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Does the conventional measure of unintended pregnancy capture valorization of motherhood in a young female inner city African American population?

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ABSTRACT

Background: Unintended pregnancies in the U.S., conventionally defined, are composed of mistimed and unwanted pregnancies. Unwanted is often understood as "excess" pregnancies at the end of women's reproductive life course. Whereas mistimed captures unexpected pregnancies at the beginning of a young woman's reproductive life course and her willingness to enter a new social role, motherhood. This study focuses on a measure developed to capture dimensions of young women's willingness to enter motherhood and relates it to the conventional pregnancy intention categories.

Methods: Based on qualitative data from New Orleans, 8 questions were developed to measure a construct called valorization of motherhood (VOM). The questions were validated in a clinic-based sample of 783 African-American women 13-24 years of age. Factor analysis was used to explore multi-dimensionality. ANOVA was used to explore differences in VOM according to pregnancy experience and the conventional pregnancy intention categories.

Results: Factor analyses of the 8 VOM items suggest the presence of two latent constructs, explaining 41% and 16% of variance. ANOVA suggest a strong association between the constructs and pregnancy experience ($P<0.001$); and no association between the constructs and the conventional intention categories.

Conclusions: Among young African-American women in New Orleans, the conventional intention categories do not capture VOM, which is a possible indication of their motivation to become pregnant. When developing programs/policies in contexts with high prevalence of unintended pregnancy, more attention should be given to valorization of motherhood, a construct typically not measured in national U.S. surveys.

INTRODUCTION

One of the Healthy People 2010 goals is to reduce unintended pregnancy to 30%. Yet reaching that goal remains a challenge in light of estimates from the 1995 National Survey of Family Growth (NSFG), which indicate that 49% of all pregnancies in the U.S. are unintended. More striking is the clear disparity in estimated unintended pregnancy by racial/ethnic group. Over 70% of pregnancies among African-American women were reported as unintended compared to about 40% of pregnancies among White women (1). This wide disparity in unintended pregnancy prevalence challenges us to think about what these estimates really indicate, especially in a country where modern contraception is widely available (2).

Measures of unintended pregnancy are applied to diverse populations of women with regard to socioeconomic factors, racial/ethnic group and geographic location. As such, reproductive health researchers have questioned whether pregnancy planning has a different meaning outside of white, middle-income groups of women for whom the conventional measure was originally created (3, 4, 5, 6, 7). Geronimus (2003) suggests that fertility norms are culturally and socially defined, and raises concerns over how fertility issues, which deviate from the "so-called" norm, are often inappropriately framed and studied (8). For example, documenting differential age at first birth distributions in different U.S. contexts, she argues that studying early childbearing from the perspective that early childbearing by itself is deviant, is scientifically unfounded (8). In fact, assuming that it is not normative, when in fact it is in some poor, inner-city settings, may do more harm then good to the population that public health researchers and policy analysts are intending to help (7). In this spirit, it is critical to re-examine the applicability of the concept of intended fertility, or perhaps the features that define intended fertility in different social and cultural contexts.

According to the conventional definition, unintended pregnancies are composed of mistimed and unwanted pregnancies. Mistimed pregnancies are those reported as occurring earlier than wanted. Unwanted pregnancies are those reported as not wanted at the time of conception or any time in the future. In national surveys, such as the NSFG, questions about pregnancy intentions refer to the time or prior to the time at which a woman found out she is pregnant. Estimates of

unintended pregnancy are usually gathered from retrospective reports, some time after the birth of an infant and (or when) the pregnancy is resolved.

The validity of this classification was questioned in a 1999 U.S. study, which documented that among women who were using contraception at the time of pregnancy (contraceptive failures) and classified the pregnancy as unintended, according to the conventional definition, over 40% reported being happy or very happy about the pregnancy (3). This finding suggests that the intention questions used on the NSFG might be imprecisely measuring pregnancy intentions.

Studies and reviews on unintended pregnancy measurement have all centered on the general notion that pregnancy intentions are multi-dimensional (5, 9, 10, 11, 12, 13). Many question the utility of grouping together mistimed and unwanted pregnancies as timing and wantedness of pregnancy are two distinct dimensions (4, 9, 10, 13). Luker (1999), commenting on the findings of Trussel and colleagues (1999), emphasizes the critical shifts in the social and cultural meaning of motherhood and the decision-making process that couples use to decide this life-changing event. She questions the comparability of estimates of unintended pregnancy over the decades it has been measured, given the shift in the population of women surveyed from those with completed fertility to those initiating childbearing. To an earlier generation of men and women, an unintended pregnancy was often an additional pregnancy after they reached desired family size. Today, the concept of intention often refers to pregnancies occurring during various times in a women's reproductive life course. To the extent the measure captures unexpected pregnancies at the beginning of women's reproductive life course as opposed to "excess" births at the end, Luker argues, what is really being captured is willingness to enter a new social role, motherhood (11). The present study aims to develop and validate a measure that captures some of the features that define women's willingness to enter motherhood. It also relates these features to the conventional pregnancy intention categories using data from New Orleans.

