

Prospective Assessment of Pregnancy Intentions Using a Single- Versus a Multi-Item Measure

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CONTEXT: Traditional measures of pregnancy intentions that are dichotomous and retrospective do not fully capture the complexity surrounding women's plans to become pregnant.

METHODS: During January–June 2008, 249 women aged 15–44 awaiting pregnancy test results at family planning clinics in Pittsburgh completed a survey containing both single- and multi-item measures of pregnancy intentions. Chi-square analyses were used to assess differences between subgroups of women.

RESULTS: Few women were trying to become or planning for pregnancy (11% on the single-item measure; 20% on the multi-item measure), while approximately one-third of the sample were not trying to become or planning for pregnancy (31% on the single-item and 36% on the multi-item measure). The single-item measure categorized more women as ambivalent about pregnancy (58%) than did the multi-item measure (44%). Of women categorized as ambivalent by the single-item measure, 62% were also categorized as ambivalent by the multi-item measure. Overall, 68% of responses to the two measures were concordant. With both measures, women who were not planning or trying for pregnancy were more likely than those who were planning for pregnancy or who were ambivalent to indicate that they planned to have an abortion if their test was positive (27–29% vs. 0–2%).

CONCLUSIONS: Prospective assessment of pregnancy intention with either a single- or a multi-item measure may allow for a more nuanced assessment of pregnancy intention than current measures. The multi-item measure may reduce the number of women categorized as ambivalent and aid the development of targeted contraceptive and preconception counseling interventions.

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Among industrialized countries, the United States continues to have the highest rate of unintended pregnancy; approximately half of all American women aged 15–44 have experienced at least one unintended pregnancy.¹ These pregnancies have well-documented health and economic consequences for mothers, children and society as a whole, including an increased risk of morbidity among women who experience unintended pregnancies and economic and social costs in education and child welfare.² Rates of unintended pregnancy and of abortion are disproportionately high among young women, minority women and low-income women.³ Given the public health impact of unintended pregnancy, the U.S. government's Healthy People 2010 initiative focuses on its prevention as part of the broader goals of eliminating health disparities and improving quality of life.⁴

Current discourse regarding unintended pregnancy, reflected in reproductive health policies and programs, often takes the stance that the concept of unintended pregnancy is uncomplicated and self-evident, despite growing evidence that the measurement and conceptualization of unintended pregnancy has significant limitations.^{5–11} Some of these limitations result from interchangeable use of terms related to the “intendedness,” “wantedness” and “planning status” of pregnancies;^{6–8} dichotomous categorization of

these concepts (as unintended or intended, unwanted or wanted, and unplanned or planned) and the universal application of the concept of unintended pregnancy to different subpopulations of women;⁹ others stem from significant differences between researchers and policymakers on the one hand and the women being researched on the other regarding the definitions and values of planned and unplanned pregnancies.¹⁰ In response to the drawbacks of divergent definitions of existing measures, Barrett, Smith and Wellings developed and validated a simple question sequence, the London Measurement of Unplanned Pregnancy (LMUP), to measure pregnancy planning as a multidimensional concept across diverse groups of women.¹¹

Several studies indicate that dichotomous measures of intention do not capture the experiences of the large portion of women who are ambivalent about becoming pregnant. For example, Schwarz and colleagues demonstrated that more women were willing and able to express their ambivalence toward becoming pregnant when presented with five possible responses to a pregnancy intention question than when presented with three.¹² This finding is of clinical significance, because women characterized as being ambivalent toward pregnancy use less effective contraceptive methods than nonambivalent women.^{12,13}

In addition, the retrospective approach to assessing pregnancy intention significantly limits the accuracy of its measurement.^{14–16} Rates of unintended pregnancy fluctuate broadly, depending on whether pregnancy intentions are measured during a pregnancy or after a birth. Most commonly, women tend to become more accustomed to a pregnancy over time, and reports of both intention and desire for pregnancy increase with time from conception.^{15–17} Only two studies^{12,13} have prospectively assessed pregnancy intentions, and both did so in populations of nonpregnant women. An analysis of National Survey of Family Growth data in conjunction with subsequent respondent interviews, which found that correlates of unintended births differ somewhat between prospective and retrospective studies, provides evidence for the need for more prospective studies addressing pregnancy intentions in diverse populations of women.¹⁸

Prospective assessment of pregnancy intention as a multi-dimensional concept may increase health care providers' ability to identify women who are ambivalent toward pregnancy and to tailor contraceptive and preconception messages to improve population-level pregnancy outcomes. Our goal was to prospectively assess pregnancy intentions in a population of women at high risk for unintended pregnancy using two measurement strategies, and to describe the relationship between these measures, decisions regarding the outcome of the potential pregnancy and the women's pregnancy test results.

