Intersectionality and Intentionality: Contraceptive Use Survival Data from the HER Salt Lake Study

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Short Abstract

Few studies follow women over the course of starting, switching, stopping and re-starting a contraceptive method. Fewer place these contraceptive practices in larger social contexts that may interact with pregnancy intentions. In this research, I use unique data to model the cumulative survival time of respondents in each of five distinct contraceptive use states. In these models, I incorporate the following covariates: race, federal poverty level and sexual orientation as indicators of socio-structural constraints, sexual satisfaction as an indicator of sexual agency, and pregnancy intention. This research is critical to moving beyond the clinical implications of respondent's contraceptive practices and consideration of contraception as solely a medical good. By placing this research in an intersectional framework, I begin to answer how the social space that contraceptive users occupy, both as gendered sexual beings and as members in other social categories, interact with, modify and shape their contraceptive experience over time.

Background

Much of the published literature on contraceptive use focuses on either a single contraceptive method, a single point in time or a single demographic group. Although there is an emerging literature on the consequences of gender (including sexuality), race and class for contraceptive uptake, these publications follow the above norm—they focus on a single group, time-point, or method[1].

Population-based literature on contraceptive use often implicitly assumes that there is an inherent demographic good in increasing contraceptive prevalence and duration; this usually takes the form of reduced fertility at the population level or a reduction in unintended pregnancy. Viewing contraception as a pathway to reductions in fertility or unintended pregnancy can be a valid public goal—indeed, there is evidence that provision of contraception via social schemes can reduce the number of abortions among young people and that reducing unintended pregnancies is related to improvements in prenatal care, maternal and child mental and physical health, and in long term socio-economic status for children and mothers (Guzzo and Hayford, 2011; Hanson et al, 2015; Herd et al, 2016; Heim, Lurie and Simon, 2018; Muligan, 2015; Sedgh et al, 2014). However, this framing often places the onus of "obtaining" this good onto individuals' rational action and fails to take into account a myriad of contexts that shape contraceptive users' experiences around reproduction and sexuality (Gubrium et al, 2016). These include historical material contexts that place individuals or couples in situations of social disadvantage, like race or class, and bypasses questions about whose reproduction and sexuality we systematically undervalue.

[1] Throughout this discussion, I distinguish between contraceptive choice, which implies choosing a method to start using, and method use, which references the dynamics of how women continue or do not continue to use contraceptive methods over time.

These types of approaches also often ignore the fact that while contraceptives are used to prevent pregnancy and are treated as a medical good, they are, in fact, designed to enable non-procreative sexual encounters. Existing clinical research can detract from examining contraceptives as a sexual good by suggesting that contraceptive user's choice and consistent use of particular methods are primarily associated with access, effectiveness and desire to limit pregnancies (Higgins and Hirsch, 2007). Few studies consider how encounters that involve contraceptive use include the construction of, performance of and experience of gender and sexuality from an embodied perspective—this can include relationships that are shaped by gendered understandings of power and consent, consideration of one's partner or one's own pleasure or sexual functioning, and the consideration of risk relative to pregnancy intentions. Social, structural and sexual inequalities have real consequences for how contraceptives are chosen and used by individuals to meet their reproductive health needs (Higgins and Hirsch, 2007). Below, I outline the existing evidence on the effects of race, class, sexuality and pregnancy intention on contraceptive use practices and address how my current research fills a gap in this evidence.

Multiple studies examine the effects of race and class on contraceptive uptake and use. These studies are premised on the idea that the complex history of reproductive coercion and sterilization of poor women of color in the United States has created a clinical and social context where poor women of color are more likely to experience physician pressure to use long acting contraceptive methods, children born to black teens in the wake of economic recession are more disadvantaged than their counterparts and poor women are more likely to discontinue a hormonal contraceptive method due to dissatisfaction (Ananat, Gassman-Pines and Gibson-Davis, 2013; Kramer et al, 2018; Higgins, Kramer and Ryder, 2016; Littlejohn, 2012). This literature suggests that while young, poor, women of color may be more likely to use certain contraceptive methods (typically injectables, withdrawal or condoms) and have different relationship dynamics than other women, there is often little, if any, statistical difference between groups that predicts long-acting reversible contraceptive selection or discontinuation of a method (Anata, Gassman-Pines and Gibson-Davis, 2013; Kramer et al, 2018; Kusunoki et al, 2016; Littlejohn, 2012).