New Orleans

Studying unintended pregnancy in New Orleans might provide key insights for other poor inner-city settings given its socio-demographic composition and fertility patterns. About 28% of individuals in New Orleans live in poverty (14), compared to about 17% in all of Louisiana (15). In Louisiana, poverty is strongly associated with reported levels of unintended childbearing (based on the conventional definition). Overall, slightly more than half of live births to all

women in Louisiana are reported as unintended (16), which is high in comparison to the national average of 31% (1). In Louisiana, among births to women who used Medicaid to pay for health care before and during pregnancy, almost 70% were reported as unintended, compared to 32% among births to women who reported other sources of payment (16). Nationally, reported unintended childbearing increases with poverty level. For example, of the births to women with household incomes of less than 100% of the federal poverty level, almost 45% were reported as unintended, compared to 21% of the births to women with household incomes greater than or equal to 200% of the federal poverty level (1).*

Since teens are more likely to report unintended pregnancy (mostly mistimed first pregnancies), a high prevalence of teen births also contribute to elevated unintended pregnancy rates in New Orleans. Over 17% of births in New Orleans were to women age 15-19 years old in 2001 (17), which is much higher than the national average of 13% (18). Further, over 77% of live births that occur to women under 20 in Louisiana are reported as unintended (16), which is also high in comparison to the national average. According to the latest estimates at the national level, about 66% of live births to women 15-19 years of age are unintended (1). These data suggest that poor and young women in New Orleans are at higher risk of unintended pregnancy, in comparison to the general U.S. population.

Valorization of Motherhood

Given this context, this study introduces a measure called Valorization of Motherhood (VOM), designed to characterize young women's attitudes towards the transition into motherhood. . VOM was developed from in-depth interviews with African-American women in New Orleans (19). During one interview, a 17-year old woman, who was never pregnant, expressed the following when asked about reasons for having a baby:

> *"You feel like you are not loved, you are insecure about yourself and you think a baby will change that."*

A 20-year old woman expressed the following about her first child who was 4 months at the time of the interview:

* Percentages here refer to live births, and are different than the 49% cited in the introduction, which refers to pregnancies (live births and abortions).

> *"My life is more meaningful now. I'm not trying to get the guy anymore, wasting my time. Now I'm trying to get through my classes. I'm more focused. I've got to support the baby."*

These sentiments are captured with the VOM measure. Agreement with the VOM measure suggests that motherhood signals an opportunity to bring greater meaning into a young woman's life. Both young mothers and their peers, who never experienced motherhood, expressed these sentiments during qualitative interviews, which are possible contributions to the high levels of unintended pregnancy observed in this New Orleans community and possibly other urban, African-American communities. However, these sentiments are typically not measured in population-based surveys, and more importantly, it is unclear whether they are captured with the conventional pregnancy intention measure.

This study relates VOM to the conventional pregnancy intention categories and addresses the following research questions: 1) Is valorization of motherhood multi-dimensional? 2) Is valorization of motherhood associated with pregnancy experience? and 3) Is valorization of motherhood associated with reporting an adolescent pregnancy as "intended", as defined conventionally and measured on the NSFG? A study like this, in a context such as New Orleans, can contribute to the national discussion on unintended pregnancy, particularly since, as noted above, the overwhelming majority of adolescent pregnancies are reported as unintended (1); and adolescent pregnancies can contribute to high rates of unintended pregnancy in the United States.

STUDY METHODOLOGY

Sample

Women were recruited for this present study as part of the Determinants of Unintended Pregnancy Risk in New Orleans (DUPR) Study. Two inner-city public clinic sites were used: one prenatal and one family planning clinic. In the first phase of the study, the qualitative study, in-depth interviews were conducted with 77 women between February and August 2001. The ages of women interviewed ranged from 14 to 38 years old; 73 out of 77 women interviewed were African-American; and over 85% of these women had completed high school or were still attending at the time of interview (19). In the second phase of the study, during the period from

March 13, 2002 to February 28, 2003, 1374 women were surveyed at the same clinics. Because this study focuses on childbearing motivations early in the life course, the analysis was limited to women 13-24 years of age. Studying this sub-group also minimized recall and cohort bias.

