

# Associations of Adolescent Hopelessness and Self-Worth With Pregnancy Attempts and Pregnancy Desire

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Rates of adolescent pregnancy and childbearing in the United States are among the highest in the developed world.<sup>1</sup> Each year, approximately 750 000 women younger than 20 years become pregnant,<sup>2</sup> and about 400 000 give birth.<sup>3</sup> In the United States, adolescent pregnancy rates are about two thirds higher among non-White young women than among White young women, and childbearing rates are approximately one third higher<sup>2</sup>; 57% of births to adolescents in 2010 were to African American or Hispanic/Latino mothers.<sup>3</sup> Surveillance data for 9th- to 12th-grade US students show that Blacks and Hispanics are more likely than Whites to engage in risk behaviors associated with pregnancy (e.g., vaginal intercourse at an early age, nonuse of hormonal contraceptives).<sup>4</sup>

Race and ethnicity do not, in themselves, explain adolescent pregnancy risk. Kirby identified more than 100 antecedents of adolescent pregnancy, primarily related to the types of physical and social environments in which minority youths in the United States are disproportionately represented.<sup>5</sup> He concluded that most risk factors, including poor school performance<sup>6</sup> and residence in a socioeconomically disadvantaged neighborhood,<sup>7-9</sup> reflected dysfunction, disadvantage, or disorganization. Offspring of adolescent parents or sisters of women who began childbearing in adolescence are at high risk for adolescent parenthood, suggesting a cultural or intergenerational component.<sup>8-10</sup> Family quality, especially parent characteristics and relationships<sup>9,11-16</sup>; the quality of relationships with one's school, residential community, and peers<sup>6,7,9,12,14</sup>; and substance use and mental health,<sup>9,17-22</sup> are associated with pregnancy or pregnancy risk behaviors among both female and male adolescents.

Youths who live in challenging social and physical environments typically have negative psychological and cognitive responses to their surroundings (e.g., low self-worth and

**Objectives.** We examined the associations of pregnancy desire (ambivalence or happiness about a pregnancy in the next year) and recent pregnancy attempts with hopelessness and self-worth among low-income adolescents.

**Methods.** To evaluate independent associations among the study variables, we conducted gender-stratified multivariable logistic regression analyses with data derived from 2285 sexually experienced 9- to 18-year-old participants in the Mobile Youth Survey between 2006 and 2009.

**Results.** Fifty-seven percent of youths reported a desire for pregnancy and 9% reported pregnancy attempts. In multivariable analyses, hopelessness was positively associated and self-worth was negatively associated with pregnancy attempts among both female and male youths. Hopelessness was weakly associated ( $P=.05$ ) with pregnancy desire among female youths.

**Conclusions.** The negative association of self-worth and the positive association of hopelessness with pregnancy attempts among young men as well as young women and the association of hopelessness with pregnancy desire among young women raise questions about why pregnancy is apparently valued by youths who rate their social and cognitive competence as low and who live in an environment with few options for material success. (*Am J Public Health.* 2014;104:e133-e140. doi:10.2105/AJPH.2014.301914)

hopelessness).<sup>23,24</sup> Although the evidence is mixed,<sup>20-22,25,26</sup> it is generally assumed that poor self-image, poor self-worth, and poor self-esteem in girls are associated with pregnancy or pregnancy risk markers, including early age at first vaginal intercourse and an inability to negotiate condom use. Hopelessness reflects negative expectations about future desired or valued outcomes and helplessness with respect to one's ability to change the odds that negative outcomes will occur.<sup>27</sup> Hopelessness has been identified as a risk marker for youth violence and self-harm and poor adult social trajectories.<sup>24,28-31</sup> In industrialized countries, adolescent pregnancy (and the decision to continue a pregnancy) may be a consequence of a lack of hope and the perception of too few positive life options,<sup>32,33</sup> although only a limited number of studies have directly examined hopelessness and pregnancy risk.

