Published in final edited form as:

Womens Health Issues. 2011 ; 21(2): 110–116. doi:10.1016/j.whi.2010.09.004.

Adolescent pregnancy desire and pregnancy incidence

Heather L. Sipsma, M.Phil.^a, Jeannette R. Ickovics, Ph.D.^a, Jessica B. Lewis, M.F.T.^a, Kathleen A. Ethier, Ph.D.^{a,b}, and Trace S. Kershaw, Ph.D.^a

^aYale University, Yale University School of Public Health, and Yale Center for Interdisciplinary Research on AIDS, New Haven, CT

^bCenters for Disease Control and Prevention, Atlanta, GA

Abstract

Background—Research has suggested the importance of pregnancy desire in explaining pregnancy risk behavior among adolescent females. Much of the literature, however, uses cross-sectional study designs to examine this relationship. Because bias may strongly influence these results, more prospective studies are needed to confirm the relationship between pregnancy desire and pregnancy incidence over time.

Methods—Non-pregnant adolescents aged 14–19 years (N=208) completed baseline interviews and interviews every 6 months thereafter for 18 months. Logistic regression was used to examine demographic and psychosocial correlates of pregnancy desire. Cox regression analysis was used to determine if pregnancy desire predicted pregnancy incidence over time after controlling for potential confounders.

Results—Twenty-four percent of participants either desired pregnancy or were ambivalent towards pregnancy in the next year. Pregnancy desire was associated with older age, relationship duration of less than 6 months, and higher perceived stress. After accounting for potential confounders, pregnancy desire doubled the risk of becoming pregnant over the 18 month follow-up period (RR=2.00, 95% CI=0.99–4.02). Additionally, a heightened risk for pregnancy was found among those who expressed some desire for pregnancy and who were not in school compared to those who expressed no desire for pregnancy and who were in school (RR=4.84, 95% CI=1.21–19.31).

Conclusion—Our analysis reinforces the importance of evaluating pregnancy desire among sexually active adolescent females. Interventions should target young women in new romantic relationships and who are not in school to improve pregnancy prevention efforts. Additionally, improving coping abilities may help reduce feelings of pregnancy desire among adolescent females.

Introduction and Background

Since the 1990's, the United States has experienced significant declines in teenage pregnancy and birth rates. Between 1991 and 2005 birth rates among women 15 to 19 years old dropped 34% from 61.8 to 40.5 births per 1,000 women. More recently, however, national data have suggested increases in the annual rate and number of births to teenage

Corresponding author and address: Heather L. Sipsma, MPhil.; Department of Epidemiology and Public Health, Yale School of Medicine, 60 College Street, New Haven, CT, 06520, heather.sipsma@yale.edu.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

women. Over 445,000 babies were born to young women 15 to 19 years old in 2007 alone (Hamilton, Martin, & Ventura, 2009).

It has been commonly assumed that teenage pregnancies are unintended and are simply the result of inconsistent or no contraception use. Although adolescent pregnancies are largely unintended or unplanned, several studies have found that a significant proportion (24%-65%) of adolescents feel some desire or ambivalence about becoming pregnant, suggesting the importance of these feelings in understanding sexual risk behavior (Cowley & Farley, 2001; Davies et al., 2003; Finer, 2010; Heavey, Moysich, Hyland, Druschel, & Sill, 2008a; Hellerstedt et al., 2001; Kelly, Sheeder, & Stevens-Simon, 2004).

Much of the research examining the relationship between pregnancy desire or ambivalence and sexual risk or pregnancy incidence has relied on cross-sectional designs (Davies et al., 2004; Heavey et al., 2008a; Kelly et al., 2004; Kinsella, Crane, Ogden, & Stevens-Simon, 2007; Raine, Harper, Pauku, & Darney, 2002). These study designs, however, can be subject to several types of biases. For instance, cross-sectional designs cannot indicate temporality. Although it may be assumed that desire precedes pregnancy, young women who receive positive pregnancy test results may increase their desire from natural tendencies to feel positive about a new pregnancy (Bankole & Westoff, 1998; Heavey et al., 2008a). Likewise, adolescents who use contraception inconsistently may modify their desire according to their perceived risk of pregnancy (Kelly et al., 2004). This measurement of desire may also be subject to social desirability bias, thereby encouraging young women to report more positive feelings towards pregnancy than they actually experience if they truly suspect they may be pregnant.

Few studies have examined the ability of pregnancy desire or ambivalence to predict sexual risk or pregnancy incidence over time. Among a sample of African American adolescents, Davies et al. found pregnancy desire at baseline to be a significant predictor of inconsistent contraception use at 6 months (Davies et al., 2006). Using a similar sample, Zabin and colleagues demonstrated that pregnancy desire predicted contraception use but not pregnancy over a two year period (Zabin, Astone, & Emerson, 1993). Crosby et al. also did not find a significant relationship between participant pregnancy desire and pregnancy outcome among African-American adolescents (Crosby, DiClemente, Wingood, Davies, & Harrington, 2002). This body of literature, therefore, provides somewhat mixed results and offers limited generalizability.