METHODS

We conducted a cross-sectional survey of women regarding their reproductive health histories and prospective pregnancy intentions as part of a larger study of the social determinants of unintended pregnancy in a population of women at high risk for this outcome. This study was approved by the institutional review board at the University of Pittsburgh.

English-speaking women aged 15–44 who sought walk-in pregnancy testing services at one of four clinics in Pittsburgh were eligible for the study. Three of the sites were general family planning clinics (two located in a women's teaching hospital and one in a Planned Parenthood facility), and the fourth was a Planned Parenthood abortion clinic. These sites were selected because they provided urine pregnancy tests free of charge and served a large number of women at high risk for unintended pregnancy—low-income, minority and young women.

All women who met the eligibility criteria during the study period (January–June 2008) were asked to complete a survey while awaiting the results of their pregnancy test. Of 301 surveys distributed, 249 (83%) were completed with consents that allowed us to record pregnancy test results. The survey took approximately 5–10 minutes to complete. Respondents returned their completed surveys to clinic staff in sealed envelopes, which allowed a woman's responses to remain private. All women who returned a sealed envelope were given a candy bar as a token of appreciation for

TABLE 1. Percentage distribution of women awaiting pregnancy test results at four family planning clinics, by selected characteristics, Pittsburgh, 2008

Characteristic	%
Age	(N=241)
15–19	32.8
20–24	41.5
25–29	16.6
30–44	9.1
Ethnicity	(N=245)
Non-Hispanic	96.7
Hispanic	3.3
Race	(N=205)
White	12.2
Black	79.5
Other	8.3
Annual household income	(N=148)
<\$5,000	23.0
\$5,000–20,000	42.6
\$20,001–50,000	31.1
>\$50,000	3.4
Marital status	(N=231)
Married	3.9
Cohabiting	35.1
Previously married	9.5
Never-married	51.5
Highest level of education	(N=245)
≤high school	61.6
Trade school	13.1
≥college	25.3
Employment	(N=241)
Full-time	20.3
Part-time	26.1
None	53.5
Health insurance	(N=246)
None	39.4
Public	39.8
Private	20.7
Prior pregnancy	(N=224)
Yes	70.1
No	29.9
Prior birth	(N=212)
Yes	51.4
No	48.6
Prior abortion	(N=247)
Yes	20.2
No	79.8
Birth control use since last menses	(N=238)
None	66.8
Any	33.1
Pregnancy test result	(N=249)
Positive	45.8
Negative	54.2
Total	100.0

Notes: Ns vary because of missing data. Percentages may not add to 100.0 because of rounding.

participating in the study. Chart review by research staff confirmed the results of the respondents' pregnancy tests.

The 41-item quantitative survey instrument included questions regarding women's demographic characteristics, reproductive and contraceptive histories, and

TABLE 2. Percentage distribution of women, by pregnancy intention as categorized by a multi-item measure (pLMUP), according to responses to a single-item measure

Response to single-item measure	pLMUP category			Total
	Not planning	Ambivalent	Planning	
Trying to avoid pregnancy	76.1	22.5	1.4	100.0
Ambivalent about pregnancy†	21.1	61.7	17.3	100.0
Wouldn't mind getting pregnant	6.8	57.6	35.6	100.0
Wouldn't mind avoiding pregnancy	43.8	56.3	0.0	100.0
Don't know	20.0	75.0	5.0	100.0
Trying to become pregnant	3.7	11.1	85.2	100.0

†Composite measure, made up of the three responses below. Notes: Percentages may not add to 100.0 because of rounding. pLMUP is the prospective London Measurement of Unplanned Pregnancy.