In the prenatal clinic, women were screened by a medical clerk before being referred to the interviewer. Only women visiting for their first prenatal screening appointment were selected for inclusion in the study. In the family planning clinic, women were screened by a nurse/nurse practitioner before being referred to the interviewer. Respondents were selected into the study if they were visiting the clinic for the following family planning services: nurse re-visit (shot update, pill refill), return annual with doctor (all methods), or problem doctor visit (method side-effects or change in methods). Clients of all ages (including adolescents) were approached in the waiting area of each clinic. Willing clients were asked to come to a separate room to take the survey. Clients completed consent forms that explained study goals and survey content. The interviews lasted about 30 minutes and were conducted before women were called for their appointment. We did not collect information on women approached in the waiting room who refused to participate. To assess how representative the surveyed samples were of their clinic, we compared the interviewed sample to the entire sample of women visiting the clinics using data from clinic records and the Louisiana Department of Health. This comparative analysis only indicated a significant difference in age for the family planning clinic. Interviewed women were significantly younger than all women visiting the family planning clinic.

The Institutional Review Boards of Tulane University Health Sciences Center, the Centers for Disease Control and Prevention, Charity Hospital, and the Department of Health and Human Services approved the study.

Instrument and Variables

Based on findings from the qualitative phase (19), a survey instrument was developed for the **DUPR** study. It covered a range of topics including demographics, the NSFG questions on intentionality, experimental measures of dimensions relevant to studying pregnancy intentions obtained from the qualitative study. These measures include perceptions about pregnancy timing, barriers to and attitudes towards contraception, self-efficacy, and partner intentions. Survey instruments were pre-tested by trained interviewers; and revised for language

appropriateness, flow and skip patterns. The survey was administered on computer (Questionnaire Development System Software Version 2.) with the presence of an interviewer as facilitator in the family planning and prenatal clinics. One interviewer was assigned to each clinic. Both were African-American women of reproductive age, and trained by the study coordinator. Data were collected monthly from the two sites and archived onto a central computer station.

This present study focuses on valorization of motherhood (VOM) and its relation to women's pregnancy experience and reported pregnancy intention status. A series of 8 items were developed to measure VOM. All 8 items were developed based on sentiments articulated by mothers and their peers who were never pregnant during the first phase of the DUPR study (refer to Kendall et al., 2004 for details of this first phase). In order to measure VOM, the interviewer read 8 statements aloud, and women were asked to respond on a scale from 1 to 5, indicating the extent of agreement (1=strongly disagree; 5=strongly agree). These statements are presented in Table 1.

The two key variables were pregnancy experience and pregnancy intention status. The pregnancy experience variable was created based on two criteria: type of clinic (prenatal or family planning) and women's parity (including stillbirths, miscarriages and abortions). Three mutually exclusive categories were created: never pregnant women, which included only women recruited from the family planning clinic and thus are current method users (7 of these women reported never having sex); women currently pregnant for the first time, which included only women recruited from the prenatal clinic; and women experiencing/who have experienced a 2nd or higher order pregnancy, which included women recruited from both clinics who may/may not have been currently pregnant.

The pregnancy intention status variable had three categories: intended, mistimed, and unwanted. It was defined based on the questions used on the NSFG: 1) At the time of your pregnancy, did you want to have any children in the future? and 2) Did your pregnancy come earlier than wanted, at about the right time or later than you wanted? These two simple questions are traditionally used as parameters to create the category "unintended". Women responded to these two questions for each of their pregnancies. Pregnancies to women who reported not wanting

any children in the future were classified as unwanted, and therefore unintended. Women who reported that they want children in the future were asked the subsequent question. Pregnancies to women who reported that they came "earlier than wanted" were classified as mistimed, and therefore unintended. Pregnancies to women who reported that they came "at about the right time" or "later" were classified as intended. Of particular note is that women were not directly asked whether their pregnancy was intended or not. This conclusion was inferred based on the responses to the two questions.

Because the NSFG questions refer to pregnancies as the unit of analysis, the analysis was limited to women reporting about their first adolescent pregnancy (under the age of 20). This sub-group was chosen to account for age at first birth and birth order. In creating the pregnancy intention variable, abortions were also included. Of the 494 first pregnancies occurring before 20 years of age, 42 were reported as abortions (15 were classified as unwanted; 26 were classified as mistimed; 1 was classified as intended).

