Measuring Factors Underlying Intendedness Of Women's First and Later Pregnancies

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CONTEXT: *Unintended pregnancy is associated with poor health outcomes for mothers and infants, and is indicative of gaps in family planning services. Conventional measures of pregnancy intendedness do not reflect the multiple factors affecting a woman's pregnancy-related intentions and attitudes.*

METHODS: *Data collected between March 2002 and February 2003 from 701 women in a public family planning clinic and 671 women in a public prenatal clinic in New Orleans were analyzed to examine factors underlying intendedness (including attitudes toward pregnancy and motivations to achieve or avoid pregnancy).*

RESULTS: *In factor analyses, variables measuring pregnancy intendedness were represented by a single latent factor, pregnancy desirability. For first pregnancy, variables that best captured desirability were those measuring happiness, effort in achieving the pregnancy, extent of looking forward to telling friends, whether the pregnancy was intended (i.e., came at the right time or later), and whether the woman wanted to have a baby with her partner. For last or current pregnancies that were second or higher order ones, they were happiness, pregnancy wantedness, effort in achieving the pregnancy, whether the pregnancy was planned and whether the woman wanted to have a baby with her partner. Among women younger than 18 at first pregnancy, happiness and whether a woman wanted a baby with her partner were the only items that captured pregnancy desirability.*

CONCLUSIONS: *Future surveys on pregnancy intendedness could reduce the number of questions used to capture pregnancy desirability. This should help standardize surveillance systems and permit better assessment of trends in pregnancy desirability over time.*

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Fertility researchers have long struggled with how to assess gaps in family planning and reproductive health services. One indicator of these gaps that is of great interest to program planners and policymakers is the proportion of pregnancies reported as unintended, because unintended pregnancies are associated with increased risks of negative health outcomes for the mother and the child. Conventional measures of pregnancy intendedness distinguish pregnancies that happened at about the right time from those that were mistimed (i.e., they happened sooner than desired) or unwanted. Pregnancies in the first group are classified as intended, whereas those in the other groups are classified collectively as unintended.

However, the appropriateness of this conventional classification scheme is questionable. The unintended pregnancy category encompasses two distinct groups of women with potentially different service needs. Furthermore, women often cannot easily be classified into one of the three categories. Specifically, Trussell and colleagues[1] have demonstrated that a considerable proportion of women who experience contraceptive failure report being happy or very happy with the outcome, which the women called intended. Such seeming contradictions have led to discussions of the meaning and measurement of pregnancy intendedness, including whether inconsistencies between

women's behavior and intentions reflect ambivalence toward the transition to motherhood,[2] ambivalence toward a partner or partnership plans,[3] or problems with retrospective measurement of pregnancy intentions.[4] Qualitative studies, too, have demonstrated that pregnancy intendedness is not a simple construct, and that multiple factors affect a woman's prior or current intentions and attitudes.[5]

Many methodologies have been used to assess pregnancy intendedness;[6] most of them retrospectively ask a small number of questions about the wantedness of a pregnancy. In an effort to better capture the multiple dimensions that affect intendedness, Cycle 5 of the National Survey of Family Growth (NSFG), conducted in 1995, included measures of pregnancy wantedness, happiness to be pregnant, feelings about getting pregnant and partner's pregnancy intentions.[7] However, women's answers to these questions were commonly inconsistent, which may reflect ambivalence about becoming pregnant.[8] Inconsistencies between the desire to avoid pregnancy and preventive behavior, such as contraceptive use, may also reflect ambivalence.[9] Cycle 6 of the NSFG, fielded in 2002, also included questions on motivation to avoid pregnancy and on whether a woman wanted to become pregnant with her partner.[10] Although all these questions provide additional information, it is still

unclear how the multiple measures should be used to assess the overall intendedness of a pregnancy.

Accurate measurement of pregnancy intendedness, including women's attitudes toward pregnancy and motivations to achieve or avoid a pregnancy, is important in understanding fertility-related behaviors, estimating unmet need for contraception and building stronger family planning programs.[11] In this study, we sought to fill gaps in the knowledge and understanding of how to measure pregnancy intendedness in surveys, by examining data collected from women attending two clinics in inner-city New Orleans.

METHODS
Samples
Data were collected between March 13, 2002, and February 28, 2003, as part of the Determinants of Unintended Pregnancy Risk in New Orleans Study—a collaboration between Tulane University and the Centers for Disease Control and Prevention (CDC). The study, which was initiated in 2000, had a qualitative phase and a quantitative phase. Only the quantitative data are presented here.

