

## **The Desire to Become Pregnant and the Desire to Avoid Pregnancy: Ambivalence, Indifference, Pronatalism, and Antinatalism**

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Pregnancy desires may be thought of as conscious motivational constructs that lie in-between the latent dispositions individuals have to respond positively or negatively to the prospect of becoming pregnant and the plans or intentions that humans formulate in their minds when they decide to become pregnant. Thus, pregnancy desires stand mid-way in the motivational sequence (traits-desires-intentions) that regulates the behaviors that in turn determine whether pregnancy occurs (Miller 1994; Miller 2007).

Most existing research on unintended childbearing divides all pregnancies into two types: pregnancies that were wanted at the time of conception or sooner (intended) and pregnancies that were not wanted at the time of conception (unintended). Unintended pregnancies are further divided into two groups: pregnancies occurring to women who wanted another child some time, but their pregnancy occurred sooner than planned (mistimed) and pregnancies occurring to women who do not ever want (more) children (unwanted).

Pregnancy desires have more recently been conceptualized by demographers in terms of a bipolar continuum. On one end, a couple trying not to conceive becomes pregnant and then decides to abort the pregnancy. This scenario anchors the negative pole. If another couple decides to conceive, the woman becomes pregnant and gives birth, this pregnancy is easily defined as intended, and anchors the positive end of the pole. This bipolar scale has typically been measured by a question, such as the one used by the NSFG, that asks respondents to look at the depiction of an equal-interval eleven-point scale with a 0 at one end and a 10 at the other end and then use that scale to rate their desire right before they got pregnant with a particular pregnancy. The interviewer explains that the 0 means they wanted to avoid a

pregnancy and the 10 means they wanted to get pregnant. Scores falling somewhere between 0 and 10 implicitly mean that the respondents' feelings about getting pregnant fell somewhere between the two extreme forms of wanting to avoid and wanting to achieve pregnancy. In real life, experiences are likely to be more complicated than this bipolar continuum, perhaps even involving an inconsistent combination of positive and negative feelings about pregnancy.

The Relationship Dynamics and Social Life (RDSL) study implemented an alternative approach to measuring pregnancy desires. The approach is based on the idea that there are two separate desires that are driven by two fundamentally different types of motivation – the desire to get pregnant and have a child, and the desire to avoid getting pregnant and having a child. Each of these desires is unipolar. Thus the desire to get pregnant was scaled from 1 = no desire to 6 = strong desire, and similarly, the desire to avoid getting pregnant was scaled from 1 = no desire to 6 = strong desire. An important consequence of conceptualizing pregnancy desires as two separate unipolar dimensions is that the two measures can then be modeled as independent of each other (Miller 2007). There is good evidence that separate brain systems are involved in the rewards and punishments that are implicit in separate dimensions of this sort (Cacioppo and Berntson 1994; Miller 2007) and these two broad measures of positive and negative pregnancy desires have been largely uncorrelated in previous research (Miller 1995; Miller 2007).

We have four goals in this paper: (1) Describe these two measures of pregnancy desires, their distributions, how they vary over time, and how they relate to each other, (2) Explore the relationship of multiple measures of positive, negative, and combined childbearing desires to subsequent pregnancy, and (3) Explore the mechanisms – sexual behavior and contraceptive use – via which these desires influence subsequent pregnancy. In this abstract, we focus mainly on the second goal. Prior to the PAA annual meeting, we will have completed the first and third goals, as well.

## **Data and Methods**

## **Study Design**

The Relationship Dynamics and Social Life (RDSL) study uses a population-based sample of 1,003 young women, ages 18-19, residing in a Michigan county. A 60-minute face-to-face baseline survey interview was conducted between March 2008 and July 2009, to assess important aspects of family background; demographic information; key attitudes, values, and beliefs; current and past friendship and romantic relationships; education; and career trajectories. At the conclusion of this baseline interview, all respondents were invited to participate in a weekly journal-based study – a mixed mode (Internet and phone) survey for 2.5 years. Each week respondents choose to complete the journal either by logging into the study's secure website, or by calling a toll free number and completing the journal with a live interviewer. To date, respondents have completed 38,576 weekly journals; this portion of the study is still in the field, and will be completed in January 2012.