Kogan et al. examined a related phenomenon, conventional future orientation, and found associations with decreased sexual risk taking at age 16 and avoidance of pregnancy

at age 19 years.<sup>34</sup> A 2013 study of Mobile Youth Survey (MYS) participants showed that having a positive feeling about the future was marginally associated with older age at first intercourse, a risk factor for adolescent pregnancy.<sup>35</sup> Neither study examined female and male youths separately. Despite the health, social, and economic burdens associated with pregnancy involvement among boys,<sup>9,36,37</sup> little is known about the psychological or cognitive correlates of adolescent paternity risk.

Adolescent pregnancy and childbearing disproportionately occur among historically marginalized youths and present significant, and often lifelong, social and health risks to parents and their offspring.<sup>37</sup> Many known antecedents, including poverty, neighborhood quality, and quality of the parental relationship, may be intractable. However, learned cognitive factors such as hopelessness and low self-worth may be modifiable.<sup>27</sup>

Because of our overarching interest in identifying potentially intervenable correlates of pregnancy involvement among high-risk

youths, we examined the hypotheses that hopelessness is positively associated and self-worth is negatively associated with 2 known risk markers of adolescent pregnancy: pregnancy attempts and pregnancy desire.<sup>15,26,38–42</sup> Our analyses involved a cross-sectional sample of adolescent female and male participants in the MYS,<sup>43</sup> a study of primarily African American and impoverished young people with little variation in their social risk for pregnancy. Because there may be gendered cultural meanings or consequences associated with early pregnancy and parenting (especially in communities where rates of adolescent pregnancy are disproportionately high) and because the psychological or cognitive correlates of pregnancy risk may vary according to gender,<sup>21,22</sup> we examined female and male youths separately.

## METHODS

The MYS is a multiple-cohort longitudinal study that examines environmental and psychosocial factors associated with behaviors and health outcomes among low-income adolescents. Its design and measures have been explained in detail elsewhere.<sup>23,24,43–47</sup> The MYS has been conducted annually since 1998 in the Mobile, Alabama, metropolitan area (including the city of Prichard). Mobile has approximately 195 000 residents; in 2010, 51% were African American and 22% lived below the poverty level.<sup>48</sup> Prichard has a population of nearly 23 000, 86% of whom were African American and 36% of whom lived below the poverty level in 2010.<sup>48</sup>

### Recruitment

To be eligible for the study, youths had to be 10 to 18 years of age, had to live in Mobile or Prichard had to verbally agree to participate, and had to have written consent from their guardian. Young people were passively and actively recruited in the 13 neighborhoods targeted for recruitment.

The Mobile and Prichard public housing authorities provided the study investigators with a list of addresses for which the lease listed residents in the 10- to 18-year age range. The survey targeted approximately 50% of these public housing units and contacted the leaseholder in each residence over an 11-week

period to verify the presence of young people 10 to 18 years of age. Because there was no list to guide the selection of youths living in non-public housing, half of such housing units in the targeted neighborhoods were randomly selected for active, door-to-door recruitment by MYS staff to determine whether youths lived there. The active recruitment cooperation rate during each of the study years was about 80%.<sup>43</sup> Passive recruitment strategies included posted flyers and word of mouth, and thus youths from nontargeted residences were also allowed to participate with parental consent.

During each recruitment period, the MYS staff attempted to locate adolescents who had completed the survey in previous years while simultaneously recruiting a new cohort. Thus, new cohorts of 9- to 19-year-olds were enrolled in 1998 and each subsequent year and previous participants were contacted for follow-up, resulting in a database of about 7500 participants between 1998 and 2009.

### Data Collection

In a few cases, the survey was administered in the participant's home, but in general both actively and passively recruited youths completed the survey at a specific time in a church, school, or other neighborhood building in groups of 10 to 30. To the extent possible, groups were segregated according to age and gender. Parents or caregivers were not allowed to be present in the survey rooms. Participants who appeared to have difficulty reading were invited to a separate area where the survey administrator read questions to them individually or in a small group. When participants indicated that they did not understand a question, the administrator explained it to the group.