The sample included women attending an inner-city public prenatal clinic for an obligatory screening and education session before their first prenatal appointment and women visiting an inner-city public family planning clinic. The prenatal clinic we selected is the primary provider of free prenatal care services in New Orleans; the family planning clinic we selected is close to the prenatal clinic and serves a similar population (inner-city low-income women). Women who visited the family planning clinic attended for their annual doctor's appointment to continue their contraceptive method (62%), to refill their oral contraception prescription or obtain a hormonal contraceptive injection (28%), to report side effects from a method or change methods (6%), or for other reasons (4%). The majority of family planning clinic clients were preexisting patients.

Clients of all ages (including adolescents) in the waiting area of each clinic were eligible to participate in the study. Using the appointment book, trained interviewers called out the name of the woman who was third or fourth in line, to allow the 30-minute survey to be started before her appointment. If a client was unwilling to participate in the study, the next name in the appointment book was called out. Willing clients were escorted to a separate room to take the survey, after signing a consent form that explained the study goals and survey content. The survey was administered by interviewers who read the questions and entered the replies into a computer. The folders of participating clients were marked to indicate that they were being interviewed, so that they could be called out of the interview to their clinic appointment and return to the interviewer after the appointment or before the next phase of their clinic visit, to complete the survey. At the end of the survey, clients received tote bags as compensation for their time and effort. The study protocol and consent procedures were approved by the institutional review boards of the Tulane

University Health Sciences Center, the CDC, Charity Hospital and the Department of Health and Human Services (DHHS), which oversees the family planning clinic.

In all, 671 women in the prenatal clinic and 701 in the family planning clinic completed the survey. We excluded 182 of the women from the family planning clinic sample, because these women had never been pregnant and, hence, could not answer questions about previous pregnancies. None of the women in the final sample from the family planning clinic were currently pregnant.

No information was available on the proportion of women approached who refused to participate. However, analyses of data in records from the prenatal clinic showed that the age distribution of interviewed women was similar to that of all women who visited the clinic during the study period: Two percent of each group were aged 15 or younger, 23–25% were 16–19, 37–39% were 20–24, 18–20% were 25–29, 9–10% were 30–34 and 7–8% were 35 or older. Furthermore, comparison of data from family planning clinic records with those from the DHHS for the same clinic revealed no significant differences in distribution by race between the sample and all women attending the clinic during the study period (e.g., the proportions who were black were 96% and 95%, respectively). However, the sample was significantly younger than all women who visited the clinic (21% vs. 15% were younger than 20, and 5% vs. 9% were older than 40; proportions of intervening age-groups were similar).

To examine factors associated with entrance into motherhood, we studied first pregnancies among all women in the final samples. This information was retrospective for all women except for 180 of the prenatal clinic attendees whose current pregnancy was their first. To examine factors associated with subsequent pregnancies, while minimizing recall bias, we focused on pregnancies among 477 prenatal clinic clients whose current pregnancy was at least their second and on last pregnancies among 285 family planning clinic clients who had conceived more than once. The retrospective information from the latter group may bias the results because the earlier that a pregnancy occurred, the more likely a woman is to have changed her attitude toward it over time.[12]

Variables
In addition to asking questions on demographic characteristics, pregnancy outcome and duration since pregnancy, the survey included 19 questions on pregnancy intendedness about the first pregnancy and 15 about the last or current pregnancy of higher order (Table 1, page 200). Most questions on intendedness came from Cycle 5 or 6 of the NSFG; a few were either modified from NSFG questions or designed specifically for this study. Most measures were scored on a scale of 1–5; the rest were dichotomous. From the responses to two questions asked about all pregnancies, we classified pregnancies into the three conventional intendedness categories—intended, mistimed and unwanted.