An emerging literature suggests that sexual experiences can affect contraceptive method uptake and use. The most well documented effects center around how sexual functioning—this includes lubrication, orgasm, pain etc.—can lead women to discontinue or switch contraceptive methods. The demographic literature that suggests that contraceptive method choice varies by the type and length of commitment and by couple heterogamy (Kusonoki and Upchurch, 2011). Higgins and Davis (2014) also argue that in addition to sexual functioning, contraceptives can change physiologies in ways that affect women's perceptions of their sexual experience (for example through increased bleeding, or changes in mood or weight) and can affect sexual experience more indirectly by reducing inhibitions via reduced risk of pregnancy. This effectively acts as a feedback loop to either reinforce or inhibit continued contraceptive use. In an earlier piece, Higgins and Hirsch highlight how social advantage may play a part in the co-experience of sex and contraceptive use—this can lead to discontinuation among the socially disadvantaged and can lead to differential eroticization (both negative and positive) of unintended pregnancies (Higgins and Hirsch, 2008).

Interdisciplinary research demonstrates a relationship between pregnancy intention and contraceptive practice; however, Higgins et al (2016) demonstrate the large variability in categorizing respondents as "ambivalent" across different measurements of this concept. This measurement variability can inhibit

comparison across studies of how feelings about pregnancy affect contraceptive uptake and subsequent use. Some of this research suggests that women who are less bothered by a potential pregnancy are more likely to use withdrawal and are less likely to use long-acting reversible contraceptives, as they see these methods as too "permanent" (Higgins and Wang, 2015; Higgins, 2017). Respondents who had clear motivations to avoid pregnancy, including beginning a new relationship, being in school, or starting a career, were more likely to want to use long acting contraceptive methods (Higgins, 2017).

There are several things missing from this literature that my proposed research adds to. First, while these studies do important work in placing contraceptive users in the social space that they occupy, they rarely examine variables that indicate racial or class inequality alongside variables that identify the sexual milieu and reproductive intentions of contraceptive users. Second, these studies typically consider either uptake of a contraceptive method, or whether patients discontinue or switch their contraceptive methods over time. Typically, these metrics are taken as discrete events that are not subject to change over time. Finally, they often present singular measures for pregnancy intentions and represent sexual experience as an extension of sexual functioning. In order to deal with measurement and respondent variability in pregnancy intention, I utilize a set of measures to develop a scale to place respondents on a spectrum of pregnancy intention. To allow for subjective evaluation of sexual satisfaction, which some researchers have suggested is more salient for sexual experience (Higgins and Davis, 2014), I use a self-rated scale of sexual satisfaction at each data collection time point. Combing the unique social space and place of contraceptive users over time provides a rich intersectional examination of the interaction between social dynamics, population dynamics and individual reproductive agency.

Data & Methods

The HER Salt Lake data come from a prospective cohort study initiated in 2015, with planned data collection through 2020. The sample consists of over 3,000 women[2] aged 16-45 years receiving new contraceptive methods at Title X family planning clinics in Salt Lake County, Utah, who intended to use the received method for at least one year. were asked to complete a self-administered survey at enrollment about their reproductive health, general health, and demographic background (Sanders et al, 2018b). Respondents were additionally asked to complete surveys at 1-, 3-, 6-, 12-, 18-, 24-, 30- and 36-month time points from when they were enrolled in the study. The full dataset includes respondents who participated in a nested quasi-experimental observational study, where the experimental groups had costs and barriers to accessing or switching contraceptive methods removed (Sanders et al, 2018b). The data I present here contain only the experimental groups in order to compare between groups who received no-cost contraceptives; additionally, this analysis uses of the first year of data points, which as of September 2018 had been collected for all participants.