Participants were reimbursed \$15 for completing the survey. Overall, participation (check-in, survey administration, payment) averaged 90 minutes. The unbiased attrition<sup>46</sup> and the extremely low within-wave rates of missing data on the sensitive issues of sexual and drug use behaviors (between 1% and 4% for any single item) suggest that any unavailable data were missing at random.<sup>47</sup>

### Sample

We derived our cross-sectional sample from 6123 young people (9 to 18 years old) who

participated in the MYS at any point between 2006 and 2009. We chose surveys from this period because of the availability of data relevant to our research question. We selected the most recent survey completed by participants to ensure that we had the most current data for them and that we had information from only 1 survey for those who had completed the survey more than once during the study period.

We restricted our analyses to 3286 sexually experienced adolescents, identified from their responses to questions related to having ever had vaginal intercourse. Of these young people, 858 who indicated that they had children were not eligible because their attitudes about a future pregnancy might significantly differ from the attitudes of those with no children. Of the 2428 youths eligible for the analyses, we excluded 143 who were missing a response to either of the outcome questions (i.e., pregnancy desire, pregnancy attempts) or missing data on the independent variables (i.e., hopelessness, self-worth) or covariates. Our analytic sample of 2285 youths comprised 94% of the MYS participants who were sexually experienced but were not parents during the study period.

### Measures

Our conceptual model was influenced by the theory of triadic influences,<sup>49</sup> in which an ecological framework is used to describe health outcomes and behaviors. The theory proposes that factors can be arranged according to 3 levels (or tiers) of causation: some have direct effects (proximal), some are causally distal (predisposing), and some are underlying (ultimate). It also proposes that variables can be arranged into 3 distinct types or streams of influence: personal, social, and cultural.

We assumed that our economically and residentially homogeneous sample shared many underlying factors, and thus we did not seek to further describe them. We were interested in how distal personal attributes (self-worth and hopelessness) were related to proximal personal attributes associated with pregnancy risk (pregnancy desire and pregnancy attempts). We adjusted for distal personal (age at survey, age at first vaginal intercourse, number of sexual partners, grade appropriate for age), social (gender norms, maternal warmth), and environmental (neighborhood connectedness) factors that are known

to be associated with pregnancy risk<sup>5-7,9,11-16</sup> and that we found to be significantly ( $P \leq .05$ ) associated with both the independent and dependent variables in our preliminary analyses. We examined possible moderating variables and found that, with the exception of gender, none warranted stratification or interaction terms.

### Outcome Variables

The pregnancy attempts variable was determined from a dichotomous question, "Are you currently trying to get pregnant (female participants) or get someone else pregnant (male participants)?" Pregnancy desire was determined from the following question: "How would you feel if you got pregnant (female participants) or if you got someone else pregnant (male participants) during the next year?" There were 3 response options: "I would be happy," "I would not care one way or the other," and "I would be unhappy or angry." We collapsed "happy" and "would not care" (i.e., ambivalent) responses into a single category because our preliminary analyses showed that they were similarly associated with the independent variables and covariates. Our combining of the 2 responses is consistent with evidence that "ambivalent" adolescents who have not formed an opinion about pregnancy are at risk for pregnancy or pregnancy-related risk taking.<sup>25,26,38,40</sup>

### Independent Variables

The 6-item Brief Hopelessness Scale<sup>43</sup> was used to assess hopelessness (negative attitudes and expectations for oneself and the future). Five of the scale's items were adapted from Kazdin's Hopelessness Scale for Children,<sup>50</sup> including "Most people don't really care what happens to other people" and "All I see ahead of me are bad things, not good things." A sixth item, "I don't expect to live a very long life," was developed to reflect the low expectations of survival among many inner-city youths. Participants indicated whether they agreed or disagreed with each statement. All agree responses were assigned a value of 1 and summed to provide a score that ranged from 0 to 6. Higher scores corresponded to stronger feelings of hopelessness. Previous work has shown that this scale has good internal consistency (Cronbach alpha coefficients between 0.71 and 0.74) with the MYS sample.<sup>23</sup>

Self-worth was measured with a 9-item scale comprising 7 items from the Perceived Competence Scale for Children<sup>51</sup> and 2 items created for this study.<sup>43,44</sup> For each series of statements, participants were asked to choose one of 2 options "most like you" (e.g., "I usually get into trouble because of the things I do" or "I usually don't do things that get me into trouble"). Positive self-worth statements were assigned a value of 1. Responses were summed to provide a self-worth score that ranged from 0 to 9. Higher scores corresponded to stronger feelings of self-worth.