TABLE 1. Description of variables measuring pregnancy intendedness, Determinants of Unintended Pregnancy Risk in New Orleans Study, 2002–2003

Variable	Question	Response options
Intended/mistimed†,‡	Would you say this pregnancy came too soon, at about the right time or later than you wanted?	Too soon, right time or later
Wanted/unwanted†	Right before this pregnancy, did you want to have a baby any time in the future?	Yes or no
Planned pregnancy	Right before you became pregnant, did you plan to get pregnant?	Yes or no
Wanted baby with partner	In the month before your first [most recent] pregnancy, would you say that you wanted to have a baby with your partner at the time?	Yes or no
Partner wanted pregnancy	Right before your first [most recent] pregnancy, would you say that your partner wanted you to become pregnant?	Yes or no
Wantedness of pregnancy	If you had to rate from 1 to 5 how much you wanted or did not want a pregnancy right before your first [most recent] pregnancy, how would you have rated yourself?	1 (wanted to avoid) to 5 (wanted to get pregnant)
Effort in achieving pregnancy	Right before you became pregnant for the first time [with your most recent pregnancy], how much were you trying to get pregnant?	1 (not trying to get pregnant) to 5 (really trying hard to get pregnant)
Effort in avoiding pregnancy	Right before you became pregnant for the first time [with your most recent pregnancy], how much were you trying to avoid getting pregnant?	1 (not trying to avoid) to 5 (trying to avoid)
Happiness	How happy did you feel when you found out you were pregnant?	1 (very unhappy) to 5 (very happy)
Surprise	When you found out you were pregnant, how surprised did you feel?	1 (not surprised) to 5 (very surprised)
Confusion	When you found out you were pregnant, how confused did you feel?	1 (not confused) to 5 (very confused)
Fear	When you found out you were pregnant, how scared did you feel?	1 (not scared) to 5 (very scared)
Hindrance§	You thought that a new baby would keep you from doing the things that you were used to doing like working, going to school, going out and so on.	1 (not at all) to 5 (tremendous amount)
New experiences§	You looked forward to new experiences that having a baby would bring.	1 (not at all) to 5 (tremendous amount)
Tell friends	You looked forward to telling friends that you were pregnant.	1 (not at all) to 5 (tremendous amount)
Improve relationship	You thought that having a baby might improve your relationship with your partner.	1 (not at all) to 5 (tremendous amount)
Worry about money	You were worried that you did not have enough money to take care of this baby.	1 (not at all) to 5 (tremendous amount)
Dread telling friends§	You dreaded telling your friends that you were pregnant.	1 (not at all) to 5 (tremendous amount)
Buy things for baby§	You looked forward to buying things for a new baby.	1 (not at all) to 5 (tremendous amount)

†Questions used in the conventional definition of intendedness. ‡Response of "too soon" was treated as mistimed; other responses were treated as intended. §Asked only about the first pregnancy. *Notes:* Most questions came from the 1995 NSFG. The "wanted baby with partner" question was from the 2002 NSFG. The following questions were modified from NSFG ones or developed specifically for this study: "planned pregnancy," "effort in avoiding pregnancy," "surprise," "confusion" and "fear."

Data for some survey items were missing for a number of respondents (6% of those reporting on first pregnancies and 7% of those reporting on second and higher order ones). The only significant difference between participants with complete information and those with incomplete information was that the proportion of women who had visited the family planning clinic was larger in the former group.

Analyses

Results of multiple analyses are presented. We used chi-square and t-tests in bivariate analyses: First, we examined differences in demographic characteristics between the two

*In the analysis pertaining to first pregnancy, the variables "happiness," "new experiences," "tell friends" and "buy things for baby" were recoded one for modal (i.e., most common) scores of five and zero otherwise; for all other variables, the recoding was based on a modal score of one. In the analysis on second or higher order pregnancies, "happiness," "wantedness of pregnancy" and "tell friends" were recoded one for modal scores of five and zero otherwise; for all other variables, the recoding was based on a modal score of one. Variables that were coded one had negative factor loadings in the dichotomous model.

clinic populations. Second, we assessed the consistency of the intendedness measures, by examining differences between the clinic populations for women reporting a first pregnancy and for those reporting a second or higher order one.

Third, we conducted a series of exploratory factor analyses (using STATA 7.0) to determine, for each pregnancy group, whether the multiple measures represented a smaller number of underlying factors. Each set of analyses included four models: In the first model, we determined factor loadings (correlations between variables and underlying factors) for the scaled variables. The second eliminated variables with an absolute factor loading of less than .4 (which indicates low correlation) and reanalyzed the remaining scaled variables. In the third model, we recoded the variables as dichotomous ones, on the basis of the modal response.* The final model examined both the recoded variables and the variables that had originally been coded dichotomously. For each variable, we also determined uniqueness—the proportion of the variance that could not

be explained by the factor. We examined eigenvalues to determine the number of factors resulting from each model (an eigenvalue that exceeds 1.0 denotes the presence of an underlying factor).