Furthermore, limited work has examined the psychosocial and demographic characteristics of pregnancy desire or ambivalence in adolescents (Cowley & Farley, 2001; Davies et al., 2003; Heavey et al., 2008a; Hellerstedt et al., 2001). Given the growing salience of pregnancy desire in predicting risk, understanding its correlates is particularly important to effectively target intervention efforts. Therefore, data from a larger cohort study designed to explore sexual behavior over time were used to accomplish two distinct aims: (1) to document how psychosocial and demographic characteristics relate to pregnancy desire and (2) to determine whether pregnancy desire predicts incident pregnancy among adolescent females.

Methods

Sample

Participants were adolescent females recruited through 10 hospital clinics, community health care centers, and high school-based clinics in New Haven, Bridgeport, and Hartford, Connecticut. These three cities have the highest rates of teenage pregnancy, HIV/AIDS, and STDs in the state (Connecticut Department of Public Health, 2006). Between June 1998 and

March 2000, adolescent women were approached in the clinic waiting rooms by study staff, referred by an enrolled participant or health care provider, or responded to study promotional material in the clinics. Both pregnant and non-pregnant adolescents were recruited and screened for eligibility in the same manner. Eligibility criteria included being female between the ages of 14 and 19, ever having had sexual intercourse, being HIV negative, and being nulliparous. Out of the 534 eligible adolescents, 411 agreed to participate and were interviewed (response rate 77%). Adolescents who agreed to participate were more likely to be African-American ($p<0.05$) and younger ($p<0.05$) than those who refused participation. Participation did not vary by any other measured characteristic. Based on the aims of our study, we limited our sample to the non-pregnant cohort ($n=208$).

Procedures

Non-pregnant participants completed a baseline interview shortly after enrollment. Each participant was then interviewed every 6 months thereafter for 18 months. At each assessment, a member of the study team administered structured, face-to-face interviews lasting approximately 90 minutes with each participant. The survey instrument was pilot-tested for age- and cultural-appropriateness with a similar population of adolescents. It ascertained demographic information, sexual histories, current sexual risk behaviors, psychological measures, and partnership characteristics. This study was approved by the Yale University Human Investigation Committee and by Institutional Review Boards at study clinics. Participation was voluntary and confidential and did not affect the provision of health care in any way. All participants provided written informed consent and were paid \$25 for each interview.

Measures

We derived measures for this study from previous research examining pregnancy desire and sexual risk behavior among adolescents (Brown et al., 2006; Crosby et al., 2002; Davies et al., 2006; DiClemente et al., 2001).

- *Pregnancy Desire.* At baseline, participants were asked at baseline to respond on a 7-point Likert scale from strongly disagree to strongly agree to the statement “You would like to get pregnant in the next year.” Because research suggests that the behavior and characteristics of adolescents who desire pregnancy are not statistically different from those who are ambivalent towards pregnancy and because our own data support this assertion, this measure was dichotomized into disagree (1-3) and maybe or agree (4-7) (Cowley & Farley, 2001; Crosby et al., 2002; Heavey et al., 2008a; Zabin et al., 1993). From this point on, the term “pregnancy desire” includes participants who reported maybe or agreeing with the above statement.
- *Pregnancy incidence.* Participants reported whether or not they became pregnant in the time between the previous and current assessment at each follow-up visit. An incident pregnancy was any new pregnancy occurring during the 18 month follow-up period. In the event of multiple incident pregnancies, only the first incident pregnancy was used for analysis.
- *Demographic factors.* All demographic information was collected from participants at baseline. Age was calculated as the difference in years between the reported date of birth and date of baseline interview. Adolescents self-reported race/ethnicity based on the following categories: white, black, Hispanic/Latina, Native American/Alaskan Native, Asian/Pacific Islander, mixed, or other. According to frequency distributions, this variable was recoded for analyses into ‘White,’ ‘Black,’ ‘Hispanic/Latina,’ and ‘Other.’ Participants were also asked whether or not they

were currently in school and employed. Number of children in home represented the number people under 18 years of age living with the adolescent. Income was categorized according to whether the monthly household income of the participant was above or below the poverty level, adjusted for number of people in the household, according to the HHS Federal Poverty Guidelines for 2000 (Shalala, 2000).

