships, mental health, personal income, and family life. The survey mainly employed Likert-type scales to assess participants' attitudes. The key variables of interest presently appear below:

1. The Criterion was the respondent's willingness to have sex without birth control, measured on a 6-point Likert scale from 0 = 'not at all willing' to 5 = 'extremely willing.'
2. The Predictor was the extent to which the respondent wanted to avoid getting pregnant during the next month, based on a 6-point Likert scale from 0 = 'do not want at all to avoid becoming pregnant' to 5 = 'really want to avoid becoming pregnant.'
3. Variables thought to act as possible mediators were selected insofar that they expressed either some obstacle toward contraceptive use, or some advantage toward getting pregnant – each utilized a 4-point Likert scale (flipped for interpretation), from 1 = 'strongly disagree' to 4 = 'strongly agree.' The 22 attitudinal questions appear as follows:
    i. If a woman asks her partner to use a condom, he will think she doesn't trust him.
    ii. It is better to have kids young because the grandparents can be more involved.
    iii. it is better to get pregnant young because young women's bodies recover faster.
    iv. having children at a young age is good because you lose more weight.
    v. young people should not have sex before marriage.
    vi. being a mother and raising children is the most fulfilling experience a woman can have.
    vii. it is all right for young people to have premarital sex even if they are just friends.

viii. it is easier for young women to lose weight after a pregnancy.
ix. using birth control is morally wrong.
x. the relationship between men and women improves after they have a baby.
xi. in general, birth control is too much of a hassle to use.
xii. it is hard for kids to have the oldest parents at their school.
xiii. if a woman waits for the perfect time to have a baby, she will probably have trouble getting pregnant.
xiv. using birth control is likely to make a woman feel sick.
xv. babies born to older mothers have more health problems.
xvi. using birth control interferes with sexual enjoyment.
xvii. if a girl uses birth control, she is looking for sex.
xviii. it is all right for a woman to have a child without being married.
xix. in general, birth control is too expensive to buy.
xx. it is all right for a couple to live together without planning to get married.
xxi. it takes too much planning ahead of time to have birth control on hand when you're going to have sex.
xxii. children cause worry and emotional strain for their parents.
xxiii. if a girl has been seeing a guy for a while, she should have sex with him.

3. RESULTS

All statistical analyses were performed using SPSS Statistics (version 25), and a significance level of alpha = .05 was used for all analyses. Baron and Kenny (1986) outline the following steps to determine whether a particular variable may be identified as a significant mediator between the association of predictor and criterion:

1. Determine that the predictor and criterion are correlated.
2. Determine that the predictor and a potential mediator variable is correlated.
3. Determine whether the predictor is no longer significantly related (or at least significantly reduced in its association) to the criterion after accounting for the variance explained by the mediator.

To begin, we conducted a Pearson product moment correlation between avoidance of pregnancy and the willingness to have sex without contraception; across the full sample, this relation was significant and negative, $r(967) = -.324$, $p < .001$; that is, young women who wished to avoid getting pregnant were more willing to use contraception in future sexual encounters. When split by ethnicity, we observed somewhat different estimates among: African Americans, $r(289) = -.250$, $p < .001$; Caucasian Americans, $r(595) = -.354$, $p < .001$; and Hispanic Americans, $r(79) = -.401$, $p < .001$. Second, according to Baron and Kenny (1986) a significant mediator must be related to the predictor variable; thus, we evaluated the relation between pregnancy avoidance and all 22 potential mediator variables. Any nonsignificant correlations between pregnancy avoidance and a given mediator would remove the latter from consideration. This procedure effectively eliminated the following 10 variables (ps > .05):

> Condom use indicates mistrust, having kids young means greater weight loss, not too go have kids when older, birth control makes you sick, having kids young means fewer health problems, birth control interferes with sexual enjoyment, girls who use birth control want sex, it is OK to be a single mom, cohabiting is OK without a plan for marriage, and children add to your worries.

Finally, we conducted a multiple linear regression for each of the remaining 12 variables with both the mediator and predictor entered as variables as regressed against the likelihood of unprotected sex, so as to observe a

reduced association between predictor and criterion *after* accounting for the mediator. Table 1 shows the mediation results with the new parameter estimate of pregnancy avoidance and likelihood of contraception use after including each mediator. By the overall sample, only five variables qualified as notable (albeit modest) mediators: Easier to recover from childbirth if young, premarital sex is OK if attracted; birth control involves too much planning; it's a hassle to use birth control; and the relationship between men and women improves after they have a baby.