Given that the final model uses dichotomous data and factor analysis is usually performed on continuous data, we tested the robustness of the final model using confirmatory factor analyses estimated with generalized least-squares methods. We present the commonly used fit statistics (goodness-of-fit index and root mean square error of approximation) from this procedure. We also calculated the squared multiple correlations (R^2) to indicate the proportion of the variance in each variable that could be explained by a single latent factor.

RESULTS
Bivariate Analyses

Although the two clinics were in the same catchment area, the demographic comparison of women who visited the prenatal clinic and ever-pregnant women who visited the family planning clinic showed some notable differences (Table 2). On average, prenatal clinic clients were significantly younger than family planning clinic clients (23.6 vs. 27.9 years); they also were younger at first pregnancy (18.7 vs. 19.3 years) and had had more pregnancies (2.7 vs. 2.0). A larger proportion of women from the family planning clinic than of women from the prenatal clinic were black (96% vs. 89%), probably because the prenatal clinic was the main provider of free prenatal services in the greater New Orleans area and thus drew a wider distribution of women. By contrast, numerous locations in greater New Orleans offered free family planning services, so the sample from the family planning clinic appeared more homogeneous. Women from the family planning clinic were significantly more educated than those from the prenatal clinic. Larger proportions of prenatal clients than of family planning clients were in relationships that had so far lasted a year or less, whereas a larger proportion of family planning clients were not currently in a relationship. Almost half of the women from the family planning clinic (45%) had had only one prior pregnancy, compared with 28% of women from the prenatal clinic.

Of the first pregnancies, 16% were current pregnancies; 64% had ended in a live birth, 12% in a stillbirth or miscarriage, and 8% in abortion (Table 3, page 202). On average, the interval between first pregnancy and the survey date was longer for women from the family planning clinic than for those from the prenatal clinic (8.5 and 4.9 years, respectively). Of the second and higher order pregnancies, most were either pregnancies among family planning clients that had ended in a live birth (31%) or current pregnancies among women in the prenatal clinic (62%). Among family planning clinic clients, 82% had ended in a live birth, and the remainder in abortion, stillbirth or miscarriage. Family planning clinic clients reported on second or higher order pregnancies that had occurred, on average, four years earlier.

TABLE 2. Means (and standard deviations), and percentage distributions reflecting selected characteristics of clinic attendees, according to clinic type

Characteristic	All (N=1,190)	Family planning (N=519)	Prenatal (N=671)
MEANS (SD)			
Age	25.49 (6.69)	27.90 (6.95)	23.61 (5.82)***
Age at first pregnancy	18.96 (3.65)	19.30 (3.70)	18.70 (3.59)**
Total no. of pregnancies	2.37 (1.57)	1.99 (1.21)	2.66 (1.75)***
% DISTRIBUTIONS			
Race			
Black	92.0	96.0	88.9
White	4.6	2.1	6.6
Other	3.4	1.9	4.5***
Education			
<12th grade, not in school	16.3	6.9	23.6
<12th grade, in school	8.3	3.9	11.7
H.S. graduate	26.2	25.8	26.4
Some trade school/college	39.6	45.9	34.7
≥completed college	9.7	17.5	3.6***
Marital status			
Married	16.4	17.2	15.9
Engaged	8.2	9.1	7.5
Relationship ≥24 mos.	39.5	39.5	39.5
Relationship 13–23 mos.	4.6	3.5	5.5
Relationship 7–12 mos.	11.0	7.5	13.6
Relationship 1–6 mos.	6.1	4.2	7.5
No relationship	14.2	19.1	10.5***
Age at first pregnancy			
≤15	12.3	11.0	13.3
16–17	26.2	22.2	29.4
18–19	26.7	27.2	26.4
20–24	25.6	28.3	23.6
≥25	9.2	11.4	7.5**
Total no. of pregnancies			
1	36.0	45.1	28.1
2	27.7	27.6	27.9
3	18.6	17.3	19.5
≥4	17.7	10.0	24.5***
Total	100.0	100.0	100.0

**p≤0.01. ***p≤0.001. *Notes:* Percentages may not total 100 because of rounding. Significance levels refer to differences by clinic type. SD=standard deviation.