Respondents were paid \$1 per weekly journal with \$5 bonuses for on-time completion of five weekly journals in a row. Automated reminder email and/or text messages were sent to respondents weekly. If a respondent was late, study staff first attempted to contact her by phone, and later by email and letter in attempt to regain her participation. Respondents who became 60 or more days late were offered an increased incentive for completing the next journal. Small gifts (e.g., pen, chapstick, compact, pencil) were also given to respondents to award continued participation.

Our incentive scheme, coupled with the cooperative nature of this age group and their interest in the subject matter, resulted in extremely high cooperation rates: an 83% response rate and a 94% cooperation rate for the baseline interviews. Over 99% of respondents who completed a baseline interview enrolled in the weekly journal portion of the study (N=992). Weekly journal participation rates are currently approximately 61% (the proportion of respondents who have completed a journal in the past 30 days).

## **Measures**

*Positive and Negative Pregnancy Desires.* The RDSL measured pregnancy desires with the following questions:

*“You know, getting pregnant and having a baby is a big event, one that has a lot of consequences. Most people your age have some positive and some negative feelings about getting pregnant and having a child. For this reason we are going to ask you first how much you want to get pregnant, using a scale from 0 to 5. Then we are going to ask you how much you want to avoid getting pregnant, using a scale from 0 to 5.*

*First, how much do you want to get pregnant during the next month? Please give me a number between 0 and 5, where 0 means you don't at all want to get pregnant and 5 means you really want to get pregnant.*

*And next, how much do you want to avoid getting pregnant during the next month? Please give me a number between 0 and 5, where 0 means you don't at all want to avoid getting pregnant and 5 means you really want to avoid getting pregnant.”*

These questions were asked at the baseline survey, and in each subsequent weekly survey. (Respondents were also asked parallel questions about their positive and negative pregnancy desires with the specific partner discussed in each weekly survey.) Note that, although the positive and negative pregnancy desires reported were negatively correlated ( $r = -.52, p = .000$ ), some respondents reported conflicting desires. We present a simple crosstabulation below.

Table 1. Pregnancy Desires at Baseline Interview

		Desire to avoid pregnancy (1-6)		Total
		Weak (1,2,3)	Strong (4,5,6)	
Desire to become pregnant (1-6)	Weak (1,2,3)	Indifferent 2%	Antinatal 95%	98%
	Strong (4,5,6)	Pronatal 1%	Ambivalent 1%	2%
Total		3%	96%	100%

Although the vast majority of respondents hold consistent antinatal pregnancy desires (weak desire to get pregnant and strong desire to avoid pregnancy), some respondents fall into the consistently pronatal, indifferent, or ambivalent cells. There is additional variance in the weekly data.

We use these questions to construct several measures of pregnancy desires: Desire to Become Pregnant is the answer to the first question, coded from 1 (weak positive desire) to 6 (strong positive desire). Desire to Avoid Pregnancy is the answer to the second question, coded from 1 (weak negative desire) to 6 (strong negative desire). Positive-Negative Pregnancy Desire is the product of reverse-coded positive desire (1=strong positive desire to 6=weak positive desire) and negative desire. This measure creates one bipolar scale running from 1=strongly pronatal to 36=strongly antinatal. The scale weights the antinatal pole more heavily, such that a one-unit move at the antinatal end of the scale (e.g., from 4, 4 to 4,5 = 4 units on scale) represents a larger increase on the scale than a one-unit move at the pronatal end of the scale (e.g., from 2, 2 to 2, 3 = 2 units on scale). Finally, a series of five mutually exclusive dichotomous variables roughly corresponds to the table above (splitting antinatal into “nearly antenatal” and “strongly antinatal”). Pronatal is coded 1 for respondents who score between 4 and 6 (strong) on the desire to become pregnant scale and between 1 and 3 (weak) on the desire to avoid pregnancy scale. Indifferent is coded 1 for respondents who score between 1