pregnancy intentions. Pregnancy intention was captured first by a single-item measure that asked women which of the following best described their current situation: “trying to get pregnant,” “wouldn't mind getting pregnant,” “wouldn't mind avoiding pregnancy,” “trying to avoid pregnancy” or “don't know.”* Women who responded “wouldn't mind getting pregnant,” “wouldn't mind avoiding pregnancy” or “don't know” were categorized as being ambivalent; this follows the convention of a previous analysis of this measure.¹² In addition, women were asked what they would do if they received a positive pregnancy test result (“choose abortion,” “continue to adoption,” “continue to parenthood” or “don't know”).

Directly following the single-item measure, the survey also included a question sequence adapted from the LMUP¹¹ to assess women's pregnancy intentions before they receive a pregnancy confirmation, which we call the prospective-LMUP (pLMUP). One question originally in the LMUP sequence that asked women about their feelings regarding a baby was omitted because of the time point at which intentions were being assessed. Research staff agreed that asking women about a baby when they were very early in their pregnancy, if pregnant at all, places a value on the early pregnancy that may not be shared by all women, especially if they intend to terminate the pregnancy. Schünmann and Glasier¹⁹ omitted this question for similar reasons in their study of pregnancy intentions

among women undergoing abortion and successfully used the question sequence to capture pregnancy intentions.

The pLMUP sequence consisted of five questions, which asked women about their contraceptive use since last menses (always used, sometimes used, not used); feelings about the timing of potentially becoming a mother (“wrong time,” “ok but not quite right time,” “right time”); intentions about potentially becoming pregnant (not intended, intentions kept changing, intended); discussions with a partner about potentially becoming pregnant (no discussions with partner, discussed but no agreement with partner, partner agreement on pregnancy); and health preparations† for pregnancy since last menses (no health preparations, one health preparation, two or more health preparations).

Scoring was based on the original schema proposed by Barrett, Smith and Wellings.¹¹ Respondents scored 0–2 for each of the five questions; thus, the final score ranged from a total of 0 (least intended) to 10 (most intended). Although Barrett and colleagues stressed that the scale had no obvious cutoff points, we used their suggested schema to guide our clustering of scores into three groups: 0–3 (not planning), 4–7 (ambivalent), and 8–10 (planning).

We characterized the study participants in terms of social and demographic characteristics (age, ethnicity, race, marital status, education, employment status, income, insurance), clinic type visited for pregnancy test (Planned Parenthood or hospital), reproductive histories, and behavior regarding pregnancy and use of contraceptives. Data from all surveys were entered into an Excel spreadsheet and analyzed using STATA version 9.0. We used chi-square tests to determine differences between women according to social, demographic and reproductive characteristics by test result, prospective pregnancy intentions and anticipated outcome of confirmed pregnancy. Results were considered significant at $p < .05$.

RESULTS

Sample Characteristics

The 249 women in this sample reflected a typical family planning clinic patient population:²⁰ Three-quarters of the women were between the ages of 15 and 24, and the majority were non-Hispanic (97%) and black (80%); two-thirds had an annual household income of \$20,000 or less (Table 1, page 239). Approximately half of the women had never been married; one-third currently lived with their sexual partner. Fifty-four percent were unemployed at the time of the survey, and 39% had no health insurance. However, 21% of women had private health insurance, while 40% had public health insurance. Most women (70%) had previously been pregnant, 51% had given birth at least once and 20% had had an induced abortion. Few women (33%) had used any form of

TABLE 3. Percentage distribution of women, by anticipated decision in the event of a positive pregnancy test, according to responses to a multi-item and a single-item measure

Intention	Terminate pregnancy	Continue pregnancy	Unsure	Total
Multi-item measure***				
Planning	0.0	97.9	2.1	100.0
Ambivalent	2.0	83.2	14.9	100.0
Not planning	27.2	35.8	37.0	100.0
Single-item measure***				
Trying to become pregnant	0.0	100.0	0.0	100.0
Ambivalent about pregnancy	2.3	84.0	13.7	100.0
Wouldn't mind getting pregnant	0.0	94.8	5.2	100.0
Wouldn't mind avoiding pregnancy	6.7	60.0	33.3	100.0
Don't know	2.4	85.4	12.2	100.0
Trying to avoid pregnancy	28.6	31.4	40.0	100.0

***Differences among distributions are significant at $p < .001$. Notes: Chi-square testing for the single-item measure did not include the individual indicators of the ambivalence measure. Percentages may not add to 100.0 because of rounding.