In general, first pregnancies seemed more intended among family planning clinic clients than among prenatal clinic clients. Among women at the family planning clinic who reported on their first pregnancy, 46% said that the pregnancy had been unintended (30% mistimed and 16% unwanted)—a proportion smaller than that among women at the prenatal clinic (74%, including 48% reporting mistimed and 26% unwanted). Significantly larger proportions of women from the family planning clinic than of those from the prenatal clinic said that they had planned to get pregnant, that they had wanted a baby with their partner and that their partner had wanted a pregnancy. Furthermore, family planning clinic clients had higher mean scores than did prenatal clinic clients on scales measuring the wantedness of the first pregnancy and the effort in achieving the pregnancy. Although family planning clinic clients seemed happier and less confused about their first pregnancy than were prenatal clinic clients, they also were more surprised and more scared. Most of the measures related to expectations about motherhood showed significant dif-

TABLE 3. Pregnancy characteristics and intendedness measures for clinic attendees reporting first and most recent higher order pregnancy, according to clinic type

Characteristic or measure	First pregnancy			Most recent higher order pregnancy		
	All (N=1,190)	Family planning (N=519)	Prenatal (N=671)	All (N=762)	Family planning (N=285)	Prenatal (N=477)
PREGNANCY						
Percentages						
Live birth	63.7	79.0	51.9	31.2	82.0	0.0
Stillbirth/miscarriage	12.4	10.6	13.8	3.3	7.6	0.0
Abortion	7.8	10.4	5.7	3.9	10.5	0.0
Current pregnancy	16.2	0.0	28.7***	61.6	0.0	100.0***
Mean (SD)						
Yrs. since pregnancy	6.43 (6.00)	8.50 (6.28)	4.85 (5.25)***	1.72 (3.58)	4.41 (4.57)	0.00 (0.00)***
INTENTIONALITY						
Percentages						
Intendedness (conventional measure)						
Intended	38.2	54.0	26.3	47.1	65.3	36.3
Mistimed	40.4	30.4	47.9	17.2	8.0	22.6
Unwanted	21.4	15.6	25.8***	35.7	26.6	41.1***
Planned pregnancy						
Yes	24.3	35.9	15.4	37.0	55.1	25.8
No	75.7	64.1	84.6***	63.0	44.9	74.2***
Wanted baby with partner						
Yes	49.4	56.8	43.7	60.1	73.7	51.6
No	50.6	43.2	56.3***	39.9	26.3	48.4***
Partner wanted pregnancy						
Yes	65.5	68.8	62.8	73.1	77.8	70.1
No	34.5	31.2	37.2*	26.9	22.2	29.9*
Means (SD)†						
Wantedness of pregnancy	2.79 (1.72)	3.18 (1.90)	2.49 (1.50)***	3.22 (1.72)	3.79 (1.77)	2.87 (1.59)***
Effort in achieving pregnancy	2.31 (1.67)	3.09 (1.81)	1.70 (1.25)***	2.73 (1.75)	3.62 (1.76)	2.18 (1.51)***
Effort in avoiding pregnancy	2.86 (1.65)	2.82 (1.72)	2.88 (1.60)	2.51 (1.62)	2.33 (1.73)	2.62 (1.55)*
Happiness	3.40 (1.68)	3.59 (1.80)	3.25 (1.56)***	3.52 (1.65)	4.08 (1.61)	3.18 (1.59)***
Surprise	4.23 (1.35)	4.36 (1.34)	4.12 (1.35)**	4.03 (1.47)	4.18 (1.48)	3.93 (1.45)*
Confusion	2.86 (1.78)	2.54 (1.85)	3.11 (1.69)***	2.34 (1.70)	1.87 (1.57)	2.62 (1.71)***
Fear	3.72 (1.68)	4.02 (1.58)	3.50 (1.71)***	2.63 (1.73)	2.75 (1.79)	2.56 (1.69)
Hindrance	2.42 (1.70)	2.22 (1.74)	2.57 (1.62)***	na	na	na
New experiences	3.84 (1.52)	3.91 (1.62)	3.79 (1.43)	na	na	na
Tell friends	3.42 (1.71)	3.59 (1.77)	3.29 (1.64)**	3.59 (1.66)	3.97 (1.65)	3.35 (1.63)***
Improve relationship	1.70 (1.32)	1.25 (0.88)	2.05 (1.48)***	1.78 (1.35)	1.24 (0.86)	2.11 (1.49)***
Worry about money	2.52 (1.70)	2.19 (1.63)	2.78 (1.71)***	2.11 (1.51)	1.59 (1.25)	2.43 (1.58)***
Dread telling friends	1.98 (1.51)	1.86 (1.56)	2.07 (1.46)*	na	na	na
Buy things for baby	4.27 (1.35)	4.33 (1.40)	4.23 (1.32)	na	na	na