and 3 (weak) on both the desire to become pregnant and the desire to avoid pregnancy scales. *Ambivalent* is coded 1 for respondents who score between 4 and 6 (strong) on both the desire to become pregnant and the desire to avoid pregnancy scales. And the antinatal group is split into two. *Nearly antinatal* is coded 1 for respondents who score 2 or 3 on the desire to become pregnant and 4 or 5 on the desire to avoid pregnancy. *Strongly antinatal* is coded 1 for those respondents who score 1 on the desire to become pregnant and 6 on the desire to avoid pregnancy. We include this final dichotomous measure as a control in most of our models, to examine whether pregnancy desires affect pregnancy *net of* the strong relationship between strongly antinatal desires and pregnancy.

*Pregnancy.* Each week, in the journal, respondents are asked, “Do you think there might be a chance that you are pregnant right now?” Respondents who answer yes are asked, “Has a pregnancy test indicated that you are pregnant?” Respondents who answer “yes” to the question about the pregnancy test are coded “1” for pregnant.

*Controls.* Several sociodemographic characteristics measured at the baseline interview are included as controls in the current analysis. Age is categorical and ranges from 18 to 20 years; the reference category is 18. Race is included as a dichotomous indicator for African American (33%) versus non-African American. School enrollment/type includes the following categories: 1) not enrolled and did not graduate from high school (8%), 2) not enrolled and graduated from high school (21%), 3) enrolled in high school (13%), 4) enrolled in two year college/vocational/technical/other (29%), and 5) enrolled in four year college (29%). Four year college is the reference category. A respondent is coded as received public assistance (23%) if she reported currently receiving at least one of the following: 1) WIC, 2) FIP, 3) cash welfare, or 4) food stamps. Religious importance is based on the question, “How important if at all is your religious faith to you - would you say not important, somewhat important, very important, or more important than anything else?”, and is coded as not important (1) to more important than anything else (4). The mean is 2.69. A dichotomous measure indicates whether the respondent

is living with a partner (16%), based on two questions, “Who do you currently live with?” and “Do you have a place you live that is separate from where [Partner Name] lives?”. A dichotomous measure indicates whether the respondent’s biological mother was less than 20 years old at her first birth (35%). Family structure is based on the questions, “While you were growing up, which of the following people did you live with?/Which of these people did you live with for the majority of the time when you were growing up?.” It includes the following three categories: 1) Two parents (both biological parents = 48%; biological parent + step-parent = 8%); 2) one biological parent only (38%), and 3) other (8%). Two-parent family is the reference category. (Note: this category also includes adoptive parents, n = 14 families.) A dichotomous measure indicates whether the respondent’s mother’s education is less than high school (8%). Parents’ income is coded as medium/high (\$15,000+) (68%), low (\$14,999 or less) (13%), or don’t know/refused (19%).

Multiple prior pregnancy-related experiences are also included as controls. Age at first sex is coded as 16 years or less (50%). Number of sexual partners is coded as 2 or more partners (57%). A dichotomous measure indicates whether a respondent ever had sex without birth control (45%). Number of prior pregnancies is coded as: 1) none (79%), 2) one (14%), and 3) two or more (7%). No prior pregnancy is the reference.

### **Analytic Strategy**

We use event history methods to model the risk of pregnancy. Because the data are precise to the week, we use discrete-time methods to estimate these models. Person-weeks of exposure are the unit of analysis. We consider women to be at risk of pregnancy during all weeks they report that they are not currently pregnant. Although using person-weeks of exposure to risk as the unit of analysis substantially increases the sample size, Petersen (1986, 1991) and Allison (1982, 1984) have shown that using discrete-time methods does not deflate the standard errors and thus provides appropriate tests of statistical significance. Furthermore, because the probability of becoming pregnant is so small within each week, the estimates

obtained using discrete-time methods are similar to those that would be obtained using continuous methods. In addition, because the probability of becoming pregnant is so small within each week, the hazard of pregnancy is similar to the pregnancy rate. Thus, in the text that follows we sometimes refer to the effects of the covariates on the pregnancy rate.