### Covariates

We examined all continuous variables to determine whether they had monotonic or threshold effects on the outcome variables. We defined grade appropriate for age by subtracting expected grade in school in the subsequent fall (the surveys were conducted in the summer) from age at the time of the survey. Youths who reported having dropped out ( $n = 13$ ) and those with more than a 6-year difference between age and grade were considered to be below grade level. Participants aged 17 and 18 years who reported that they had graduated ( $n = 121$ ) and those with 6 or fewer years difference between age and grade were considered to be at grade level.

We collapsed responses from the age at first vaginal intercourse question into 5 categories: 9 to 11 years, 12 to 14 years, 15 to 16 years, 17 to 18 years, and missing (8%). We categorized number of sexual partners in the preceding year as 0 to 1, 2 to 3, 4 or more, and missing (6%). We used 2 items to examine gender norms: "If a boy my age has sexual intercourse, it proves that he is a man" and "If a girl my age has sexual intercourse, it proves that she is a woman." Responses were dichotomized for both male and female participants (accepts gender norms or does not accept gender norms).

We measured neighborhood connectedness with an 11-item scale,<sup>43,44</sup> adapted from the Psychological Sense of Community Scale,<sup>52</sup> that reflected the perceived quality, safety, and comfort of one's neighborhood. All of the scale items were positive statements about the neighborhood. Each statement of agreement was assigned a value of 1, and scores ranged from 0 to 11 (11 was most positive). We

measured maternal warmth with a 10-item scale<sup>43,44</sup> adapted from the Maternal Warmth/Involvement scale.<sup>53</sup> All positively worded statements were assigned a value of 1, and scores ranged from 0 to 10. After examining the distribution of responses, we classified maternal warmth score as high (score of 8–10), moderate or low (score of 0–7), or missing (4%).

### Data Analysis

We used SAS version 9<sup>54</sup> to conduct gender-stratified  $\chi^2$  analyses, tests of means, and multivariable logistic regression analyses. We derived adjusted odds ratios (ORs) and 95% confidence intervals to describe the associations of hopelessness and self-worth (adjusted for each other and for the study covariates) with our 2 outcome variables, pregnancy attempts and pregnancy desire.

## RESULTS

Ninety-four percent of the 2285 sexually active 9- to 18-year-old participants in our sample were African American, and 65% were male. Eleven percent of the female participants and 20% of the male participants were 9 to 14 years old; 41% and 43%, respectively, were 15 or 16 years old; and 48% and 38%, respectively, were 17 or 18 years old. Approximately 20% of the participants lived in public housing, and 89% received free or reduced-cost lunches (data not shown).

There were significant gender differences in pregnancy desire (ambivalence or happiness about hypothetical pregnancy involvement in the next year) but not in pregnancy attempts (Table 1). Forty-three percent of the female youths and 64% of the male youths reported a desire for pregnancy ( $P \leq .001$ ). Nine percent of female youths reported that they were trying to get pregnant at the time of the survey, and 9% of male youths reported that they were trying to get someone pregnant. Male youths had higher mean hopelessness ( $P = .004$ ) and lower mean self-worth ( $P = .003$ ) scores than did female youths. With the exception of maternal warmth, there were also significant ( $P \leq .05$ ) gender differences in the distribution of or means for all covariates.