Analysis

All statistical analyses were performed using SPSS (Windows 10.0). First, stratifying by clinic, each separate VOM item mean was cross-tabulated by pregnancy experience. In the family planning sample, pregnancy experience was limited to the two categories of never pregnant and ever pregnant (had 1 or more pregnancies); in the prenatal sample, the categories were limited to women currently pregnant for the first time and women with 1 or more pregnancies. Student t-tests were performed to study statistical differences of each VOM item mean according to pregnancy experience within each clinic group.

Second, exploratory factor analysis was performed to investigate multi-dimensionality. Specifically, factor analysis was used to examine clusters or groupings of the 8 items developed to capture VOM, how strongly each item belonged to each grouping, and the number of dimensions needed to explain the relations among variables. Principal Axis Factoring in SPSS 10.0 was selected to compute factor scores, which are standardized. Axis factoring assumes that each item has unique variance; an attempt is made to factor only common variance among all eight items (20). To simplify interpretation, an oblique PROMAX rotation was performed on the

original solution. This rotation allowed for maximum spread of variance among factors and for correlation between factors (20).

Third, based on the results of the exploratory factor analysis, sub-scales were developed to reflect the different dimensions or theoretical constructs. Sub-scales were continuous variables that were created by taking summary counts of items that clustered together. Summary counts were used instead of factor scores to simplify interpretation of results. Reliability analysis for each sub-scale was conducted to compute Cronbach α and assess internal consistency.

Finally, ANOVA was used to assess bivariate associations between 1) VOM sub-scale scores and pregnancy experience and 2) VOM sub-scale scores and pregnancy intention status.
To assess whether pregnancy experience was associated with VOM, ANOVA was performed among all women in the sample. To assess whether the intention categories were associated with VOM, the analysis was limited to women reporting on their first adolescent pregnancy. ANOVA was used to assess bivariate associations between sub-scale scores and the traditional 3-category intention classification (intended, mistimed, unwanted). Post-hoc Tukey comparison tests (SPSS 10.0) were performed for both analyses to identify groups that are significantly different from each other.

Additionally, to assess whether these findings were robust, and to examine potential selection bias of women in the different pregnancy groups, the analysis was stratified by respondent's mother's educational level, current age and contraceptive use at first sex.

RESULTS

Socio-demographic characteristics

A total of 351 women from the family planning clinic and 432 women from the prenatal clinic, 13 to 24 years of age, were analyzed in this study. All women in this sub-sample were African-American. Table 2 provides fertility and socio-demographic information on these women stratifying by clinic. The mean age was similar in both clinics (20.1). The prenatal sample had a significantly lower mean age at first sex (15.6 vs. 16.1). Women in the prenatal sample were more likely to have an adolescent pregnancy (78% vs. 46%). However, women in the different clinics did not differ with regard to contraceptive use at first sex. In both clinics, almost 80%

reported using a method at first sex. In terms of the socioeconomic background of women in the sample, significantly higher proportions of the prenatal sample had not completed high school (24% vs. 5%) at the time of survey, reported that their mothers had no college education (66% vs. 54%), and reported not knowing their father's educational level (30% vs. 19%) in comparison to the family planning sample. Detailed information on income was not collected. In general these women can be considered as low-income given that they were recruited from publicly funded clinics.

Descriptive analysis of the VOM items

Table 3 presents the overall raw means scores of each VOM item (listed in Table 1), and the scores according to pregnancy experience in each clinic. Overall, women tended to agree with CAREER, EDUCATION, TROUBLE and RESPONSIBLE demonstrated by their mean scores above 3.0; and tended to disagree with items ADULT, FAMILY, FRIENDS and PARTNER demonstrated by their mean score below 3. However, it is important to note that among these items, ADULT and FAMILY have mean scores close to 3.0 (2.6 and 2.7, respectively).
Table 3 also compares the mean scores of the VOM items among different pregnancy experience groups, stratified by clinic. In the family planning clinic, ever pregnant women (had 1 or more pregnancies) reported higher scores on every item, with the exception of PARTNER, compared to the never pregnant women. A striking pattern observed is that in general, ever pregnant women in the family planning clinic had similar mean scores on every item when compared to women in the prenatal clinic. Further, mean scores did not differ considerably according to pregnancy group among women in the prenatal clinic. In the prenatal clinic, only means for TROUBLE ("A child gives me more of a reason to stay away from trouble.") differed significantly according to pregnancy experience with women with a 2nd or higher order pregnancy reporting higher scores.