Our time-varying measures of pregnancy desires are measured three weeks prior to the current week of pregnancy status, in order to measure these characteristics prior to the sexual intercourse that resulted in the pregnancy. In other words, all time-varying covariates are lagged by three weeks. We adopt this strategy to guard against reciprocal causation. For instance, a young woman's recent discovery that she is pregnant may affect her pregnancy desires. Of course, a couple's sexual and contraceptive behavior may also be important predictors of pregnancy desires, and thus the reciprocal causation problem is not completely solved by the use of the time lag.

## **Results**

The first two models separately estimate the effect of pronatal and antinatal pregnancy desires on subsequent pregnancy. These models demonstrate that pronatal pregnancy desires are strongly predictive of early pregnancy, and antinatal pregnancy desires are strongly predictive of delayed pregnancy. This is consistent with prior research, which has usually focused on one or the other measure.

Model 3 includes both pronatal and antinatal desires, and shows that once antinatal desires are included in the model, the effect of pronatal desires is no longer statistically significant. Model 4 investigates the idea that the large effect of antinatal desires is largely due to the large number of respondents who scored 6 on antinatal and 1 on pronatal desires (the very antinatal group). Adding a dichotomous indicator for this group explains the relationship between antinatal desires and their negative influence on subsequent pregnancy rates.

Model 5 estimates the effect of a combined measure of pronatal and antinatal desires – the product of these two scores. Note that the pronatal desire score is reverse-coded; thus both



scores are coded so that higher numbers refer to more negative pregnancy desires. Figure 1 illustrates the magnitude of the effect for this variable at each level of pronatal and antinatal desires. For girls with very high positive desires to get pregnant (desire to get pregnant = 6), the effect of desire to avoid pregnancy is almost flat – in other words, there is very little effect of holding antinatal desires. Girls who want to get pregnant ignore their desire to avoid pregnancy. At the other end of the spectrum, girls who have no positive desires to get pregnant have very steep effects of desires to avoid pregnancy – their antinatal desires have a big effect on behavior. Model 6 estimates the same model, but also including the dichotomous indicator for being very antinatal. This model demonstrates that a substantial fraction of the effect of desires to avoid pregnancy is driven by that very antinatal group. The coefficient is reduced by 1/3 between models 5 and 6, due to the inclusion of the additional measure.

Models 7 through 11 explore the effects of a series of mutually exclusive, exhaustive dichotomous categories. Each of these models includes the very antinatal indicator, so that the models examine differences among the population *not* in that group (i.e., the very antinatal population is not included in the reference group). Models 7, 8, and 9 show that the ambivalent, indifferent, and pronatal groups' pregnancy rates do not differ from the rest of the population. Model 10 shows that the nearly antinatal and very antinatal groups have substantially lower pregnancy rates than the ambivalent, indifferent, and pronatal groups combined. Model 11 demonstrates that the very antinatal group is distinct from every other group in the population – this group has pregnancy rates that are particularly lower than ambivalent, indifferent, and pronatal groups, and also significantly different than the near antinatal group.

### **Discussion**

Overall, our models suggest that our measures of pronatal and antinatal desires may represent truly distinct desires. However, antinatal desires seem to be more important predictors of early pregnancy than pronatal desires. In other words, regardless of stated desires

to become pregnant, the most important predictor of who will successfully delay pregnancy is a stated desire to avoid getting pregnant.

Our next steps with this paper will be to more fully examine the distributional properties of these two measures, as well as how they change over time. We will also examine the extent to which each of these measures operates via two behaviors: sexual intercourse and contraceptive use.