- *Behavioral factors.* All participants were sexually active. At baseline, they self-reported age at first sex, maintained in its continuous form for analysis. Participants also reported whether or not they had ever been pregnant and number of sexual partners in their lifetime. Participants also reported on drug and alcohol use at baseline. Of particular interest, according to past research on pregnancy incidence, was recent alcohol and marijuana use (Crosby et al., 2002). Participants reported the number of days they used alcohol in the past 30 days and marijuana in the past 30 days. For the analysis, these two variables were dichotomized into yes (reported 1 or more days of use) and no (reported no days of use).
- *Relationship factors.* Relationship duration was calculated differently for each analysis. To study its association with reported pregnancy desire at baseline, relationship duration (baseline) was used. If participants were currently involved with a husband or boyfriend at baseline, they were asked the date at which their relationship began. Relationship duration at baseline was calculated based on the date of the first interview. For those not currently involved in a partnership, relationship duration was coded as 0. To test its association with pregnancy incidence over the 18 month follow-up, relationship duration (follow-up) was used to take this time into account. At each of the three follow-up interviews, participants were asked if they currently had a husband or boyfriend, and if so, if it was the same partner from the previous interview. If participants reported a different partner or reported no partner after having been in a relationship, 3 months was added (approximately half the time between interviews) to the time between when the relationship began and the date of the previous interview. (Date relationship ended was not available.) For analytic purposes, both relationship duration variables were categorized into 'no relationship,' 'less than six months,' 'between six months and one year,' and 'longer than one year.'
- *Psychological factors.* All psychological information was collected from participants at baseline; baseline measures were deemed sufficient due to high correlations over the follow-up period. Self-esteem. This construct was measured using the Rosenberg Self-Esteem Inventory (Rosenberg, 1965). Participants were asked 10 questions pertaining to their general outlook on life and prompted to respond on a scale of 1 to 5, with "1" as strongly disagree, and "5" as strongly agree. Cronbach's alpha measured 0.83. Stress. The Perceived Stress Scale (PSS) asks participants to respond to 10 questions about how often they felt or thought a certain way (e.g., "nervous and stressed") during the last month (Cohen, Kamarck, & Mermelstein, 1983; Cohen & Williamson, 1988). Responses were made on a scale of 1 to 5, with "1" being never, and "5" being very often. The PSS has adequate internal and test reliability; Cronbach's alpha among non-pregnant adolescents was 0.74 at baseline. Anxiety and Depression. Participants responded to the Brief Symptom Inventory at baseline, to determine a person's current psychological symptom status (Derogatis & Melisaratos, 1983). The 18 items were designed to measure symptoms and their intensity in three distinct dimensions: depression, anxiety, and somatization; this study used only the depression and anxiety subscales. Participants responded on a scale from 1 to 5 about how much a particular feeling (e.g., "feeling tense," "feeling afraid") bothered them in the past 7

days. The depression subscale (7 items) had an alpha level of 0.80, and the anxiety subscale (6 items) had an alpha of 0.79. Coping Ability. The Brief Cope Scale was used at baseline to assess the degree to which participants used particular strategies to cope with issues in the past month (Carver, 1997). This measure included 24 items (e.g., “Getting emotional support from others”) with responses ranging from 1 (not at all) to 4 (a lot). Positive coping ability included the following subscales: active coping, emotional support, positive reframing, planning, and acceptance. This scale had a Cronbach's alpha of 0.81. Negative coping included denial, behavioral disengagement, and emotional venting. This scale also demonstrated good reliability; Cronbach's alpha was 0.72.

Statistical analysis

We used independent t-tests and chi-square tests to examine demographic and psychosocial correlates of pregnancy desire for continuous and categorical variables, respectively. We then entered variables with p-values less than 0.2 into a multivariate logistic regression model to examine the association of these factors entered simultaneously with pregnancy desire. The p-value of 0.2 has been suggested for use in observational studies with small sample sizes (Jewell, 2004). A final multivariate regression model was constructed using backwards elimination guided by the likelihood ratio test (inclusion $p \leq 0.05$; exclusion $p \leq 0.10$).

We used Cox regression analysis to examine the ability of pregnancy desire to predict pregnancy incidence. This approach allowed us to include participants who did not complete the entire 18 month follow-up. First we used independent t-tests and chi-square tests to compare demographic and psychosocial characteristics between those with and without an incident pregnancy during follow-up. Risk factors with significance levels of less than 0.2 were entered simultaneously in a multivariate Cox regression model and backwards elimination using the likelihood ratio test was used to derive the final covariates. After the predictors of incident pregnancy had been determined, we entered pregnancy desire into the model to examine its impact on pregnancy incidence after accounting for these other associated factors. We also explored two-way statistical interactions between pregnancy desire and the other predictor variables.

A very small proportion of participants had missing data for some predictor variables (all $<4\%$). Missing values were imputed based on means for continuous variables and modes for categorical variables. All analyses were conducted using SPSS 16.0 (SPSS Inc., Chicago, 2007).