*In an earlier study, women who stated they were trying to avoid pregnancy when presented with only “yes,” “no” or “don't know” options were identified as ambivalent with this measure (source: reference 12).

†Health preparations included taking folic acid, decreasing or stopping smoking or drinking alcohol, adopting a healthier diet and seeking medical advice.

birth control since their last menses. Almost half (46%) received a positive pregnancy test result during the clinic visit.

Comparison Between Measures

According to the pLMUP measure, 20% of women were planning for pregnancy, 44% were ambivalent toward pregnancy and 36% were not planning for pregnancy. Using the single-item measure, we found that 11% of women were trying to become pregnant, 58% were ambivalent and 31% were trying not to become pregnant (not shown). Responses to the single-item measure closely paralleled pLMUP classifications for nonambivalent women (Table 2): Seventy-six percent of women trying to avoid pregnancy per the single-item measure would be categorized by the pLMUP as not planning for pregnancy, while 85% of women who stated they were trying to become pregnant on the single-item measure would be categorized by the pLMUP as planning for pregnancy. Overall, 68% of responses were concordant (not shown).

The measures demonstrated less accord regarding their sensitivity in detecting ambivalence. Only 62% of women who were identified as ambivalent by the single-item measure were considered to be ambivalent about pregnancy by the pLMUP; 21% were classified by the pLMUP as not planning for pregnancy, and 17% as planning for pregnancy. When the individual responses denoting ambivalence on the single-item measure were examined, overlap with the pLMUP measure ranged from 56% to 75%.

Anticipated pregnancy outcomes differed significantly by prospective pregnancy intentions as measured by both the pLMUP and the single-item measure; these outcome percentages were similar for both measures (Table 3). The proportion of women who planned to have an abortion if their test was positive was greater among those who were not planning for or were trying to avoid pregnancy (27–29%) than among those who were planning for pregnancy, were trying to become pregnant or were ambivalent about pregnancy (0–2%). Women surveyed at the Planned Parenthood family planning or abortion clinics were more likely to indicate that they would elect to have an abortion if they received a positive pregnancy test result than were

women surveyed at the hospital clinics (25% vs. 3%, $p < .001$ —not shown).

With both measures, women categorized as not planning for pregnancy were the least likely to receive positive pregnancy tests (Table 4). With the pLMUP measure, 55% of women characterized as planning for pregnancy and 57% of those who were ambivalent received a positive pregnancy test result, as did 28% of those not planning for pregnancy. With the single-item measure, 63% of those trying to become pregnant and 56% who were ambivalent received a positive test result, compared with 22% of those who were trying to avoid pregnancy. Women with positive pregnancy test results were more likely than those with negative tests to indicate that they had not been using birth control since their last period (65% vs. 41%, $p < .01$ —not shown).

Participant Characteristics by pLMUP Status

Given the concordance between the measures, we present subgroup comparisons only for the pLMUP measure, because it represents the more detailed breakdown of the intention categories. Women aged 15–24 were more likely than older women to be categorized as not planning for pregnancy (40% vs. 21–26%—Table 5, page 242). Cohabiting women were less likely than others to be classified as not planning (21% vs. 33–48%) and more likely to be classified as being ambivalent about pregnancy (58% vs. 24–37%). Women who were employed full-time were more likely to be categorized as planning a pregnancy than were women who were working part-time or not working (38% vs. 14–18%). Interestingly, women with public health insurance were less likely to be categorized as planning for pregnancy than were those who had either no health insurance or private health insurance (9% vs. 22–31%). Women identified as ambivalent by the pLMUP were less likely than women who were not planning for pregnancy to report having used any form of birth control since their last period (37% vs. 72%, $p < .001$ —not shown).