The 2 outcome variables were associated with one another ( $P \leq .001$ ). Of the 211 female and male participants who stated they were

**TABLE 1—Characteristics of 2285 Sexually Experienced Young People 9 to 18 Years Old, by Gender: Mobile Youth Survey, Alabama, 2006–2009**

Characteristic	Total (n = 2285), No (%) or Mean ±SD	Female Youths (n = 802), No (%) or Mean ±SD	Male Youths (n = 1483), No (%) or Mean ±SD
Pregnancy attempt at time of survey	211 (9.2)	72 (9.0)	139 (9.4)
Pregnancy desire <sup>a</sup>	1289 (56.4)	346 (43.1)	943 (63.6)
Hopelessness score <sup>b,c</sup>	1.23 (1.75)	1.05 (1.70)	1.32 (1.78)
Self-worth score <sup>c,d</sup>	6.53 (1.98)	6.70 (2.06)	6.45 (1.93)
Below grade appropriate for age <sup>a</sup>	1040 (45.5)	295 (36.8)	745 (50.2)
Age at time of survey, y <sup>a</sup>	15.6 ±2.05	16.0 ±1.84	15.4 ±2.13
Age at first vaginal intercourse, y <sup>a</sup>			
9–11	588 (25.7)	45 (5.6)	543 (36.6)
12–14	933 (40.8)	283 (35.3)	650 (43.8)
15–16	447 (19.6)	288 (35.9)	159 (10.7)
17–18	136 (6.0)	103 (12.8)	33 (2.2)
Missing	181 (7.9)	83 (10.4)	98 (6.6)
No. of sexual partners in past year <sup>a</sup>			
0	201 (8.8)	80 (10.0)	121 (8.2)
1	648 (28.4)	386 (48.1)	262 (17.7)
2–3	702 (30.7)	220 (27.4)	482 (32.5)
≥ 4	585 (25.6)	61 (7.6)	524 (35.3)
Missing	149 (6.5)	55 (6.9)	94 (6.3)
Accepts gender norms regarding sexual experience <sup>a,e</sup>	684 (29.9)	139 (17.3)	545 (36.8)
Neighborhood connectedness score <sup>a,f</sup>	7.24 ±2.51	6.91 ±2.78	7.42 ±2.34
Maternal warmth			
High	1879 (82.2)	665 (82.9)	1214 (81.9)
Moderate/low	324 (14.2)	117 (14.6)	207 (14.0)
Missing	82 (3.6)	20 (2.5)	62 (4.1)

<sup>a</sup>Difference between male and female youths is significant at  $P \leq .001$  (according to  $\chi^2$  or  $t$  test).

<sup>b</sup>Range = 0–6.

<sup>c</sup>Difference between male and female youths is significant at  $P \leq .01$  (according to  $\chi^2$  or  $t$  test).

<sup>d</sup>Range = 0–9.

<sup>e</sup>Endorsed one or both of 2 questions about whether having had sexual intercourse proves that a boy (or girl) the same age as the respondent is a man (or a woman).

<sup>f</sup>Range = 0–11.

trying to become pregnant or impregnate someone, 85% reported a desire for pregnancy. Of the 1289 female and male participants reporting that they desired a pregnancy in the next year, 14% stated that they were trying to become pregnant or impregnate someone (data not shown).

### Pregnancy Attempts

The analyses focusing on pregnancy attempts in the preceding year were restricted to the 2084 (91%) youths who reported having had at least 1 sexual partner in the past year. In the case of both female and male participants, hopelessness was positively associated

( $P \leq .001$ ) and self-worth was negatively associated ( $P \leq .001$ ) with pregnancy attempts in unadjusted analyses (data not shown). As can be seen in Table 2, the positive associations between pregnancy attempts and hopelessness were weakened, but still significant, in multivariable analyses ( $P = .05$  for female youths and  $P = .001$  for male youths). The negative associations between pregnancy attempts and self-worth also persisted, but were weakened, in multivariable analyses ( $P = .03$  for female youths and  $P = .03$  for male youths).

Among male participants, gender norms ( $P \leq .001$ ), neighborhood connectedness ( $P = .02$ ), and having 4 or more partners (vs none) in the

preceding year ( $P = .003$ ) were associated with trying to get someone pregnant at the time of the survey. Adjusted odds of reporting trying to get someone pregnant were twice as high among male youths who were missing responses on the series of maternal warmth questions as among those who reported high maternal warmth ( $P = .05$ ). Among female youths, moderate or low maternal warmth (vs high warmth) was inversely associated with trying to get pregnant (adjusted OR = 0.35;  $P = .04$ ). Not responding to the question about number of partners, as compared with reporting only 1 partner ( $P = .002$ ), and age at the time of the survey were positively associated ( $P = .004$ ) among female participants.