Using a multi-state Cumulative Incidence Curve (CIC) approach (Kuo et al, 2008; Mills, 2011; Schmertmann et al, 2010), the main outcome variable that I will analyze is the cumulative survival of

[2] Not all respondents identified as women in this sample, however the sample of those who did not identify this way is very small. In order to facilitate comparison of survival on birth control methods, I have censored these observations from the dataset analyzed.

respondents in one of five specific contraceptive practice states for six commonly used contraceptive methods—the implant, levonorgestrel (LNG) IUD, copper IUD, combined oral contraceptives ("The Pill"), 3-month injectables and the vaginal ring. I created this variable by coding the most effective method each respondent reported using at a specific time point and matching it against the contraceptive method used in the subsequent survey to determine whether they continued using this method, discontinued all methods, switched to either a more or less effective method, or re-started a method from previous discontinuation (this last category only applies to time points after the first follow up survey, since all enrolled participants obtained a new contraceptive method at enrollment).

This analysis relies on two categories of covariates: structural and pregnancy intendedness. The first set represent proximate variables intended to model structural restraints and experiences around contraceptive use (Higgins and Brown, 2008). These include the following variables: a time-constant three-category racial self-identification (non-Hispanic White, Hispanic non-White, non-Hispanic non-White), time-constant income as a percent of federal poverty line, the respondent's time-varying self-identified sexual orientation (heterosexual, mostly heterosexual, bisexual and other), and the respondent's time-varying self-rated score on a question asking about the respondent's sexual satisfaction ("On a scale of 1 to 100 how might you rank your sex life right now?"). While not a complete picture of the respondents' social lives, these four variables situate respondents within socially constructed strata that may affect how they "do" gender, how they interact with their partners, health providers and health systems, and how they create and interpret the meaning of contraceptive use over time.

The second covariate set of interest pertains to pregnancy intendedness, here captured with an aggregate measure. There is significant debate in the literature about whether respondents' intentions about getting pregnant correspond with actual feelings when a mistimed or unwanted pregnancy does occur, as respondents tend to adjust their pregnancy intentions to fit their realized fertility over time (Quesnel-Vallée and Morgan, 2003; Morgan and Rackin, 2010). Additionally, some literature suggests that this convergence varies depending on the type of pregnancy intention question asked. I do two things in this analysis to account for these concerns. First, I allow pregnancy intendedness to vary over time. Second, I construct a 13-point scale of pregnancy intention out of two discrete intention questions and two pregnancy avoidance affect questions. In this scale, 0 is equal to a respondent who states that she is sure she never wants to have (more) children, avoiding pregnancy is extremely important to her, and she would report the worst possible feeling if she found out she was pregnant. A score of 13 corresponds to a respondent who wants to have (more) children within the next year, who reports that avoiding pregnancy is not particularly important, and she would report the happiest possible feeling if she found out she was pregnant. If we take avoiding pregnancy as a core premise of why individuals use contraception, how they feel about avoiding pregnancy over time should be taken into account when evaluating long-term contraceptive use. More importantly for this analysis, pregnancy intention may differ in important ways by race, class, sexual orientation, and satisfaction, and may differ by these variables in important ways over the duration of contraceptive use. Included in these analyses will be a set of controls indicated by the literature as well (i.e. education, relationship status and length, etc.).

I plan to model competing risks using the CIC approach for six commonly used contraceptive methods—the implant, LNG IUD, copper IUD, combined oral contraceptives ("The Pill"), 3-month injectables and the vaginal ring. These six methods account for over 95% of respondents at enrollment in the HER Salt

Lake Study. The analytic model will demonstrate the cumulative survival time of respondents in each of five distinct contraceptive use practices (continuing previous method, switching to a more effective method, switching to a less effective method, re-starting from no use, and discontinuing any method) at four time points over the course of a year (1 month, 3 months, 6 months and 12 months), and will take into account time-constant and time-varying factors, potential right censoring, and will consider specifications to test non-independence of the contraceptive use practice states.

Preliminary Findings

Descriptive analyses at enrollment indicate that even when all contraceptive costs were eliminated, distinct racial, socioeconomic status and sexuality profiles emerge for specific contraceptive methods (see chi-square tests in Table 1). For example, White women and Non-Hispanic Non-White women were more likely than Hispanic women to select LNG IUDs at enrollment, while Hispanic women were more likely to select a contraceptive implant than the other two groups. However, method-specific profiles do NOT differ by sexual satisfaction and pregnancy intention scores at enrollment. What additionally emerges from descriptive tabulations are distinct racial, socioeconomic, sexual and intention-based practices of contraceptive use over the course of a year. For example, respondents who are in the highest quartile of pregnancy intention scores, meaning that they have low intentions of avoiding pregnancy, are three times as likely to discontinue by the 12-month mark relative to those in lower pregnancy intention quartiles. When the pregnancy intention scale is further disaggregated by race or socioeconomic status, distinct magnitudes and patterns emerge for contraceptive use practices over time.