DISCUSSION

To the best of our knowledge, our study is the first to assess pregnancy intentions prospectively in a population of both pregnant and nonpregnant women, in a way that allows consideration of intentions and pregnancy status. Prospective measurement allows for a more accurate assessment of women's feelings, plans and behaviors regarding a possible pregnancy before time or the confirmation of a pregnancy can influence them. Integrating measures that incorporate this time point into both research on women's fertility and clinical practice would facilitate identification of women who would benefit from targeted interventions to improve reproductive health outcomes. By assessing pregnancy intentions among women who visit clinic settings for a pregnancy test but who may not be pregnant, clinicians may be able to assist women who are not actively planning for pregnancy by addressing potential family planning challenges and helping them to clarify and realize their fertility goals.

TABLE 4. Percentage distribution of women, by pregnancy test results, according to responses to a multi-item and a single-item measure

Intention	Positive	Negative	Total
Multi-item measure***			
Planning	55.1	44.9	100.0
Ambivalent	57.1	42.9	100.0
Not planning	27.9	72.1	100.0
Single-item measure***			
Trying to become pregnant	63.0	37.0	100.0
Ambivalent about pregnancy	56.2	43.8	100.0
Wouldn't mind getting pregnant	59.3	40.7	100.0
Wouldn't mind avoiding pregnancy	45.5	54.5	100.0
Don't know	60.5	39.5	100.0
Trying to avoid pregnancy	21.6	78.4	100.0

***Differences among distributions are significant at $p < .001$. Note: Chi-square for the single-item measure did not include the individual indicators of the ambivalence measure.

Our study indicates that our modification of the original LMUP questions can be used to measure women's pregnancy intentions prospectively. In addition, we found good accord between our pLMUP question sequence and the single-item measure of pregnancy intention. The difference in the proportion of women who are classified as ambivalent according to each measure highlights the ability of the multi-item pLMUP to detect some aspects of ambivalence that the single-item measure is unable to. Because the pLMUP sequence queries women regarding multiple dimensions of fertility (plans, desires, behaviors, partner influences), it is better able than a single question to capture feelings and plans that may not be well defined. It is thus not surprising that the single-item measure categorized a larger proportion of women as ambivalent about getting pregnant than the pLMUP.

As seen from our results, the single-item measure of pregnancy intentions is sufficiently comparable to the pLMUP question sequence to provide a reasonable assessment of women's prospective pregnancy intentions in settings with significant time constraints. Although the single-item measure is useful as a screening tool, women who indicate ambivalence toward pregnancy when that measure is used may be better served by follow-up with a more in-depth exploration of the nature of this ambivalence using the pLMUP sequence. The pLMUP measure seems to be preferable for use in clearly identifying women who are ambivalent about pregnancy and for targeting interventions that are based on one or more of the fertility dimensions it assesses. Although this five-question sequence may not be appropriate in certain settings or surveys where provider or respondent burden may outweigh the benefit of an in-depth understanding of women's ambivalence, we recommend further exploration of it as a prospective measurement tool in studies that could benefit from more precise assessments of intention.

Almost half of our sample received a positive pregnancy test result. This proportion is higher than those in the two earlier studies that have used pregnancy test results.^{21,22} Given the increased availability and sensitivity of home pregnancy tests since the time of the prior two studies (1996 and 2002), many women who visit clinics for pregnancy tests may already have used an at-home test but desire clinical confirmation of the result. If so, women with positive pregnancy tests may have been more likely than women with negative tests to have pLMUP scores indicating they were planning for pregnancy because they had already experienced pregnancy symptoms or tested positive for pregnancy. Indeed, 55% of women who received confirmation of a pregnancy were categorized as planning for the pregnancy. The high rate of ambivalence and lack of planning for a pregnancy among women who received a positive test result documented here is characteristic of family planning clinic populations of women at high risk for unintended pregnancy.²¹ Our data suggest that these clinic populations would be well served by efforts to prospectively assess pregnancy intentions and by interventions to help women plan for or avoid future pregnancies.