### Pregnancy Desire

Among both female and male participants, hopelessness was positively associated ( $P \leq .001$ ) and self-worth was negatively associated ( $P \leq .001$ ) with pregnancy desire in unadjusted analyses (data not shown). In multivariable analyses (Table 3), only hopelessness remained weakly positively associated ( $P = .05$ ) with pregnancy desire among female participants.

Age at the time of the survey was positively associated with pregnancy desire among both female ( $P \leq .001$ ) and male ( $P \leq .001$ ) participants. Female youths who were 12 to 14 years of age at the time of their first vaginal intercourse were 1.9 times more likely to report a desire for pregnancy than those whose first vaginal intercourse occurred between the ages of 17 and 18 years ( $P = .02$ ). Male youths who were missing data on the maternal warmth variable were 3.4 times more likely to indicate a desire for pregnancy than those who reported a high level of maternal warmth ( $P \leq .001$ ).

### DISCUSSION

To our knowledge, our study is unique in linking adolescent pregnancy attempts and psychological variables. Consistent with our hypotheses, self-worth was negatively associated and hopelessness was positively associated with pregnancy attempts for female and male youths, even after adjustment for several other factors. We hypothesized that self-worth and hopelessness would also be associated with pregnancy desire. There was a strong association for both genders in unadjusted analyses,

**TABLE 2—Multivariable Associations Between Pregnancy Attempts and Selected Characteristics, by Gender, Among Participants Who Reported At Least 1 Partner in the Preceding Year: Mobile Youth Survey, Alabama, 2006–2009**

Characteristic	Female Youths (n = 722), Adjusted OR (95% CI)	Male Youths (n = 1362), Adjusted OR (95% CI)
Hopelessness	1.16 (1.01, 1.34)	1.18 (1.07, 1.30)
Self-worth	0.87 (0.76, 0.99)	0.90 (0.81, 0.99)
Below grade appropriate for age	1.38 (0.81, 2.34)	1.12 (0.76, 1.64)
Age at time of survey	1.44 (1.18, 1.76)	1.09 (0.99, 1.21)
Age at first vaginal intercourse, y		
9–11	3.62 (0.87, 15.05)	1.48 (0.31, 7.16)
12–14	2.18 (0.87, 5.46)	1.38 (0.29, 6.51)
15–16	1.46 (0.62, 3.43)	1.09 (0.21, 5.76)
17–18 (Ref)	1.00	1.00
Missing	0.30 (0.03, 2.86)	2.77 (0.47, 16.26)
No. of sexual partners in past year		
1 (Ref)	1.00	1.00
2–3	1.41 (0.77, 2.60)	1.64 (0.84, 3.20)
≥ 4	2.00 (0.86, 4.43)	2.62 (1.39, 4.94)
Missing	4.44 (1.74, 11.32)	1.78 (0.71, 4.50)
Accepts gender norms regarding sexual experience	1.30 (0.66, 2.55)	2.22 (1.51, 3.26)
Neighborhood connectedness	0.99 (0.90, 1.09)	0.91 (0.83, 0.99)
Maternal warmth		
High (Ref)	1.00	1.00
Moderate/low	0.35 (0.13, 0.93)	1.43 (0.87, 2.37)
Missing	0.96 (0.19, 4.77)	2.01 (1.01, 4.07)

Note. CI = confidence interval; OR = odds ratio.

but we found only a weak association between hopelessness and pregnancy desire in a multivariable analysis that included only female participants. Although we are unaware of literature with which we can directly compare our findings, other studies have also reported inconsistent associations between depressive symptoms (a psychosocial factor related to hopelessness) and risk for adolescent pregnancy<sup>18,19,55,56</sup> and fatherhood,<sup>18,55,56</sup> and different associations have been reported for female and male youths.<sup>21</sup>

Few youths reported that they were currently attempting a pregnancy (9%), but a high percentage of our sample reported a desire for pregnancy (43% of female participants and 64% of male participants). In a recent clinic-based study of 411 female adolescents, a lower percentage of respondents reported positive or ambivalent pregnancy feelings (24%); however, as in our study, pregnancy desire was positively associated with age, suggesting that

adolescent pregnancy may be normative and acceptable to older adolescents.<sup>9</sup>