Results

Participant characteristics

Participant demographic and psychosocial characteristics at baseline are shown in Table 1. The mean age of participants was 17.2 years ($SD=1.46$). Approximately 40% were non-Hispanic black, 33% were Hispanic, and 16% non-Hispanic white. Most were still in school and not working at baseline. Approximately one-third of participants were involved in relationships lasting longer than one year. Seventy-six percent of participants disagreed with the statement, “You would like to get pregnant next year;” almost 12% neither agreed nor disagreed; and 12% agreed to the statement.

Pregnancy desire

The bivariate analysis (Table 1) indicated that those young women who desired pregnancy were significantly older and less likely to be in school than those who did not desire

pregnancy within the next year. These adolescents also had a greater number of lifetime sexual partners and experienced significantly more perceived stress than adolescents who did not desire pregnancy in the next year (all $p < 0.05$).

In the multivariate logistic regression model, three participant characteristics were significantly related to pregnancy desire: participant age, age at first sex and relationship duration (Table 2). Each year increase in age was associated with almost two-fold greater odds of desiring pregnancy. Additionally, older ages at first sex were associated with reduced odds of desiring pregnancy. And thirdly, adolescents who were in a relationship of less than six months at baseline had odds of desiring pregnancy 5.35 times greater those who were not in a relationship. Longer relationships (6 months or more) were not statistically associated with pregnancy desire in the multivariate model. Perceived stress was marginally significant ($p = 0.054$) with pregnancy desire; every unit increase in perceived stress almost doubled the odds of desiring pregnancy.

Pregnancy incidence

Table 3 describes participant follow-up and number of reported pregnancies over the follow-up period. Seventy-eight percent of participants completed the first follow-up visit. Of these participants, almost 90% either reported a pregnancy or completed both remaining follow-up assessments. Of the 162 adolescents who completed at least one follow-up visit, 38 (23.5%) became pregnant at least once during the study.

Table 4 displays the bivariate analysis used to examine the associations between participant characteristics and pregnancy incidence. Variables that were significant [$p < 0.2$; school status, employment status, relationship duration (follow-up), ever been pregnant, marijuana use, depression, anxiety, and negative coping ability] were used to develop the final model. School status, employment status, and ever been pregnant were retained in the multivariate Cox model for their significant effects on pregnancy incidence. Pregnancy desire was then added to this model. Desire for pregnancy doubled the risk of becoming pregnant over the 18 month follow-up ($RR = 2.00$, $p = 0.053$) after accounting for potential confounders (Table 5). Figure 1 presents the multivariate Cox regression survival curves stratified by pregnancy desire. Investigating further, we found a significant statistical interaction between pregnancy desire and school status ($RR = 4.84$, $p = 0.026$). The risk of pregnancy was almost 5 times higher among those who were not in school and expressing some desire for pregnancy compared to those in school and expressing no desire for pregnancy.

Conclusion and Discussion

Approximately 24% of participants reported feelings of desire or ambivalence towards pregnancy within the next year. Our analysis demonstrates that some desire for pregnancy in this sample of adolescents is significantly associated with pregnancy incidence over the 18 month follow-up period. This study, therefore, is one of the first to suggest that expressions of desire for pregnancy indicate higher risk for subsequent pregnancy among a racially and ethnically diverse sample of young women.

Adolescents who expressed pregnancy desire or ambivalence were likely to be older, have been younger at first sex, in shorter-term relationships and have greater perceived stress than those who expressed no desire for pregnancy. The relationship between pregnancy desire and relationship length is particularly interesting. Pregnancy desire may be creating the drive for new partners or a new relationship may be contributing to pregnancy desire. Ideas surrounding pregnancy in these shorter term relationships may be more romanticized and influenced by the strong intensity of feelings associated with new love (Aron, Norman, Aron, & McKenna, 2000). These shorter adolescent relationships, however, tend to be less

stable by nature, thereby introducing a higher chance of family instability if a pregnancy were to occur and be carried to term. This instability has been linked with less positive behavioral and cognitive child development. Clinicians and family planning practitioners may consider strategies for intervening among this particular adolescent subpopulation, specifically upon presentation for contraceptive regimens.

Additionally, higher levels of stress among those desiring pregnancy also warrant additional attention. These results suggest that adolescents may be using thoughts about pregnancy as a coping mechanism to escape stressful environments. Other literature corroborates this notion, proposing that pregnancy and childbirth may be a strategy used among certain subpopulations to find value and purpose in otherwise depressing or tumultuous environments (Geronimus, 1991; Stevens-Simon & Lowry, 1995). Again, improving coping strategies among adolescent females may be a beneficial approach for reducing sexual risk behavior.