Several retrospective studies^{2,11,12,19} have shown that dichotomous measures of pregnancy planning and intention are insufficient to capture the large proportion of women who are ambivalent about becoming pregnant. Our data, using a prospective approach, support this finding. Both the single-item and the multi-item measures of pregnancy intention indicated that a higher proportion of women were ambivalent than were either planning or not planning pregnancies. Our results also substantiate the earlier work indicating that ambivalence toward pregnancy is common among women and associated with less effective use or nonuse of birth control.^{12,13,19} Although earlier work has documented an association between race and ambivalence¹² (and speculated about the impact of cultural norms and values on ambivalence²¹), we did not

TABLE 5. Percentage distribution of women, by pregnancy planning status as assessed by a multi-item measure, according to selected characteristics

Characteristic	Not planning	Ambivalent	Planning	Total
Total	35.8	43.8	20.4	100.0
Age***				
15–19	39.5	48.7	11.8	100.0
20–24	39.5	45.5	15.2	100.0
25–29	26.3	44.7	29.0	100.0
30–44	21.1	21.1	57.9	100.0
Ethnicity				
Non-Hispanic	36.0	43.9	20.2	100.0
Hispanic	25.0	50.0	25.0	100.0
Race				
White	40.0	32.0	28.0	100.0
Black	36.3	43.3	20.4	100.0
Other	29.4	47.1	23.5	100.0
Annual household income				
<\$5,000	45.2	32.3	22.6	100.0
\$5,000–20,000	35.5	45.2	19.4	100.0
\$20,001–50,000	18.2	54.6	27.3	100.0
>\$50,000	60.0	20.0	20.0	100.0
Marital status**				
Married	33.3	33.3	33.3	100.0
Cohabiting	20.5	57.7	21.8	100.0
Previously married	42.9	23.8	33.3	100.0
Never-married	47.8	37.4	14.8	100.0
Highest level of education				
≤high school	36.6	42.8	20.7	100.0
Trade school	32.3	38.7	29.0	100.0
≥college	36.7	48.3	15.0	100.0
Employment*				
Full-time	21.3	40.4	38.3	100.0
Part-time	34.9	50.8	14.3	100.0
None	40.2	41.8	18.0	100.0
Health insurance**				
None	25.5	43.6	30.9	100.0
Public	43.0	48.4	8.6	100.0
Private	42.0	36.0	22.0	100.0
Reproductive history				
Prior pregnancy	33.1	44.4	22.5	100.0
Prior birth	34.6	43.3	22.1	100.0
Prior abortion	34.0	44.7	21.3	100.0

*Differences among distributions are significant at $p < .05$. **Differences among distributions are significant at $p < .01$. ***Differences among distributions are significant at $p < .001$. Note: Percentages may not add to 100.0 because of rounding.

observe this association, perhaps in part because a large proportion of our sample were black. Further study is needed to better understand the reasons for and nature of women's ambivalence toward pregnancy. In addition, efforts are needed to address ambivalent women's unique needs with regard to contraception and pregnancy planning.

Limitations

Although our study overcomes the common limitations associated with retrospective surveys, some limitations must be addressed. Our sample focused on women at high risk for unintended pregnancy in a narrow geographic area; as a result, generalizability to other populations is limited. In addition, our study population is not representative of the general population of women at high risk for unintended pregnancy, which may impact our ability to detect relationships between certain demographic variables and reproductive health outcomes. Surveying women at the time of pregnancy testing may produce different results from those that would be obtained at a time when women were not anticipating pregnancy test results and actively considering their intentions. Finally, the intentions of women who visited a clinic to be tested for pregnancy may not reflect those of demographically similar women who do not visit a health care setting for a pregnancy test.

CONCLUSIONS

Rates of unintended pregnancy continue to be high among low-income, minority and young women.³ Our study indicates that these populations have high rates of ambivalence toward pregnancy and concurrent low use of effective contraceptives. Prospective assessment of pregnancy intentions to identify ambivalent women, especially with multidimensional measures, may prove a valuable tool that provides the opportunity for clinicians to address these women's concerns and needs for future contraception and healthy pregnancies. In addition, incorporating prospective assessments of pregnancy intention into future research and policy informed by this research will more accurately illuminate the issue before time and a confirmed pregnancy can influence women's feelings, motivations, plans and reactions. Moving away from dichotomous measures of pregnancy intention toward ones that acknowledge multiple dimensions of fertility will further increase our efforts, as researchers, clinicians and policymakers, to develop strategies that highlight the unique needs of women at varying stages of pregnancy intention in order to improve population-level pregnancy outcomes.