*p≤0.05. **p≤0.01. ***p≤0.001. †Scores on scales of 1–5. *Notes:* Some data were missing on each item. Percentages may not total 100 because of rounding. Significance levels refer to difference by clinic type. na=not applicable. SD=standard deviation.

ferences by clinic, indicating greater intendedness among women from the family planning clinic.

The same pattern of significant differences in intendedness measures was observed between clinic populations reporting a second or higher order pregnancy, except for how scared a woman was when she found out she was pregnant. For example, among family planning clinic clients, 35% reported that their last second or higher order pregnancy was unintended (8% mistimed, 27% unwanted), whereas 64% of prenatal clinic clients reported that their current second or higher order pregnancy was unintended (23% mistimed, 41% unwanted).

Overall, second and higher order pregnancies appeared more intended than first pregnancies. This pattern was observed not only for the conventional measure of intendedness (47% vs. 38% were reported as intended at the time,

and 53% vs. 62% as unintended), but also for the majority of the remaining intendedness measures, including whether the woman wanted a baby with her partner, whether the partner wanted the pregnancy and whether the pregnancy was planned.

Factor Analyses

•*First pregnancy.* In factor analyses of first-pregnancy intendedness measures, only one eigenvalue per model exceeded 1.0, suggesting that a single factor underlay all measures (Table 4). That factor, which we call pregnancy desirability, explained 94% of the shared variance among the 15 intention measures in the final model (not shown). In that model, the variables with the highest absolute factor loadings (greater than .7) and lowest uniqueness (less than .5) were those measuring happiness, effort in achieving the pregnancy,* extent of looking forward to telling friends, whether the pregnancy was intended (i.e., came at the right time or later) and whether the woman wanted to

*This variable was included because its factor loading (.508) was very close to the cutoff value.

TABLE 4. Factor loadings and uniqueness for variables measuring intendedness of first pregnancy

Variable	Model 1 (All scaled variables)		Model 2 (Scaled variables with factor loadings ≥.4)		Model 3 (Scaled variables dichotomized)		Model 4 (All dichotomous variables)	
	Factor loading	Uniqueness	Factor loading	Uniqueness	Factor loading	Uniqueness	Factor loading	Uniqueness
Happiness	.820	.328	.821	.326	.788	.379	.797	.365
Confusion	−.535	.714	−.509	.740	.470	.780	.476	.774
Fear	−.348	.879	na	na	na	na	na	na
Surprise	−.074	.995	na	na	na	na	na	na
Wantedness of pregnancy	.787	.380	.791	.374	−.606	.633	−.649	.579
Effort in achieving pregnancy	.689	.526	.694	.518	−.654	.572	−.701	.508
Effort in avoiding pregnancy	−.590	.652	−.590	.651	.541	.708	.587	.656
Hindrance	−.658	.568	−.655	.570	.592	.649	.573	.672
New experiences	.700	.511	.702	.507	.679	.540	.638	.592
Tell friends	.751	.435	.754	.432	.746	.444	.712	.494
Dread telling friends	−.605	.635	−.605	.634	.579	.665	.550	.698
Buy things for baby	.591	.650	.593	.649	.557	.690	.517	.733
Improve relationship	.095	.991	na	na	na	na	na	na
Worry about money	−.557	.690	−.558	.689	.542	.706	.527	.723
Intended pregnancy†	na	na	na	na	na	na	.728	.470
Planned pregnancy	na	na	na	na	na	na	.692	.521
Wanted baby with partner	na	na	na	na	na	na	.766	.414
Partner wanted pregnancy	na	na	na	na	na	na	.606	.632
Three largest eigenvalues	*5.04, 0.67, 0.50*		*4.91, 0.63, 0.28*		*4.23, 0.41, 0.27*		*6.17, 0.67, 0.30*	

†Pregnancy came at the right time or later. *Notes*: N=1,121 nonmissing observations. In model 3, "happiness," "new experiences," "tell friends" and "buy things for baby" were recoded one for modal scores of five and zero otherwise; for all other variables, the recoding was based on a modal score of one. na=not applicable.

have a baby with her partner. Therefore, these five variables best captured the single underlying latent construct.