This analysis confirms the suspected link between pregnancy desire and pregnancy over time and reinforces the importance of evaluating this construct among sexually active adolescents. Our multivariate model also suggests that being in school and being employed are important factors that may protect young women from pregnancy. Being in school or employed may represent more responsible behavior or may simply result in less time and opportunity for risk behavior to occur. Being employed may also suggest a greater financial need. The meaning of these variables, however, may differ according to the participant's age. For instance, attending school before graduating high school is reasonably different from attending school after high school. Furthermore, our results highlight the synergistic risk for pregnancy among young females who express some desire for pregnancy and who are not in school. Our study therefore helps interventionists target higher risk subpopulations and provides constructive strategies for improving pregnancy prevention efforts.

After establishing this relationship between pregnancy desire and pregnancy incidence, we tested whether contraception use mediated this relationship using three criteria established by Baron and Kenny (Baron & Kenny, 1986). Contraception use was measured on a scale from 0 to 4 to describe the number of occasions participants used contraception inconsistently. First, contraception use was significantly associated with pregnancy desire ($p < 0.001$); second, contraception use was significantly associated with pregnancy incidence ($p < 0.001$); and third, when contraception use was added to our final multivariate model predicting incident pregnancy, pregnancy desire was no longer significant ($p = 0.485$) and contraception use was highly significant ($p < 0.001$). These results suggest that the relationship between pregnancy desire and pregnancy is mediated by contraception use, and thus highlights risk not only for pregnancy, but also for sexually transmitted infections, including HIV.

This study, however, is not without limitations. First, our sample includes sexually active adolescents and therefore may not generalize to a non-sexually active adolescent population. This population, however, was most appropriate for our study because they represent those at highest risk for pregnancy. Second, our pregnancy desire variable is limited as it uses a single item to assess this construct and therefore may have issues of validity and reliability. Our relationship duration variable for follow-up was also limited as it is pertains only to the relationship reported at baseline. We do contend, however, that this variable contains valuable information for the half of participants who did not initiate new partnerships during the follow-up period. Other attempts at measuring relationship dynamics (e.g., number of partners during follow-up, new partnerships during follow-up) did not meaningfully alter results. Additionally, all measures are self-reported and are subject to bias and misclassification. We were also unable to use biological markers or a chart review to

confirm pregnancy status. Furthermore, the measures assessed at baseline – including pregnancy desire – assume stability over time, which may not have been the case. Future research designs should account for changes in these potentially dynamic variables. We also lack information on partner characteristics, which may play an important role in shaping feelings towards pregnancy and pregnancy risk among adolescent females (Cowley & Farley, 2001; Crosby et al., 2002; Heavey, Moysich, Hyland, Druschel, & Sill, 2008b; Hellerstedt et al., 2001). And lastly, the rate of any follow-up among participants (77.9%) may have been a limitation, and we cannot rule out the possibility of selection bias.

Our study, however, has a number of strengths including its prospective design with a long follow-up period. Additionally, several potential confounders were considered, such as behavioral risk factors and psychological characteristics, which have previously been associated with sexual risk behavior (Brown et al., 2006; Crosby et al., 2002; DiClemente et al., 2001). Furthermore, this racially and ethnically diverse sample improves the generalizability of this research beyond the African American samples used in previous research. Lastly, these results provide strong evidence for the importance of assessing pregnancy desire among adolescents.

It is crucial for future work to continue exploring the characteristics and complexity of pregnancy desire to determine potential strategies for reducing or delaying such sentiment. For instance, research should investigate the importance of the partner's desire for pregnancy and the potential interaction of desire in the dyad. Research should also explore the link between pregnancy desire and expectations for the future, which has been associated with pregnancy desire and sexual risk behavior (Hellerstedt et al., 2001; Kotchick, Shaffer, Forehand, & Miller, 2001; Singer et al., 2006). And lastly, intervention efforts should target young women who desire or are ambivalent towards pregnancy, such as those involved in new romantic relationships, and promote positive coping skills to help reduce rates of adolescent pregnancy in the US.

Acknowledgments

The project described was supported by Award Number T32MH020031 from the National Institute of Mental Health. The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIMH or the NIH. Heather Sipsma had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

References

- Aron A, Norman CC, Aron EN, McKenna C. Couples' shared participation in novel and arousing activities and experienced relationship quality. *Journal of Personality and Social Psychology* 2000;78(2):273–284. [PubMed: 10707334]
- Bankole A, Westoff C. The consistency and validity of reproductive attitudes: evidence from Morocco. *Journal of Biological Science* 1998;30(4):439–455.
- Baron R, Kenny D. The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistic considerations. *Journal of Personality and Social Psychology* 1986;51:1173–1182. [PubMed: 3806354]
- Brown LK, Tolou-Shams M, Lescano C, Houck C, Zeidman J, Pugatch D, et al. Depressive symptoms as a predictor of sexual risk among African American adolescents and young adults. *Journal of Adolescent Health* 2006;39:444.e441–444.e448. [PubMed: 16919811]
- Carver C. You want to measure coping but your protocol's too long: Consider the Brief COPE. *International Journal of Behavioral Medicine* 1997;4:92–100. [PubMed: 16250744]
- Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. *Journal of Health and Social Behavior* 1983;24:385–396. [PubMed: 6668417]