Factor analysis of VOM

In Table 4, the rotated factor solution is presented. The first factor in this analysis had an Eigenvalue of 3.24 and explained 40.5% of the variance. The second factor had an Eigenvalue of 1.30 and explained16.2% of the variance. Table 4 illustrates that in the rotated solution, CAREER, EDUCATION, TROUBLE, and RESPONSIBLE loaded highest on the first factor. FRIENDS, ADULT, PARTNER, and FAMILY loaded highest on the second factor.

Factor analysis of the eight questions designed to capture valorization of motherhood suggest the presence of two latent constructs. Based on the rotated solution, the first factor was captured by the following items:

- A child gives me more of a reason to work towards my career goals.
- A child gives me more of a reason to complete my education.
- A child gives me more of a reason to stay away from trouble (excessive parties, drinking, drugs, etc.).
- Having a baby makes me feel more responsible.

The latent construct captured by factor 1 was interpreted as the perception that motherhood was a life event that required greater responsibility in women's career and professional life. Agreement with items that make up this construct suggest that women value motherhood because it signaled greater responsibility and motivated them to work towards their goals, complete their education, stay away from trouble; all of these themes are consistent with findings from the qualitative phase of the study (19).

Based on the rotated solution, the second factor was captured by the following items:

- Having a baby makes me feel more acceptable among my friends.
- Having a baby makes me feel more like an adult.
- Having a baby gives me more attention from my boyfriend/husband.
- Having a child brings my family closer together.

The second latent construct was interpreted as women's perception of motherhood as a socialization process. Agreement with items that make up this construct suggests that women valued motherhood because it gave them greater social stability, and an opportunity to assert adulthood in the form of gaining acceptance among friends, improving relationship with partner, bringing the family closer together; all of these themes are consistent with findings from the qualitative phase of the study as well (19).

Reliability analysis suggests that both sub-scales have high internal consistency. Cronbach's α for the first construct, called VOM-career, is .77; for the second construct, VOM-social, it is .67. Based on these factor analysis and reliability results, ANOVA analysis was conducted separately for the two different constructs.

Association between VOM sub-scale scores and pregnancy experience

Table 5 presents ANOVA results for the two separate factors and pregnancy experience groups. With regard to VOM-career, the data in this table show that scores were similar for women who had 1 or more pregnancies and those currently pregnant for the first time (17), and lowest for women who were never pregnant (13). The global F test indicates a strong and significant association between the VOM-career score and women's pregnancy experience ($p<.001$), suggesting that women who perceive motherhood as signaling greater responsibility with regard to career were more likely to have experienced a pregnancy. A post-hoc comparison test indicated that the scores in the two latter categories (women currently pregnant for the first time and women who had 1 or more pregnancies) were significantly different from score in the "never pregnant" category.

With regard to VOM-social, the sub-scale score was lowest for women who were never pregnant (6.9), and similar for women with 1 or more pregnancies and those currently pregnant for the first time (9.8). Global F-test suggest an association between VOM-social and pregnancy experience, suggesting that women who viewed motherhood as a way of attaining greater social stability were more likely to have experienced a pregnancy. A post-hoc comparison test indicated that the scores in the two latter categories (women currently pregnant for the first time and women who had 1 or more pregnancies) were significantly different from the score in the "never pregnant" category.

According to a separate analysis stratified by respondent's age, mother's education, and contraceptive use at first sex, the results discussed above were robust (data not shown). Within the different age, mother's education, and contraceptive use at first sex categories the pattern observed above persisted; women who have experienced a pregnancy, including those who had one or more pregnancies, were still more likely to have higher mean VOM scores. Further, within pregnancy groups, there was no significant difference in VOM scores by these factors.

Table 5 also presents the intention groups according to pregnancy experience among women reporting on their first adolescent pregnancy (currently pregnant for first time with an adolescent pregnancy and women who had 1 or more pregnancies). Table 5 illustrates that there were no

significant differences in intention groups by pregnancy experience. Notably, the percentage of reported unintended pregnancy (mistimed & unwanted) was the same in both groups and elevated (about 80%) even though these groups reported high VOM scores.

Association between VOM sub-scale scores and intention groups

Table 6 presents ANOVA results for the two separate factors according to the intention groups among women reporting on an adolescent pregnancy. The global F-test suggests no overall significant association between intention groups and both VOM factors. These findings suggest that women's perceptions of motherhood as signaling greater responsibility in career or attaining greater social stability, have no relation to their report of pregnancy intention, as measured by the questions used in the NSFG.