These descriptive findings may be minimalized when the full set of controls are included. However, I hypothesize a distinct trajectory where structural status is more important for contraceptive practice at less than 3 months than other factors. I suggest this is because women are more likely to return to their provider or care institution within this window to modify their method or deal with side effects, and that these repeat encounters offer more frequent occasion for structural discrimination. After three months of contraceptive use I hypothesize that pregnancy intention will be more strongly associated with contraceptive practice than any other factor, under the assumption that contraceptive users will have "settled" into a method, and their determination to continue or discontinue a method will be primarily related to the strength of their desire to avoid a pregnancy.

Table 2 shows the contraceptive use practices at 1 month and 12 months of the study broken down by three aggregated race/ethnicity groups: White, Hispanic, and non-Hispanic non-White. These data show that contraceptive continuation follows a similar pattern of decline over time among the three groups; however, Whites start at higher levels of continuation at 1 month (7-8 percentage points higher), and continue their contraceptive method at higher rates than Non-Whites (3-7 percentage point difference). Although all racial groups end up at similar levels of switching to more effective methods (around 25-30%) at 12 months, there is a much steeper increase among Whites and Hispanics from 1 month to 12 months than among non-White non-Hispanic respondents. Switching to a less effective method was almost twice as common among non-Hispanic non--Whites compared to both Whites and Hispanics, and re-starting from no use was twice as common among non-Hispanic non-Whites and Hispanics as among Whites. Discontinuation levels and trends were similar among all three racial groups.

Respondents who were above 200 percent of the federal poverty level had steeper increases in switching to more effective methods from 1 to 12 months relative to those below 200 percent, but around 30% of all respondents ended up switching to a more effective method by the 12-month point. Respondents at or below the federal poverty level were more likely to discontinue their method over the 12-month period. Around 60% of all respondents continued their contraceptive methods from 1 month to 12 months; the proportionate decrease in continuation from 1-month to 12-months was smallest among those at or below the federal poverty level relative to those above the federal poverty line. Respondents in lower socioeconomic groups experienced less switching to a more effective method and were more likely to discontinue their contraceptive method over time.

Respondents who identified as an "Other" sexuality category (non-hetero and non-bisexual) or as "Heterosexual" were almost half as likely to continue to use their contraceptive method than those who identified as "Mostly heterosexual". Those in the "Other" category were also twice as likely to switch to a more effective method at 1 month and were more likely to discontinue all methods at 12 months compared to any of the other groups. Sexual satisfaction scores[3] are unrelated to continuing contraceptive use. It may be that the effect of the sexual satisfaction variable will be more discernible when interacted with other factors that may affect the co-experience of sex and contraception (see Higgins et al. 2016 for description of relationship between sexual acceptability and contraception).

Respondents' score on the aggregate scale of pregnancy intention has` implications for contraceptive practices over a 12-month period. At 1 month, those who expressed the strongest intention to prevent pregnancy (in the lowest quartile) had the lowest continuation rates compared to the other quartiles and had almost three times the rate of switching to a more effective method relative to the 2nd and 3rd quartiles of respondents. This means that those respondents who had a strong desire to prevent pregnancy at 1 month switched to more effective methods by one month than those who have weaker desires to prevent pregnancy. By the 12-month survey, the 1st and 2nd intention quartile respondents had similar levels of continuation; the highest quartile had almost 20 percentage points lower continuation. Those respondents with the weakest intention to prevent pregnancy continued using their contraceptive method at 12 months at much lower rates than other respondents; this group was mainly split between switching to a more effective method and discontinuing (this group was more than 3 times more likely to discontinue than any of the other quartiles).

Conclusion

Findings from these analyses will help move beyond the framework of clinical care to better understand how clinical experiences with contraceptive use and continuation are affected by social factors that play out in women's everyday lives. Examining these trends longitudinally allows for incorporation of changes in respondents' pregnancy intentions, sexual status, and life situations. Understanding these dynamics will allow researchers and medical practitioners to situate women's lived social experiences within the context of their reproductive health care and goals; this in turn can help promote patient-centered care and reproductive equity.