## References

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Table 2. Logistic Regression Estimates of Effects of Desires for Pregnancy on Hazard of Pregnancy

	1	2	3	4	5	6	7	8	9	10	11
<b>Desires</b>											
Desire to Become Pregnant (1=weak, 6=strong)	.42 *** (.06)		.17 (.11)	.05 (.11)							
Desire to Avoid Pregnancy (1=weak, 6=strong)		-0.43*** (.06)	-.29 ** (.11)	-.15 (.11)							
Positive-Negative Pregnancy Desire (1=positive, 36=negative)					-.06 *** (.01)	-.04 * (.02)					
Dichotomized Pregnancy Desires:											
Ambivalent							.47 (.33)				2.10 *** (.32)
Indifferent								.38 (.43)			2.10 *** (.44)
Pronatal									.32 (.30)		1.95 *** (.30)
Nearly Antinatal										-1.18 ** (.42)	.84 * (.42)
Very Antinatal				-1.15 ** (.38)		-.65 (.52)	-1.60 *** (.25)	-1.68 *** (.24)	-1.62 *** (.26)	-2.03 *** (.24)	
<b>Sociodemographic Characteristics</b>											
Age											
19 years old	-.02 (.23)	.01 (.23)	.00 (.23)	-.03 (.24)	-.02 (.24)	-.04 (.24)	-.08 (.24)	-.04 (.24)	-.04 (.24)	-.05 (.24)	-.06 (.24)
20 years old	-1.98 + (1.03)	-1.92 + (1.02)	-1.92 + (1.03)	-1.92 + (1.03)	-1.93 + (1.03)	-1.94 + (1.03)	-2.05 * (1.03)	-1.96 + (1.03)	-1.93 + (1.03)	-2.02 + (1.03)	-2.04 * (1.03)
African American	.04 (.29)	.07 (.29)	.07 (.29)	.00 (.29)	.02 (.29)	-.01 (.29)	-.06 (.29)	-.03 (.29)	-.03 (.29)	-.04 (.29)	-.04 (.29)
School enrollment/type											
Not enrolled and did not graduate	-.73 (.55)	-.77 (.55)	-.79 (.55)	-.93 + (.55)	-.90 (.55)	-.93 + (.55)	-.89 (.55)	-.92 + (.55)	-.92 + (.55)	-.95 + (.55)	-.94 + (.55)
Not enrolled and did graduate	.78 * (.37)	.78 * (.37)	.75 * (.37)	.74 * (.37)	.73 * (.37)	.73 * (.37)	.82 * (.37)	.82 * (.37)	.78 * (.37)	.75 * (.37)	.76 * (.37)
Enrolled in high school	.48 (.43)	.50 (.43)	.47 (.43)	.40 (.43)	.38 (.43)	.37 (.43)	.43 (.43)	.43 (.43)	.43 (.43)	.35 (.43)	.35 (.43)
Enrolled in 2 year college/vocational/technical/other	.08 (.37)	.07 (.37)	.06 (.37)	.04 (.37)	.05 (.37)	.05 (.37)	.08 (.37)	.06 (.37)	.05 (.37)	.09 (.37)	.10 (.37)
Receiving public assistance	.53 + (.28)	.55 * (.28)	.56 * (.28)	.56 * (.28)	.56 * (.28)	.55 * (.28)	.54 + (.28)	.54 + (.28)	.54 + (.28)	.58 * (.28)	.57 * (.28)
Religious importance	.07 (.13)	.07 (.13)	.08 (.14)	.09 (.14)	.08 (.14)	.09 (.14)	.07 (.14)	.07 (.14)	.09 (.14)	.08 (.14)	.07 (.14)
Living with partner	.62 * (.24)	.61 * (.24)	.60 * (.24)	.59 * (.24)	.60 * (.24)	.60 * (.24)	.63 ** (.24)	.60 * (.24)	.59 * (.24)	.63 ** (.24)	.64 ** (.24)