DISCUSSION

These results provide evidence that valorization of motherhood is multi-dimensional. Among this urban, low-income African American population, motherhood brings greater meaning to young women's lives by giving them an opportunity to assert responsibility and secure relationships with family, friends and their partners. Further, the study provides evidence of a strong and positive relationship between women's valorization of motherhood and pregnancy experience, suggesting that this construct might be an important dimension of their motivation to become pregnant. Further, young women in this study appear to report high levels of unintended pregnancy even though they have positive perceptions of motherhood. Among the women reporting on a first adolescent pregnancy, the analysis provides no evidence of an association between the intention status of the pregnancy and women's valorization of motherhood. These findings suggest that valorization of motherhood is not captured by the usual questions used on the NSFG to measure pregnancy intention. They demonstrate that the conventional categories of unwanted, mistimed, and intended are not sensitive to this construct, and therefore not capturing a possible dimension of women's motivation to become pregnant.

The sentiments captured with this VOM index are similar to those expressed by African-American, urban youth throughout the U.S. In a recent 2004 study (21), based on focus groups with African-American, urban youth in 10 U.S. cities, pregnancy was perceived as a more realistic option than idealized career goals. According to the study, "Becoming a teen parent

seems more realistic than abstaining from sex, getting married, or having a successful future" (21, p.6). The expressed desire to become pregnant among young women as well as normative early childbearing patterns have been described in other studies, most notably by Arline Geronimus who hypothesizes that early childbearing is an adaptive strategy in response to poverty and the rapidly deteriorating health of African-American women (21, 22, 23, 24, 25). These studies emphasize the existence of social norms that make adolescent childbearing, traditionally considered as non-normative, adaptive and desirable in certain contexts. Similarly, the evidence in this study suggests that some young women in this New Orleans population have positive expectations about childbearing that might make it desirable, even though the pregnancy may be traditionally classified as unintended.

In a context such as New Orleans, where almost one-third of the population live in poverty (14), a desire to assert adulthood, family stability and greater intimacy with partners, as reflected in our two VOM constructs, are possibly more powerful motivations to get pregnant than unrealistic pregnancy timing goals that prescribe the sequence of educational achievement, career fulfillment, and then family formation – features that might dictate the utility of fertility planning (19). Whether these expectations are fulfilled needs further exploration. Yet, our qualitative research suggests that while family support was unconditional, the partner's support was often lacking (19). These findings are consistent with those of the Louisiana Fragile Family Study, which found that the event of pregnancy often aggravated both stable and unstable relationships. Although relationships among unmarried parents began as committed relationships, they often deteriorated into other less committed or non-romantic type of relationships within 2 to 5 months after the birth of the child (26).

While the women in this study demonstrated positive sentiments about motherhood, these positive sentiments were not equally shared by all the young women in this study. The never pregnant women had consistently lower VOM scores on all items, in comparison to the women who had experienced a pregnancy, suggesting a somewhat different orientation towards motherhood. Further research is necessary to understand the unidentified factors that motivate this group to delay childbearing in this context of limited socio-economic opportunities and community support for early pregnancy.

Study limitations

There are some limitations to this study that have to be considered. Power was limited because the sample size was small. Further, the sample was clinic-based and homogeneous with regard to racial/ethnic and socioeconomic groups. While this study was designed to develop a measure that was specific to poor, inner-city women, this study would benefit by replicating data collection and analysis among other groups of women of different socio-demographic characteristics to make the findings more generalizeable. Further, when the study is replicated, confirmatory analysis should be conducted to test the fit of the new data to the *a priori* model in this study.

Another caveat is related to the cross-sectional study design that makes it difficult to attribute causality. With the current data, it is possible that having a baby causes women to develop the VOM attitudes measured; and therefore the causal relationship is contrary to that hypothesized. The experience of raising a child (or being pregnant) might influence the way women respond to the VOM items. Therefore, the higher VOM scores among the groups of women experiencing a pregnancy might be a consequence of the pregnancy or motherhood itself. The potential for this type of recall bias is perhaps minimal because women currently pregnant for the first time, in the prenatal clinic, had higher VOM scores than the women that were never pregnant in the family planning clinic, and had similar scores to women with one or more pregnancies. Yet, the former group, who was interviewed during their first prenatal screening visit, still has not experienced motherhood, and therefore the potential for recall bias in their response to the VOM items is expected to be smaller.

In light of these limitations, the overarching strength of this study is its theoretical basis. The VOM items were developed based on findings of an earlier qualitative study (19), and are themes that resonate with poor, young African-America women featured in other studies as discussed above (21, 22, 23, 24, 25). Related literature provides evidence to support that young women included in this study already possess positive attitudes towards motherhood without the experience of motherhood itself, and that these attitudes influence their pregnancy outcomes

Implications for measurement

For the past half-century, the indicator unintended pregnancy has been used to drive reproductive health policies and programs in the United States and abroad (6, 27); and is currently used in U.S. state and national population-based surveys (28, 29, 30). In this New Orleans sample, 73% of first pregnancies occurring before the age of 20 were classified as unintended. In Louisiana, slightly more than half of live births to all women of childbearing age are classified as unintended (16), which is very high in comparison to the national average of 31% (1).