[3] The mean proportions of respondents in the different contraceptive use practices at 12 months, disaggregated by sexual satisfaction quartile, are at different levels than the other variables due to missingness of responses.

Table 1: Contraceptive Method at Enrollment, by Race, Socioeconomic Status, Sexual Orientation, Sexual Satisfaction and Pregnancy Intention

	LNG IUD	Nexplanon Implant	Paragard IUD	Combined Oral Contraceptives	Depo-Provera Injections	NuvaRing	Total	χ^2
	%	%	%	%	%	%	(N)	χ^2 (df, p-value)
Aggregate Racial Categories	**26.4**	**22.4**	**13.7**	**21.5**	**11.2**	**4.9**	**3,534**	
White, Non-Hispanic	29.4	20.5	14.5	21.2	9.4	5.0	2,205	61.6645*** (10, p<.001)
Hispanic	20.3	28.1	11.7	21.9	13.2	4.7	886	
Non-White, Non-Hispanic	23.7	20.8	13.5	21.9	15.6	4.5	443	
Percent of Federal Poverty Level	**26.4**	**22.1**	**13.6**	**21.8**	**11.2**	**4.9**	**3,455**	
0-100%	23.6	23.8	11.2	22.6	14.6	4.2	1,493	63.5392*** (10, p<.001)
101-200%	27.0	20.6	14.4	23.9	9.1	5.0	963	
>201%	30.0	21.1	16.3	18.6	8.0	5.9	999	
Sexual Orientation Categories	**26.6**	**22.1**	**13.8**	**21.6**	**11.0**	**4.9**	**3,471**	
Heterosexual	26.4	22.4	12.8	21.8	11.5	5.1	2,523	30.4698* (15, p<.05)
Mostly Heterosexual	27.1	19.3	19.9	20.1	8.8	4.8	502	
Bisexual	28.1	23.8	12.9	21.8	9.4	4.1	395	
Other	23.5	17.7	9.8	23.5	21.6	3.9	51	
Sexual Satisfaction Quartiles	**26.6**	**22.3**	**13.7**	**21.4**	**11.3**	**4.7**	**3,228**	
1st (Lowest) Quartile	25.6	23.5	13.5	20.2	12.3	4.9	762	11.4248 (15, p=.722)
2nd Quartile	28.6	20.4	13.4	22.3	10.1	5.2	979	
3rd Quartile	26.3	22.9	13.2	21.1	11.6	4.9	817	
4th (Highest) Quartile	25.2	23.1	14.8	22.1	11.3	3.4	670	
Intendedness Scale Quartiles	**26.3**	**22.5**	**13.7**	**21.5**	**11.1**	**4.9**	**3,571**	
1st (Lowest) Quartile	28.0	25.1	13.3	19.6	9.7	4.4	526	16.6335 (15, p=.341)
2nd Quartile	27.8	20.4	15.4	20.2	11.4	4.8	1,067	
3rd Quartile	25.0	22.5	13.6	22.3	11.1	5.4	1,158	
4th (Highest) Quartile	25.1	23.4	12.0	22.4	11.6	4.5	820	

Table 2: Contraceptive Practice at 1 and 12 months, by Aggregated Race Categories At Enrollment

Contraceptive Practice from Previous Measurement	1 Month	12 Months
Continued previous method		
White, Non-Hispanic	88.4	59.3
Hispanic	81.6	55.7
Non-White, Non-Hispanic	80.4	57.8
Switched to more effective method		
White, Non-Hispanic	6.2	29.6
Hispanic	11.1	29.9
Non-White, Non-Hispanic	10.9	25.3
Switched to less effective method		
White, Non-Hispanic	4.2	3.8
Hispanic	5.5	3.6
Non-White, Non-Hispanic	6.9	6.0
Discontinued all methods		
White, Non-Hispanic	1.2	5.0
Hispanic	1.9	6.5
Non-White, Non-Hispanic	1.9	6.3
Re-start from previous stopped use		
White, Non-Hispanic	n/a	2.3
Hispanic	n/a	4.3
Non-White, Non-Hispanic	n/a	4.8