Results of the confirmatory factor analysis indicated that all variables in the final model had significant relationships with the single latent factor and that the fit of the model was good (goodness-of-fit index, adjusted for degrees of freedom, 0.904; root mean square error of approximation, 0.071). The variables with the highest squared multiple correlations with the latent variable ($R^2>0.5$) included the five most representative variables in the exploratory analysis. Although the variable measuring whether the pregnancy was planned did not have a factor loading greater than .7 in the exploratory analysis, it correlated well with the latent pregnancy desirability construct in the confirmatory analysis.

•*Second and higher order pregnancies.* In factor analyses of measures related to the last or current pregnancy that was a second or higher order one, only one eigenvalue per model exceeded 1.0, again indicating that a single factor underlay all measures (Table 5, page 204). This pregnancy desirability factor explained 95% of the shared variance among the 11 variables in the final model. In that model, the variables with the highest absolute factor loadings and lowest uniqueness were those measuring happiness, wantedness, effort in achieving the pregnancy, whether the pregnancy was planned and whether the woman wanted to have a baby with her partner.

In the confirmatory factor analysis, this single-factor model had a good fit (adjusted goodness-of-fit index, 0.884; root mean square error of approximation, 0.091), and the same five factors found in the exploratory analysis had the highest correlations with the latent pregnancy desirability con-

struct ($R^2>0.5$). In addition, the variable measuring how much women looked forward to telling friends, which had a factor loading of .68 in the exploratory analysis, correlated well with the latent construct in the confirmatory analysis, suggesting that it also captured pregnancy desirability.

•*Analyses stratified by age at pregnancy.* Pregnancy intendedness varied widely by age: Among the 428 women younger than 18 at first pregnancy who provided complete data, 88% reported that their first pregnancy was unintended (64% mistimed and 24% unwanted), whereas among the 693 women aged 18 or older at first pregnancy, 44% reported that the pregnancy was unintended (25% mistimed and 19% unwanted). Given this difference, we performed additional factor analyses, stratified by age at pregnancy, to determine whether the single-factor solution is appropriate for both younger and older women, and whether the same variables are important for each age-group (results not shown). For both younger and older women, factor analysis of the variables measuring first-pregnancy intendedness demonstrated that a single latent factor—pregnancy desirability—explained more than 85% of the shared variance in the final model. For women younger than 18 at first pregnancy, only two variables had a factor loading of at least .7 in the final model: those measuring happiness and whether the woman wanted to have a baby with her partner. All other variables had factor loadings of less than .6, except for the extent of looking forward to telling friends (.62). For women aged 18 or older at first pregnancy, the variables that had high factor loadings were the same as those in Table 4, model 4.

We conducted similar analyses of variables measuring intendedness of second and higher order pregnancies

TABLE 5. Factor loadings and uniqueness for variables measuring intendedness of most recent second or higher order pregnancy

Variable	Model 1 (All scaled variables)		Model 2 (Scaled variables with factor loadings ≥.4)		Model 3 (Scaled variables dichotomized)		Model 4 (All dichotomous variables)	
	Factor loading	Uniqueness	Factor loading	Uniqueness	Factor loading	Uniqueness	Factor loading	Uniqueness
Happiness	.865	.251	.870	.243	.867	.249	.850	.277
Confusion	−.678	.541	−.661	.563	.597	.643	.572	.673
Fear	−.472	.777	−.451	.796	−.319	.898	−.313	.902
Surprise	−.172	.970	na	na	na	na	na	na
Wantedness of pregnancy	.861	.259	.866	.250	.845	.285	.851	.276
Effort in achieving pregnancy	.797	.364	.800	.360	−.676	.543	−.740	.452
Effort in avoiding pregnancy	−.648	.580	−.647	.581	.604	.635	.601	.639
Tell friends	.707	.500	.712	.493	.691	.523	.678	.538
Improve relationship	.068	.995	na	na	na	na	na	na
Worry about money	−.395	.844	na	na	na	na	na	na
Intended pregnancy†	na	na	na	na	na	na	.640	.590
Planned pregnancy	na	na	na	na	na	na	.796	.366
Wanted baby with partner	na	na	na	na	na	na	.779	.394
Partner wanted pregnancy	na	na	na	na	na	na	.548	.700
Three largest eigenvalues	*3.92, 0.60, 0.23*		*3.71, 0.44, 0.15*		*3.22, 0.27, 0.09*		*5.19, 0.28, 0.26*	

†Pregnancy came at the right time or later. *Notes:* N=711 nonmissing observations. In model 3, "happiness," "wantedness of pregnancy" and "tell friends" were recoded one for modal scores of five and zero otherwise; for all other variables, the recoding was based on a modal score of one. na=not applicable.

among women aged 20 or younger (N=138) and those older than 20 (N=573). In the final model, variables for both age-groups were represented by a single-factor solution, and variables with high factor loadings were the same as those in Table 5, model 4.