Are we possibly overestimating unintended pregnancy prevalence by not considering the value that some young women give to childbearing? Valuing pregnancy, wanting a pregnancy and planning a pregnancy are all different dimensions, as other researchers have noted (3, 10, 13, 19). All are important in shaping women's pregnancy intentions and motivations to avoid or get pregnant. Thus, efforts need to be made to develop measures of pregnancy "intent" that reflect its multiple dimensions, similar to an approach recommended by Barrett et al (2004). They recommend a 6-item measure of unplanned pregnancy that captures several dimensions including expressed intent, desirability, social context, and pre-conception behavior (31). Alternatively, we as researchers need to be more precise about what we are trying to measure – is it whether the pregnancy was planned or whether it was wanted (in retrospect or at the time of conception) or both?

Implications for policy

This study underscores the multi-dimensionality of unintended childbearing; it is not a casual event caused simply by the lack of access to contraception, for example. Hence, broad integrated approaches that address personal and environmental factors need to be considered. These include efforts that address poor educational and career opportunities, the rapidly deteriorating health of disadvantaged African-American women, childcare in educational settings and supportive environments for teen mothers (32, 33). Youth development programs, which focus on providing youth with alternatives, are also promising. In addition to comprehensive reproductive health information, youth development programs include the provision of academic support, job mentoring, after school volunteer programs, and summer internship programs (34, 35, 36).

Further, this study suggests that positive childbearing motivations, usually not measured in standard population-based surveys, are powerful determinants of young women's fertility. Motherhood may serve as a motivation to achieve career goals, rather than a detriment to a women's socioeconomic well-being. As such, environments should be created that encourage these women to pursue their life goals recognizing that there are alternative paths to achieving them, rather than socialize young women to believe their futures are blighted.

There is growing evidence that point to the increasing need for more exploratory research to understand the social context in which fertility decisions are made, to develop reliable and valid measures, and to understand the mechanisms of how context influences fertility. Doing so will enhance efforts at developing policies and programs to better address all women's health needs.

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Table 1: Valorization of Motherhood (VOM) Items

Statement wording	Variable label
A child gives me more of a reason to work towards my career goals.	CAREER
Having a baby makes me feel more acceptable among my friends.	FRIENDS
Having a baby makes me feel more like an adult.	ADULT
A child gives me more of a reason to complete my education.	EDUCATION
A child gives me more of a reason to stay away from trouble (excessive parties, drinking, drugs, etc.).	TROUBLE
Having a baby gives me more attention from my boyfriend/husband.	PARTNER
Having a child brings my family closer together.	FAMILY
Having a baby makes me feel more responsible.	RESPONSIBLE

All items are coded 1-5, indicating the extent of agreement (1=strongly disagree, 2=disagree, 3=don't know, 4=agree, 5=strongly agree).

Table 2. Background characteristics of women in prenatal and family planning clinics; and chi-square & student t significance test results across clinic groups among women 13-24 years old (N=783).

Variable	Clinic		Total Sample
	Family Planning	Prenatal	
Age (mean)	20.1	20.1	20.1
Age at first sex (mean)[a]	16.0	15.6	15.8
Parity			
0/never pregnant	45.6	na	20.4
1	35.6	40.0	38.1
2	13.4	33.1	24.3
3 or more	5.4	26.9	17.2
Pregnancy experience [b]			
Never pregnant	45.6	na	20.4
Currently pregnant for the first time	na	40.0	22.1
Had 1 pregnancy (not currently pregnant)	35.6	-	16.0
Had 2 + pregnancies (including current)	18.8	60.0	41.5
Had pregnancy under 20 [c]			
Yes	45.6	77.7	63.3
No	54.4	22.3	36.7
Contraceptive use at first sex [d]			
Yes	79.7	75.9	77.5
No	20.3	24.1	22.5
Education [c]			
Still in h.s.	19.7	17.8	18.6
Incomplete h.s.	5.4	23.6	15.5
Complete h.s./GED	25.6	28.5	27.2
Some college	45.6	29.6	36.8
Complete college	3.7	.5	1.9
Mother had some college education [c]			
No	53.6	65.7	60.3
Yes	44.2	26.2	34.2
Unknown[e]	2.3	8.1	5.5
Father had some college education [a]			
No	58.1	52.8	55.2
Yes	22.5	17.4	19.7
Unknown[e]	19.4	29.9	25.2
Total N	**351**	**432**	**783**

[a] $p<0.05$
[b] Significant tests are not relevant here because of sample selection.
[c] $p<0.005$
[d] Excludes 7 women who never had sex.
[e] This category includes don't know, no response and not in contact/don't know parent

Table 3. Valorization of motherhood (VOM) item means with range of 1 to 5, indicating degree of agreement; and student t-test results across pregnancy groups, stratified by clinic.