Table-1. Mediation analysis of the likelihood of contraception use by racial self-identification.

All women (*N* = 1003)	**B**	**SErr**	**ß**	**t**	**p**	**delta**	**%EV**
Predictor: Avoid pregnancy	-10.34	.973	-.324	-10.63	<.001	-----	-----
Mediators							
Easier to recover when you are younger	-10.21	.987	-.317	-10.34	<.001	<.001	2.16%
Premarital sex is OK if you are attracted to your partner	-9.98	.961	-.314	-10.39	<.001	<.001	3.09%
Children will improve the quality of your relationship	-10.53	.973	-.331*	-10.82	<.001	<.001	2.11%
Birth control is a hassle	-9.91	.973	-.310	-10.26	<.001	<.001	4.32%
It is too hard to plan to take your birth control	-10.03	.982	-.313	-10.21	<.001	<.001	3.40%
Caucasian Americans (n = 599)	B	SErr	ß	t	p	p	%EV
Predictor: Avoid Pregnancy	-10.59	1.15	-.354	-9.24	<.001	<.001	------
Mediators							
Easier to recover when you are younger	-10.67	1.15	-.357	-9.29	<.001	------	------
Premarital sex is OK if you are attracted to your partner	-10.32	1.12	-.348	-9.18	<.001	.008	2.52%
Children will improve the quality of your relationship	-10.91	1.14	-.367*	-9.55	<.001	------	------
Birth control is a hassle	-10.19	1.16	-.339	-8.81	<.001	.005	1.40%
It is too hard to plan to take your birth control	-10.38	1.15	-.347	-9.00	<.001	.007	1.96%
African Americans (*n* = 292)	B	SErr	ß	t	p	delta	%EV
Predictor: Avoid Pregnancy	-8.80	1.95	-.258	-4.52	<.001	-----	-----
Mediators							
Easier to recover when you are younger	-8.12	2.03	-.231	-4.00	<.001	.027	10.5%
Premarital sex is OK if you are attracted to your partner	-8.19	1.92	-.241	-4.27	<.001	.027	10.5%
Children will improve the quality of your relationship	-8.84	1.95	-.259*	-4.52	<.001	------	------
Birth control is a hassle	-8.40	1.93	-.246	-4.36	<.001	.012	4.65%
It is too hard to plan to take your birth control	-7.85	1.99	-.230	-3.94	<.001	.028	10.9%
Hispanic Americans (*n* = 81)	B	SErr	ß	t	p	delta	%EV
Predictor: Avoid pregnancy	-16.37	4.24	-.401	-3.87	<.001	-----	-----
Mediators							
Easier to recover when you are younger	-15.98	4.19	-.391	-3.81	<.001	.010	2.49%
Premarital sex is OK if you are attracted to your partner	-16.20	4.33	-.397	-3.74	<.001	.004	1.00%
Children will improve the quality of your relationship	-15.94	4.32	-.393	-3.67	<.001	.008	2.00%
Birth control is a hassle	-20.13	4.29	-.445*	-4.69	<.001	------	------
It is too hard to plan to take your birth control	-21.74	4.52	-.480*	-4.81	<.001	------	------

Note: * suppressor variable %EV = percentage of variance explained by the mediator.

None of these variables acted as a full mediator, since the association between pregnancy avoidance and willingness to use contraceptives remained significant (*p*s < .05). However, for 4 of the 5 mediators, the association was reduced, from 2.11% to 4.32% (although small, this is not uncommon with large samples); and for one variable (namely 'relationships between men and women improves after they have a baby'), the association grew in strength from -.324 to -.333 (revealing a suppressor variable; Pedhazur (1997). That is, accounting for a young woman's attitudes to children as a route toward marital improvement actually enhanced the association (by removing noise

or error variance) between pregnancy avoidance and willingness to have unprotected sex.