DISCUSSION

The proportion of unintended pregnancies among our study population was notably high: In all, 62% of first pregnancies were reported as unintended. Furthermore, among women from both clinics, 53% of second and higher order pregnancies were reported as unintended. At the national level, Henshaw[13] has estimated that in 1994, some 49% of pregnancies in the previous five years (and 31% of births) were unintended. Therefore, the population of women from inner-city New Orleans who were included in this study is clearly a group at high risk of unintended first and higher order pregnancies.

Pregnancies reported by women who visited the family planning clinic were generally more intended than those reported by women who visited the prenatal clinic. In addition, second or higher order pregnancies were generally more intended than first pregnancies. This finding is not surprising, given that first pregnancies in many populations are often mistimed, and the transition to motherhood may engender mixed feelings. Subsequent pregnancies are not expected to have as great an impact on lifestyle, because most women who have been pregnant before are already mothers.

The factor analyses of measures of intendedness showed that for both pregnancy groups, all variables were related to a single underlying latent construct, pregnancy desirability. Three variables were common to the final models of the two pregnancy groups: happiness, effort in achiev-

ing the pregnancy and whether the woman wanted to have a baby with her partner. The conventional measure of intendedness and the extent of looking forward to telling friends helped explain the latent construct for first pregnancy only, whereas wantedness and whether the baby was planned helped explain the latent construct for second or higher order pregnancies only. When the analyses were stratified by maternal age, all age-groups indicated the same, single underlying factor. Moreover, similar groups of variables best represented this factor. The notable exception was that for women younger than 18 at first pregnancy, only two variables represented pregnancy desirability—happiness and whether a woman wanted a baby with her partner. To many young mothers, questions about happiness and desire for a pregnancy with the partner may be more salient and more understandable than some of the other questions.

This study had a number of limitations. First, the analysis was based on a relatively homogeneous sample of mostly black women from two inner-city New Orleans public clinics—a group generally at high risk of unintended pregnancies. The replicability of our factor analysis results needs to be tested in more heterogeneous populations. Second, although we included an extensive list of questions on pregnancy intendedness, we found that all measures were associated with a single latent factor. This appears to contradict both common sense and our qualitative findings that suggest that intendedness is multidimensional.[14] Qualitative research uncovered five domains bearing on intendedness—values toward childbearing/motherhood, contraception, teen and premarital sex, abortion, and community and partner influences—not all of which are reflected or measured in the variables included in this study. Yet, our finding of a single underlying factor does not suggest that pregnan-

cy intentions are one-dimensional; rather, it suggests that the questions traditionally used to measure pregnancy intendedness, such as those in the NSFG, are one-dimensional and may not always be congruent with women's behavior and emotions.

Further work is needed, not only to develop measures that capture the other domains, but also to assess the power of these domains in predicting and explaining intendedness and related behaviors. Such domains need to be explored qualitatively and quantitatively in a sample of nonpregnant women that includes users and nonusers of contraceptives, in order to obtain information on how multiple dimensions influence women's pregnancy desires and means and motivations for preventing pregnancies.

We recommend that future surveys on pregnancy intendedness reduce the number of questions used to capture pregnancy desirability. However, we also recommend that questionnaires on intendedness, although limited by space, continue to use the conventional measure of pregnancy intendedness (based on two questions), because this variable generally well represents the latent construct. Using questions that best capture pregnancy desirability—both those measured with scales and yes-no questions—will also provide information to test the reporting reliability and consistency between first and higher order pregnancies. Finally, it is particularly important that studies targeting adolescents include the questions on happiness and whether a woman wanted a baby with her partner, because these were the main factors that captured pregnancy desirability for this age-group. Our recommendations should help standardize future public health surveillance systems and thus permit better assessments of trends in pregnancy desirability over time.

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