	Family Planning		Prenatal		
	Never pregnant	Had 1 or more pregnancies	Currently pregnant for first time	Had 1 or more pregnancies	Total
CAREER	3.4	4.5 [b]	4.3	4.5	4.2
	(1.8) [a]	(1.2)	(1.1)	(1.1)	(1.3)
FRIENDS	1.6	1.8 [c]	2.1	2.0	1.9
	(1.1)	(1.4)	(1.3)	(1.3)	(1.3)
ADULT	1.9	2.8 [b]	2.6	2.8	2.6
	(1.4)	(1.7)	(1.5)	(1.6)	(1.6)
EDUCATION	3.1	4.4 [b]	4.3	4.4	4.1
	(1.9)	(1.2)	(1.2)	(1.2)	(1.5)
TROUBLE	3.6	4.5 [b]	4.3	4.6 [b]	4.3
	(1.8)	(1.1)	(1.2)	(1.0)	(1.3)
PARTNER	1.6	1.6	2.4	2.3	2.0
	(1.1)	(1.2)	(1.4)	(1.4)	(1.3)
FAMILY	2.0	3.0 [b]	2.8	3.0	2.7
	(1.4)	(1.7)	(1.5)	(1.5)	(1.6)
RESPONSIBLE	2.9	4.1 [b]	4.0	4.1	3.9
	(1.7)	(1.4)	(1.3)	(1.3)	(1.5)
Total N	**157**	**191**	**172**	**257**	**777** [d]

[a] Figures in parenthesis are standard deviations.
[b] $p<0.05$
[c] $p<0.005$
[d] VOM data is missing for 6 women.

Table 4. Factor analysis: rotated solution for VOM index among women 13-24 years of age (n=777).

Item	Rotated solution Factor 1	Factor 2
CAREER	.531	.004
FRIENDS	-.098	.532
ADULT	.092	.631
EDUCATION	.986	-.158
TROUBLE	.671	.026
PARTNER	-.064	.668
FAMILY	.224	.436
RESPONSIBLE	.497	.256

Eigenvalues: 3.24 (explains 40.5% of variance), 1.30 (explains 16.2% of variance)

Table 5. VOM sub-scale scores of all women 13-24 years of age and NSFG intention status of first adolescent pregnancy according to pregnancy experience.

	Never Pregnant	Currently pregnant w/ first pregnancy	Had 1 or more pregnancies	Total
VOM				
Career	13.01 (5.48) [a]	17.00 (3.57) [b]	17.50 (3.42) [b]	16.48
Social	6.93 (3.54)	9.93 (4.16) [b]	9.73 (4.10) [b]	9.21
Total N	**157**	**172**	**448**	**777**
Intention categories				
Unwanted	n/a	19.0	28.6	26.3
Mistimed	n/a	62.1	50.8	53.4
Ok time	n/a	19.0	20.6	20.2
Total N		**116**	**377**	**493**

[a] Figures in parenthesis are standard deviations.
[b] ANOVA and post-hoc comparison test indicates this category is significantly different ($p<.005$) from the never pregnant category.

Table 6. ANOVA results for sub-scale scores according to NSFG intention groups among women reporting on their first adolescent pregnancy (N=493).

Indicator	Sample size	Mean estimate	95% confidence interval	Global F	p value
VOM – career					
Unwanted	130	17.22 (3.52)[a]	16.60, 17.83	.75	.47
Mistimed	263	17.65 (3.24)	17.25, 18.04		
Ok time	100	17.43 (3.33)	16.77, 18.09		
Total	493	17.49 (3.33)	17.20, 17.78		
VOM – social					
Unwanted	130	9.79 (4.27)	9.05, 10.53	.55	.58
Mistimed	263	9.92 (4.08)	9.43, 10.42		
Ok time	100	9.42 (3.88)	8.65, 10.19		
Total	493	9.79(4.09)	9.43, 10.15		

[a] Figures in parenthesis are standard deviations.