The fact that 56% of our sample reported a desire for pregnancy might suggest an accommodating perspective about what is possibly a common unintended familial or cultural event<sup>8</sup>: about one quarter of the sexually experienced adolescents in the original sample were excluded from our analyses because they were already parents. This finding also highlights the distinctiveness of our 2 outcome measures. Fourteen percent of the youths who reported a desire for pregnancy said that they were currently attempting a pregnancy, and thus pregnancy desire was not synonymous with pregnancy attempts.

We do not know whether our outcome variables were ultimately associated with pregnancy in our sample, but they were significantly associated with other measures of adolescent pregnancy risk such as older age,<sup>57,58</sup> more sex partners,<sup>58</sup> and low maternal warmth.<sup>11,14,16</sup>

Other studies have shown that our measure of pregnancy desire (positive or ambivalent feelings about a future hypothetical pregnancy) is associated with pregnancy risk markers among female adolescents,<sup>25,42</sup> including reduced contraceptive use<sup>15,38,40</sup> and an increased risk of pregnancy 6 months<sup>15</sup> and 18 months<sup>26</sup> after a desire for pregnancy has been reported.

### Strengths and Limitations

One reason we may not have found strong associations between pregnancy desire and hopelessness and self-worth in our adjusted analyses is the possibility that our measure of adolescents' feelings about a theoretical future event is unstable and dynamic.<sup>40</sup> If this is the case, such feelings would not be expected to be associated with similarly unstable negative psychological states such as hopelessness and low self-worth. Another explanation could be that our definition of pregnancy desire was too broad because it included both ambivalent and positive feelings about a future hypothetical pregnancy. Although some studies have shown that there are differences in the associations of ambivalent and positive feelings with adolescent pregnancy risk factors such as lack of contraceptive use,<sup>25,38,39</sup> our preliminary analyses supported the creation of this variable (the associations did not change when ambivalent and positive feelings were examined separately). Furthermore, our combining of ambivalent and positive feelings is consistent with theoretical perspectives and the research results of others.<sup>25,26,38,40</sup>

Ours was a cross-sectional study, a design that was appropriate given our interest in examining the concurrence of psychological variables (self-worth and hopelessness) with pregnancy attempts and pregnancy desire. Several characteristics of the MYS sample may limit the generalizability of the results. For example, the participants lived in a small geographic area, and they were disproportionately poor and African American. The select nature of the MYS sample was also a strength given the high risk of adolescent pregnancy and fatherhood among African Americans<sup>9,57</sup> and disadvantaged youths.<sup>9</sup> Although the sample was not randomly selected, it was generally representative of the study catchment area.<sup>43,46,47</sup> In all likelihood, given the high school absentee rates of MYS participants,<sup>44</sup>

**TABLE 3—Multivariable Associations Between Pregnancy Desire and Selected Characteristics, by Gender: Mobile Youth Survey, Alabama, 2006–2009**

Characteristic	Female Youths (n = 802), Adjusted OR (95% CI)	Male Youths (n = 1483), Adjusted OR (95% CI)
Hopelessness	1.10 (1.01, 1.20)	1.02 (0.95, 1.09)
Self-worth	0.95 (0.88, 1.03)	0.98 (0.92, 1.04)
Below grade appropriate for age	1.02 (0.75, 1.38)	0.98 (0.78, 1.22)
Age at time of survey	1.25 (1.13, 1.39)	1.24 (1.17, 1.32)
Age at first vaginal intercourse, y		
9–11	2.12 (0.90, 5.03)	0.91 (0.39, 2.13)
12–14	1.92 (1.13, 3.28)	0.77 (0.34, 1.76)
15–16	1.36 (0.84, 2.20)	0.67 (0.28, 1.59)
17–18 (Ref)	1.00	1.00
Missing	1.38 (0.65, 2.94)	1.38 (0.52, 3.64)
No. of sexual partners in past year		
0	0.87 (0.48, 1.56)	1.01 (0.62, 1.64)
1 (Ref)	1.00	1.00
2–3	1.10 (0.78, 1.56)	1.16 (0.84, 1.59)
≥ 4	1.14 (0.64, 2.03)	1.28 (0.93, 1.76)
Missing	1.26 (0.67, 2.36)	1.26 (0.74, 2.14)
Accepts gender norms regarding sexual experience	0.99 (0.67, 1.48)	1.20 (0.95, 1.52)
Neighborhood connectedness	1.04 (0.99, 1.10)	0.99 (0.95, 1.04)
Maternal warmth		
High (Ref)	1.00	1.00
Moderate/low	0.81 (0.53, 1.23)	0.89 (0.65, 1.22)
Missing	2.06 (0.81, 5.23)	3.36 (1.61, 7.01)