- Cohen, S.; Williamson, G. Perceived stress in a probability sample of the United States. In: Spacapan, S.; Oskamp, S., editors. *The social psychology of health: Claremont Symposium on applied social psychology*. Newbury Park, CA: Sage; 1988.
- Connecticut Department of Public Health. Statistics & Research. 2006.
- Cowley C, Farley T. Adolescent girls' attitudes toward pregnancy: the importance of asking what the boyfriend wants. *Journal of Family Practice* 2001;50(7):603–607. [PubMed: 11485709]
- Crosby RA, DiClemente RJ, Wingood GM, Davies SL, Harrington K. Adolescents' ambivalence about becoming pregnant predicts infrequent contraceptive use: a prospective analysis of nonpregnant African American females. *American Journal of Obstetrics and Gynecology* 2002;186(2):251–252. [PubMed: 11854644]
- Davies SL, DiClemente RJ, Wingood GM, Harrington KF, Crosby RA, Sionean C. Pregnancy desire among disadvantaged African American adolescent females. *American Journal of Health Behavior* 2003;27(1):55–62. [PubMed: 12500952]
- Davies SL, DiClemente RJ, Wingood GM, Person SD, Crosby RA, Harrington KF, et al. Relationship characteristics and sexual practices of African American adolescent girls who desire pregnancy. *Health Education & Behavior* 2004;31(4):85S–96S. [PubMed: 15296694]
- Davies SL, DiClemente RJ, Wingood GM, Person SD, Dix ES, Harrington K. Predictors of inconsistent contraceptive use among adolescent girls: findings from a prospective study. *Journal of Adolescent Health* 2006;39:43–49. [PubMed: 16781960]
- Derogatis L, Melisaratos N. The brief symptom inventory: an introductory report. *Psychological Medicine* 1983;13:595–605. [PubMed: 6622612]
- DiClemente RJ, Wingood GM, Crosby RA, Sionean C, Brown LK, Rothbaum B, et al. A prospective study of psychological distress and sexual risk behavior among black adolescent females. *Pediatrics* 2001;108(5):E85. [PubMed: 11694669]
- Finer LB. Unintended pregnancy among U.S. adolescents: accounting for sexual activity. *Journal of Adolescent Health* 2010;1–3. in press.
- Geronimus A. Teenage childbearing and social and reproductive disadvantage: the evolution of complex questions and the demise of simple answers. *Family Relations* 1991;40:463–471.
- Hamilton BE, Martin JA, Ventura SJ. Births: Preliminary data for 2007. *National Vital Statistics Reports* 2009;57(12):1–23. [PubMed: 19754006]
- Heavey EJ, Moysich KB, Hyland A, Druschel CM, Sill MW. Differences in pregnancy desire among pregnant female adolescents at a state-funded family planning clinic. *Journal of Midwifery and Womens Health* 2008a;53:130–137.
- Heavey EJ, Moysich KB, Hyland A, Druschel CM, Sill MW. Female adolescents' perceptions of male partners' pregnancy desire. *Journal of Midwifery and Women's Health* 2008b;53(4):338–344.
- Hellerstedt WL, Fee RM, McNeely CA, Sieving RE, Shew ML, Resnick MD. Pregnancy feelings among adolescents awaiting pregnancy test results. *Public Health Reports* 2001;116:180–193. [PubMed: 11889284]
- Jewell, NP. *Statistics for Epidemiology*. Boca Raton, FL: Chapman & Hall/CRC; 2004.
- Kelly L, Sheeder J, Stevens-Simon C. Teen home pregnancy test takers: More worried or more wishful? *Pediatrics* 2004;113:581–584. [PubMed: 14993553]
- Kinsella E, Crane L, Ogden L, Stevens-Simon C. Characteristics of adolescent women who stop using contraception after use at first sexual intercourse. *Journal of Pediatric and Adolescent Gynecology*. 2007
- Kotchick BA, Shaffer A, Forehand R, Miller KS. Adolescent sexual risk behavior: a multi-system perspective. *Clinical Psychology Review* 2001;21(4):493–519. [PubMed: 11413865]
- Raine T, Harper C, Paukku M, Darney P. Race, adolescent contraceptive choice, and pregnancy at presentation to a family planning clinic. *Obstetrics and Gynecology* 2002;99(2):241–247. [PubMed: 11814504]
- Rosenberg, M. *Society and the Adolescent Self-Image*. Princeton, NJ: Princeton University Press; 1965.
- Shalala DE. Annual Update of the HHS Poverty Guidelines. *Federal Register* 2000;65(31):7555–7557.