Biological mother less than 20 years old at first birth	.34 (.23)	.31 (.23)	.32 (.23)	.31 (.23)	.32 (.23)	.31 (.23)	.31 (.23)	.30 (.23)	.31 (.23)	.31 (.23)	.31 (.23)
Family structure											
One biological parent only	.30 (.26)	.30 (.26)	.27 (.26)	.29 (.26)	.29 (.26)	.30 (.26)	.34 (.26)	.34 (.26)	.32 (.26)	.31 (.26)	.32 (.26)
Other	.37 (.36)	.38 (.36)	.37 (.36)	.35 (.36)	.37 (.36)	.36 (.36)	.34 (.37)	.34 (.36)	.34 (.36)	.36 (.37)	.36 (.37)
Mother's education less than high school graduate	.29 (.36)	.32 (.36)	.34 (.36)	.36 (.36)	.39 (.36)	.38 (.36)	.31 (.36)	.31 (.36)	.32 (.36)	.40 (.36)	.40 (.36)
Parent's income											
\$14,999 or less	.11 (.31)	.17 (.31)	.14 (.31)	.10 (.31)	.09 (.31)	.08 (.31)	.02 (.32)	.10 (.31)	.11 (.31)	.03 (.32)	.01 (.32)
Don't know/Refused	.05 (.30)	.04 (.30)	.06 (.30)	.09 (.30)	.06 (.30)	.08 (.30)	.06 (.30)	.10 (.30)	.10 (.30)	.05 (.30)	.04 (.30)
<b>Early Pregnancy-Related Experiences</b>											
Age at first sex 16 years or less	.38 (.29)	.34 (.29)	.34 (.29)	.39 (.29)	.36 (.29)	.39 (.29)	.46 (.29)	.45 (.29)	.44 (.29)	.40 (.30)	.40 (.30)
Number of sexual partners 2 or more	.70 * (.33)	.72 * (.33)	.74 * (.33)	.73 * (.33)	.74 * (.33)	.73 * (.33)	.64 + (.33)	.68 * (.33)	.69 * (.33)	.68 * (.33)	.66 * (.33)
Ever had sex without birth control	.17 (.28)	.13 (.28)	.13 (.28)	.10 (.28)	.11 (.28)	.10 (.28)	.15 (.28)	.12 (.28)	.11 (.28)	.13 (.28)	.14 (.28)
Number of prior pregnancies											
1 prior pregnancy	.63 * (.29)	.61 * (.29)	.63 * (.29)	.65 * (.29)	.66 * (.29)	.66 * (.29)	.61 * (.29)	.63 * (.29)	.64 * (.29)	.63 * (.29)	.62 * (.29)
2 or more prior pregnancies	.72 * (.36)	.66 + (.36)	.67 + (.36)	.60 + (.36)	.61 + (.36)	.59 (.36)	.61 + (.36)	.62 + (.36)	.64 + (.36)	.54 (.36)	.53 (.36)
<b>Baseline Hazard Controls</b>											
Journal number	-.02 (.02)	-.01 (.02)	-.01 (.02)	-.01 (.02)	-.01 (.02)	-.01 (.02)	-.01 (.02)	-.01 (.02)	-.01 (.02)	-.01 (.02)	-.01 (.02)
Journal number squared	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)
Constant	-8.04 *** (.63)	-5.11 *** (.67)	-6.13 *** (.96)	-5.79 *** (.90)	-5.44 *** (.65)	-5.57 *** (.66)	-6.17 *** (.64)	-6.14 *** (.64)	-6.21 *** (.65)	-5.75 *** (.64)	-7.76 *** (.63)
$\chi^2$	185.93	189.33	191.90	200.12	200.63	202.08	197.80	196.54	196.90	205.92	206.15
Log-likelihood	-497.10	-495.40	-494.11	-490.00	-489.74	-489.02	-491.16	-491.79	-491.61	-487.10	-486.98

Notes: Coefficients are effects on log-odds. Standard errors in parentheses.

All measures of desires for pregnancy are time-varying and measured three weeks prior to the current week of pregnancy status.

# Pronatal and Antinatal Desires