Table 3: Contraceptive Practice at 1 and 12 months, by Percent of Federal Poverty Level At Enrollment

Contraceptive Practice from Previous Measurement	1 Month	12 Months
Continued previous method		
0-100%	82.9	57.3
101-200%	85.7	59.7
>201%	90.1	59.2
Switched to more effective method		
0-100%	10.1	29.5
101-200%	7.2	27.6
>201%	5.2	29.7
Switched to less effective method		
0-100%	5.5	4.7
101-200%	5.5	4.1
>201%	3.4	3.8
Discontinued all methods		
0-100%	1.5	6.1
101-200%	1.6	4.3
>201%	1.4	4.7
Re-start from previous stopped use		
0-100%	n/a	2.4
101-200%	n/a	4.3
>201%	n/a	2.6

Table 4: Contraceptive Practice at 1 month and 12 Months, by Sexual Orientation

Contraceptive Practice from Previous Measurement	1 month	12 Months
Continued previous method		
Heterosexual	88.3	69.5
Mostly Heterosexual	87.0	75.4
Bisexual	89.3	73.1
Other	85.0	64.7
Switched to more effective method		
Heterosexual	6.3	16.3
Mostly Heterosexual	5.1	14.6
Bisexual	6.1	15.2
Other	12.5	19.6
Switched to less effective method		
Heterosexual	4.1	4.3
Mostly Heterosexual	5.9	4.1
Bisexual	2.5	5.3
Other	2.5	5.9
Discontinued all methods		
Heterosexual	1.4	6.9
Mostly Heterosexual	2.0	4.1
Bisexual	2.1	5.2
Other	0.0	9.8
Re-start from previous stopped use		
Heterosexual	n/a	3.1
Mostly Heterosexual	n/a	0.6
Bisexual	n/a	1.2
Other	n/a	0.0

Table 5: Contraceptive Practice at 1 month and 12 Months, by Quartiles of Sexual Satisfaction Scale

Contraceptive Practice from Previous Measurement	1 month	12 Months
Continued previous method		
1st (Lowest) Quartile	86.5	79.0
2nd Quartile	87.6	81.4
3rd Quartile	86.8	87.7
4th (Highest) Quartile	85.1	81.0
Switched to more effective method		
1st (Lowest) Quartile	6.0	4.8
2nd Quartile	6.6	8.7
3rd Quartile	8.3	5.4
4th (Highest) Quartile	8.5	7.3
Switched to less effective method		
1st (Lowest) Quartile	4.8	4.8
2nd Quartile	4.9	5.2
3rd Quartile	4.9	4.4
4th (Highest) Quartile	5.9	5.3
Discontinued all methods		
1st (Lowest) Quartile	2.7	6.9
2nd Quartile	0.9	3.2
3rd Quartile	1.0	4.5
4th (Highest) Quartile	0.5	5.3
Re-start from previous stopped use		
1st (Lowest) Quartile	n/a	1.9
2nd Quartile	n/a	1.4
3rd Quartile	n/a	1.0
4th (Highest) Quartile	n/a	1.2

Table 6: Contraceptive Practice at 1 month and 12 Months, by Quartiles of Intendedness Scale

Contraceptive Practice from Previous Measurement	1 month	12 Months
Continued previous method		
1st (Lowest) Quartile	78.5	61.3
2nd Quartile	90.9	61.3
3rd Quartile	88.3	58.0
4th (Highest) Quartile	83.7	42.7
Switched to more effective method		
1st (Lowest) Quartile	13.3	27.3
2nd Quartile	4.6	28.9
3rd Quartile	5.9	29.7
4th (Highest) Quartile	9.5	32.4
Switched to less effective method		
1st (Lowest) Quartile	6.8	3.7
2nd Quartile	3.1	3.9
3rd Quartile	4.1	4.2
4th (Highest) Quartile	5.5	2.9
Discontinued all methods		
1st (Lowest) Quartile	1.4	4.7
2nd Quartile	1.4	3.8
3rd Quartile	1.8	5.0
4th (Highest) Quartile	1.3	15.8
Re-start from previous stopped use		
1st (Lowest) Quartile	n/a	3.0
2nd Quartile	n/a	2.2
3rd Quartile	n/a	3.1
4th (Highest) Quartile	n/a	6.3

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