Singer MC, Erickson PI, Badiane L, Diaz R, Ortiz D, Abraham T, et al. Syndemics, sex and the city: understanding sexually transmitted diseases in the social and cultural context. *Social Science and Medicine* 2006;63:2010–2021. [PubMed: 16782250]

Stevens-Simon C, Lowry R. Is teenage childbearing an adaptive strategy for the socioeconomically disadvantaged or a strategy for adapting to socioeconomic disadvantage? *Archives of Pediatrics and Adolescent Medicine* 1995;149:912–915. [PubMed: 7633547]

Zabin LS, Astone NM, Emerson MR. Do adolescents want babies? The relationship between attitudes and behavior. *Journal of Research on Adolescence* 1993;3(1):67–86. [PubMed: 12318551]

Figure 1. Multivariate Cox regression survival curves predicting incident pregnancy stratified by pregnancy desire¹
¹Model controlled for school status, employment status, and ever been pregnant.
 $X^2(4)=19.346, p<0.01$

Table 1
Baseline Characteristics Overall and by Pregnancy Desire¹

	All	Pregnancy Desire		p-value ^a
		No (n=159)	Maybe / Yes (n=49)	
Age (years)	17.2 ± 1.46	17.0 ± 1.45	17.8 ± 1.36	0.001**
Race/ethnicity				0.112
Non-Hispanic White	34 (16.3%)	25 (15.7%)	9 (18.4%)	
Non-Hispanic Black	83 (39.9%)	70 (44.0%)	13 (26.5%)	
Hispanic	68 (32.7%)	46 (28.9%)	22 (44.9%)	
Other	23 (11.1%)	18 (11.3%)	5 (10.2%)	
Poverty Level				0.396
Below	158 (76.0%)	123 (77.4%)	35 (71.4%)	
Above	50 (24.0%)	36 (22.6%)	14 (28.6%)	
Currently in School				0.042*
No	46 (22.1%)	30 (18.9%)	16 (32.7%)	
Yes	162 (77.9%)	129 (81.1%)	33 (67.3%)	
Employment Status				0.399
Unemployed	117 (56.2%)	92 (57.9%)	25 (51.0%)	
Employed	91 (43.8%)	67 (42.1%)	24 (49.0%)	
# Children in Home				0.097
0	34 (16.3%)	21 (13.2%)	13 (26.5%)	
1	56 (26.9%)	43 (27.0%)	13 (26.5%)	
2	54 (26.0%)	41 (25.8%)	13 (26.5%)	
3 or more	64 (30.8%)	54 (34.0%)	10 (20.4%)	
Relationship Duration (Baseline)				0.099
No relationship	45 (21.6%)	38 (23.9%)	7 (14.3%)	
Less than 6 months	50 (24.0%)	32 (20.1%)	18 (36.7%)	
Between 6 and 12 months	45 (21.6%)	35 (22.0%)	10 (20.4%)	
12 months or more	68 (32.7%)	54 (34.0%)	14 (28.6%)	
Ever Pregnant				0.933
Yes	50 (24.0%)	38 (23.9%)	12 (24.5%)	
No	158 (76.0%)	121 (76.1%)	37 (75.5%)	
Alcohol Use (past 30 days)				0.520
Yes	81 (38.9%)	60 (37.7%)	21 (42.9%)	
No	127 (61.1%)	99 (62.3%)	28 (57.1%)	
Marijuana Use (past 30 days)				0.165
Yes	76 (36.5%)	54 (34.0%)	22 (44.9%)	
No	132 (63.5%)	105 (66.0%)	27 (55.1%)	
Age at First Sex (years)	12.8 ± 2.08	12.9 ± 2.14	12.4 ± 1.85	0.151
Number of Sex Partners (ever)	4.6 ± 4.83	4.0 ± 4.41	6.6 ± 5.61	0.004**

	All	Pregnancy Desire		p-value ^a
		No (n=159)	Maybe / Yes (n=49)	
Perceived Stress	3.0 ± 0.58	3.0 ± 0.59	3.2 ± 0.51	0.013 *
Self-Esteem	4.0 ± 0.65	4.0 ± 0.65	3.8 ± 0.60	0.062
Depression	7.7 ± 5.61	7.5 ± 5.41	8.5 ± 6.24	0.281
Anxiety	6.4 ± 5.10	6.5 ± 5.13	6.3 ± 5.02	0.856
Positive Coping	5.5 ± 1.12	5.6 ± 1.07	5.3 ± 1.27	0.116
Negative Coping	4.2 ± 1.32	4.1 ± 1.34	4.3 ± 1.28	0.600

*
p<0.05;

**
p<0.01

¹ Table values are n (column %) for all above categorical variables and mean ± standard deviation for all above continuous variables. Percentages may not sum to 100% due to rounding.