REFERENCES

1. Henshaw SK, Unintended pregnancy in the United States, *Family Planning Perspectives*, 1998, 30(1):24–29 & 46.
2. Brown SS and Eisenberg L, eds., *The Best Intentions: Unintended Pregnancy and the Well-Being of Children and Families*, Washington, DC: National Academy Press, 1995.
3. Finer LB and Henshaw SK, Disparities in rates of unintended pregnancy in the United States, 1994 and 2001, *Perspectives on Sexual and Reproductive Health*, 2006, 38(2):90–96.

4. Office of Disease Prevention and Health Promotion, U.S. Department of Health and Human Services, Healthy People 2010, <<http://www.healthypeople.gov>>, accessed Feb. 4, 2007.
5. Santelli J et al., The measurement and meaning of unintended pregnancy, *Perspectives on Sexual and Reproductive Health*, 2003, 35(2):94–101.
6. Stanford JB et al., Defining dimensions of pregnancy intendedness, *Maternal and Child Health Journal*, 2000, 4(3):183–189.
7. Petersen R and Moos MK, Defining and measuring unintended pregnancy: issues and concerns, *Women's Health Issues*, 1997, 7(4):234–240.
8. Fischer RC et al., Exploring the concepts of intended, planned, and wanted pregnancy, *Journal of Family Practice*, 1999, 48(2):117–122.
9. Luker KC, A reminder that human behavior frequently refuses to conform to models created by researchers, *Family Planning Perspectives*, 1999, 31(5):248–249.
10. Lifflander A, Gaydos LM and Hogue CJ, Circumstances of pregnancy: low income women in Georgia describe the difference between planned and unplanned pregnancies, *Maternal and Child Health Journal*, 2007, 11(1):81–89.
11. Barrett G, Smith SC and Wellings K, Conceptualisation, development, and evaluation of a measure of unplanned pregnancy, *Journal of Epidemiology and Community Health*, 2004, 58(5):426–433.
12. Schwarz EB et al., Prevalence and correlates of ambivalence towards pregnancy among nonpregnant women, *Contraception*, 2007, 75(4):305–310.
13. Crosby RA et al., Adolescents' ambivalence about becoming pregnant predicts infrequent contraceptive use: a prospective analysis of nonpregnant African American females, *American Journal of Obstetrics & Gynecology*, 2002, 186(2):251–252.
14. Miller WB, Reproductive decisions: how we make them and how they make us, in: Severy LJ, ed., *Advances in Population*, vol. 2, Gainesville, FL: Jessica Kingsley Publishers, 1998, pp. 1–27.
15. Joyce T, Kaestner R and Korenman S, On the validity of retrospective assessments of pregnancy intention, *Demography*, 2002, 39(1):199–213.
16. Westoff CF and Ryder NB, The predictive validity of reproductive intentions, *Demography*, 1977, 14(4):431–453.
17. Miller WB, Relationships between the intendedness of conception and the wantedness of pregnancy, *Journal of Nervous and Mental Disease*, 1974, 159(6):396–406.
18. Williams L, Abma J and Piccinino LJ, The correspondence between intention to avoid childbearing and subsequent fertility: a prospective analysis, *Family Planning Perspectives*, 1999, 31(5):220–227.
19. Schünmann C and Glasier A, Measuring pregnancy intention and its relationship with contraceptive use among women undergoing therapeutic abortion, *Contraception*, 2006, 73(5):520–524.
20. Abma J et al., Fertility, family planning, and women's health: new data from the 1995 National Survey of Family Growth, *Vital and Health Statistics*, 1997, Series 23, No. 19.
21. Raine T et al., Race, adolescent contraceptive choice, and pregnancy at presentation to a family planning clinic, *Obstetrics & Gynecology*, 2002, 99(2):241–247.
22. Zabin LS et al., Adolescents with negative pregnancy test results: an accessible at-risk group, *Journal of the American Medical Association*, 1996, 275(2):113–117.

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