With these five partial mediators identified in the full sample, we further evaluated their efficiency after splitting the data by ethnicity, and found unique profiles. For the Caucasian women (60% of the sample), three of the five variables (premarital sex is ok, it's a hassle to use birth control, and it's difficult to plan to use birth control) acted as mediators, accounting for 1.4% to 2.5% of the variance; notably, improved marital relations acted as a suppressor wherein the parameter increased from -.354 to -.367; so that removal of attitudes to marital relations enhanced the association between pregnancy avoidance and willingness to use birth control. For African American women (29% of the sample), four of the five variables acted as mediators, ranging in explained variance from 4.65% to 10.9% (sizably larger by comparison); like the Caucasian sample, expected improvement to marital relations following childbirth acted as a suppressor to the association between pregnancy avoidance and willingness to use birth control. Finally, for the Hispanic women (8% of the sample), three of the five variables acted as mediators, ranging in explained variance from 1.00% to 2.49%; however, as distinct from the other ethnic subsamples, two variables ('hassle to use birth control' and 'hard to plan') acted as suppressor variables, adjusting the original parameter (between pregnancy avoidance and willingness to use birth control) from -.401 to -.445 and -.480, respectively.

4. DISCUSSION

The present study extended our understanding of the association between pregnancy avoidance and young women's willingness to use birth control by accounting for the role of likely mediators in the realm of attitudes (or obstacles) to contraception. Although these results offered modest support for our hypothesis, we uncovered a salient caveat in addressing the ethnic background of the respondents. Based on a sample of 1003 young Michigan women, our analysis identified five attitudinal variables that partially mediated this initial association, namely: premarital sex is OK if attracted to your partner, birth control is a hassle, birth control takes too much planning, it is easier to recover when young following a pregnancy, and the relation between men and women will improve after they have a baby. Whereas in the overall sample, the proportion of variance accounted for by the mediator was modest, we determined that this proportion varied considerably by ethnic identification – very small for Hispanic Americans, modest for Caucasian Americans, and moderate for African Americans. To our knowledge, this is the first study to investigate the mediational role of attitudes to contraceptive use as a bridge spanning pregnancy avoidance and willingness to use birth control.

Surprisingly, we also uncovered several suppressor variables, whose extraction improved the overall association between pregnancy avoidance and willingness to use birth control. The notion of a suppressor might best be illustrated using the following example. Suppose one wishes to predict the quality of churned butter based on the farmer's years of experience; however, the presence of toast crumbs in the butter detracts from a genuine assessment of this relation. Thus, removing the crumbs (like extracting the noise or variance of a suppressor variable) should rarify the original relation. Returning to the present analysis, suppressor variables acted differentially by ethnic identification, such that improved marital relations acted as a *modest* suppressor among both Caucasian and African American women, whereas both 'birth control is a hassle' and 'it takes too much planning to have birth control on hand' acted as *moderate* suppressors among Hispanic American women. These results should help inform policy makers and health advocates concerning the specific directives needed to assist adolescents (from a unique ethnic background) in their reproductive health management.

The work of Grady *et al.* (2015) should help situate the present results. In a community sample of over 2900 women aged 15-44 years, whereas 91% used contraception at their last sexual encounter, African American women

were far less likely to use birth control compared to Caucasian women – even when controlling for differential access to health care. Callegari *et al.* (2017) mirrored these results using 2300 veterans, with racial and ethnic categories that qualified the interpretation. Specifically, African American veterans were less likely to believe that contraception would be effective or would prevent sexually transmitted infection; Hispanic American veterans were more likely to believe that contraception is chiefly the woman's responsibility. They urged healthcare providers to consider these factors when administering client-centered contraceptive advice.

Several limits in the present study warrant mention. First, our analysis could have controlled for several demographic variables, including education, employment, and marital status; these factors could have differed between ethnic designations. Furthermore, the data were collected between 2008 and 2012, but we argue that the respondents' attitudes and their relation to both pregnancy avoidance and willingness to have unprotected sex should not have been expected to be vastly different in today's climate.

Future researchers would do well to explore other potential mediators available in the same dataset, including the approving attitudes of both friends and parents to a young pregnancy. In addition, a subset of religious questions, her partner's wishes for the pregnancy, and even knowledge of birth control information may prove fruitful. To reiterate, the urgency remains to help unpack the underlying mechanism in a woman's choice to engage in unprotected sex, and the mediators identified presently bring us a step closer to that aim.

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