^a P-values reflect statistical significance of chi-square tests for categorical variables and independent t-tests for continuous variables.

Table 2
Final Logistic Regression Model Predicting Pregnancy Desire

	OR (95% CI)
Age (years)	1.91 (1.39, 2.62)*
Race/ethnicity	
Non-Hispanic White	REF
Non-Hispanic Black	0.78 (0.26, 2.33)
Hispanic	2.37 (0.82, 6.88)
Other	0.80 (0.20, 3.223)
Relationship Duration (Baseline)	
No relationship	REF
< 6 months	5.35 (1.67, 17.16)*
6 – 12 months	2.21 (0.66, 7.44)
> 12 months	1.77 (0.58, 5.43)
Age at first sex (years)	0.83 (0.70, 0.98)*
Perceived Stress	1.96 (0.99, 3.88)
Positive Coping	0.72 (0.51, 1.02)

*
 $p < 0.05$

Table 3
Participant follow-up and pregnancy incidence at each time point

Assessment	Total N(%) ^a	Cumulative lost to follow-up	Cumulative reporting pregnancy
Baseline	208	N/A	N/A
Follow-up 1 (6 months)	162 (77.9%)	46	13
Follow-up 2 (12 months)	147 (70.6%)	61	26
Follow-up 3 (18 months)	145 (69.7%)	63	38

^a Percentages reported are of the total number of participants enrolled at baseline.

Table 4
Participant Characteristics by Incident Pregnancy (n=162)¹

	Incident Pregnancy (n=38)	No Incident Pregnancy (n=124)	p-value ^a
Age (years)	17.5 ± 1.32	17.2 ± 1.50	0.269
Race			0.236
Non-Hispanic White	4 (10.5%)	21 (16.9%)	
Non-Hispanic Black	12 (31.6%)	53 (42.7%)	
Hispanic	16 (42.1%)	40 (32.3%)	
Other	6 (15.8%)	10 (8.1%)	
Below poverty	28 (73.7%)	96 (77.4%)	0.634
Currently in School	25 (65.8%)	101 (81.5%)	0.042*
Employed	12 (31.6%)	61 (49.2%)	0.056
# Children in Home			0.462
0	8 (21.1%)	19 (15.3%)	
1	13 (34.2%)	32 (25.8%)	
2	7 (18.4%)	35 (28.2%)	
3 or more	10 (26.3%)	38 (30.6%)	
Relationship Duration (Follow-Up)			0.030*
No relationship	6 (15.8%)	32 (25.8%)	
Less than 6 months	7 (18.4%)	7 (5.6%)	
Between 6 and 12 months	1 (2.6%)	13 (10.5%)	
12 months or more	24 (63.2%)	72 (58.1%)	
Ever Pregnant	14 (36.8%)	25 (20.2%)	0.035*
Alcohol Use (past 30 days)	12 (31.6%)	52 (41.9%)	0.253
Marijuana Use (past 30 days)	19 (50.0%)	44 (35.5%)	0.108
Age at First Sex (years)	12.9 ± 2.24	12.8 ± 2.00	0.798
Number of Sex Partners (ever)	4.7 ± 5.53	4.4 ± 4.32	0.742
Perceived Stress	3.1 ± 0.59	3.0 ± 0.59	0.291
Self-Esteem	3.9 ± 0.69	4.0 ± 0.65	0.454
Depression	8.9 ± 5.48	7.5 ± 5.71	0.175
Anxiety	8.1 ± 5.66	6.1 ± 4.95	0.037*
Positive Coping	5.6 ± 1.20	5.5 ± 1.13	0.770
Negative Coping	4.6 ± 1.37	4.1 ± 1.34	0.064
Pregnancy Desire	15 (39.5%)	24 (19.4%)	0.011*

*
 $p < 0.05$

¹ Table values are n (column %) for all above categorical variables and mean ± standard deviation for all above continuous variables. Percentages may not sum to 100% due to rounding.

^a P-values reflect statistical significance of chi-square tests for categorical variables and independent t-tests for continuous variables.

Table 5
Cox Regression Model Predicting Pregnancy Incidence^I

	RR (95% CI)
Currently in School	0.54 (0.25, 1.16)
Employed	0.35 (0.17, 0.73)
Ever Pregnant	2.28 (1.14, 4.58)
Pregnancy Desire	2.00 (0.99, 4.02)

^I Multivariate model derived using backwards elimination with those variables that were significant at $p < 0.2$ in the bivariate analysis.