Note. CI = confidence interval; OR = odds ratio.

the data collection protocols of the MYS allowed inclusion of adolescents who would have been missed by a school-based survey.<sup>45</sup>

A major strength of the MYS sample was the inclusion of male youths, which addresses a “gendered blind spot” in research focusing on adolescents’ attitudes toward pregnancy.<sup>59</sup> Consistent with the work of Geronimus regarding the cultural norms and expectations that influence pregnancy attitudes among adolescents in poor African American communities,<sup>8</sup> we found that attitudes regarding the association between sexual experience and maturity, as well as neighborhood connection, were strong independent predictors of pregnancy attempts among male but not female youths.

Response bias may have affected the quality of our findings. Participants may have been influenced by their peers to report socially desirable answers. Surveys were usually completed in crowded rooms with groups of 10

to 30 young people. Public survey sites are not ideal for data collection; overcrowding, noise, and heat could have influenced participants’ concentration. Although the length of the survey could have introduced participant fatigue, it was necessary to include many psychosocial variables that are relevant to adolescent pregnancy, for example neighborhood connectedness, maternal warmth, and perceived gender roles.<sup>5,7,17,41</sup>

### Conclusions

Some researchers have asserted that adolescent pregnancy and childbearing may be culturally normative for African American youths.<sup>8</sup> If this is the case, our data suggest that norms should not be confused with comfort, given that low self-worth was strongly associated with pregnancy attempts among both female and male youths. Of concern to us—independent of its association with pregnancy attempts and desire—was that mean

hopelessness scores for the female and male MYS participants (1.05 and 1.32, respectively) were high; in another study of suburban high school students in which the same measure was used, the mean score was 0.34.<sup>47</sup>

Challenging learned negative cognitions such as hopelessness and low self-worth may improve health behaviors and outcomes among young people.<sup>60</sup> A positive youth development approach, which has shown some success in reducing adolescent sexual risk taking,<sup>32,61</sup> may be particularly effective with socially vulnerable youths such as the MYS participants. A positive youth development intervention could help young people develop short- and long-term academic or occupational goals that are antithetical to pregnancy involvement and provide them with the opportunities, experiences, and skills they need to expand their life trajectories.

Our findings also raise future research questions that we cannot answer with our data. For example, how do our low-income participants view pregnancy and, presumably, early parenthood? Are they viewed as the only options among youths who rate their social and cognitive competence as low? Are they viewed as opportunities to assume a positive role in an environment where there are limited options for social and material advancement? More specific conceptualizations of hopelessness<sup>62</sup> and self-worth relative to pregnancy or sexual risk taking may result in more precise risk assessments and the development of more focused interventions. ■

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### Contributors

A. R. Fedorowicz conceptualized the study analyses, conducted the data analysis, and contributed to the writing of the article. W. L. Hellerstedt conceptualized and directed the study analyses, reviewed the analyses, and had primary responsibility for writing the article.

P.J. Schreiner provided consultation on the study analyses and participated in revisions of the article. J.M. Bolland provided consultation on the study design and analyses and reviewed all versions of the article.

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### Human Participant Protection

This study was approved by the institutional review boards of the University of Alabama and the University of Minnesota. All youths were asked to verbally agree to participate, and, if they did so, their caregivers signed an informed consent form.

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