Measurement of Parenting Self-Efficacy and Outcome Expectancy Related to Discussions About Sex

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Abstract:
The purpose of this study was to evaluate the psychometric properties of two scales—one to measure the self-efficacy of parents to discuss sexual health issues with their adolescents and the other to measure parents' outcome expectancy associated with such discussions. Understanding how parents feel about their confidence in talking with their children about important sexual health issues and the outcomes they expect as a result of such discussions can be useful in guiding both the development and refinement of educational programs to promote parent-child discussions. The responses of 491 mothers who participated in an HIV prevention intervention with their adolescents were used for the present analysis. Mothers ranged in age from 25 to 68 years with a mean of 37.9 years (SD = 6.9). Of mother participants, 33% were married, 96.7% were African American, and 89.2% had completed high school. Their adolescents ranged in age from 11 to 14 years, and 61.5% were male. Assessment of reliability for both scales showed that internal consistency reliability was acceptable for the total scales as well as three of the five subscales. With the exception of one item on the outcome expectancy scale, the inter-item correlations, the mean inter-item correlations, and the item-to-total correlations meet the standard criteria for scale development for both scales. Factor analysis was used to identify the underlying structure of the scales, and hypothesis testing was used to assess construct validity. The results of these analyses provide support for the construct validity of the scales.

Article:
A topic that has generated considerable interest in recent years is that of parent/ adolescent communication about sex. With the advent of acquired immune deficiency syndrome (AIDS) and the concern that unprotected sexual encounters can lead to infection with deadly diseases, parents and nurses alike have become increasingly aware of the need for appropriate and timely education of youth about reproductive and other sexual health issues.

There seems to be a consensus that the transmission of information about sex from parents to children is beneficial for the children (Fisher, 1986; Lefkowitz, Kahlbaugh, & Sigman, 1996).

Yet, studies in the area of parent-child sex-based communication demonstrate that conversations about sex held between parents and their children show considerable variability. Parent-child discussions vary by gender of the parent and by age and gender of the child (Dilorio, Kelley, & Hockenberry-Eaton, 1999; Nolin & Petersen, 1992). Mothers tend to provide more information to their children than do fathers, and mothers tend to talk more to daughters than to sons. Although fathers tend to report fewer sex-based discussions with their children overall, they provide more information to their sons than to their daughters. Hepburn (1983) notes that the type of discussions about sex also varies by age of the child. Parents tend to provide factual information (e.g., how a baby is born, menstruation) to children and younger adolescents and convey more messages containing values and moral content (e.g., abortion is wrong, wait until marriage to have sex) to older adolescents.

To understand the differences observed in sex-based discussions, researchers have begun to examine the characteristics of parents that might account for these differences. Fisher (1987) found that college students who reported a more open communication style with their parents were also more likely to discuss sex-based topics with them. The results of two more recent studies suggest that the parents' degree of confidence in discussing sex-related material is an important factor that should be examined in more depth. Jaccard, Dittus, and Gordon (2000) found that topic-specific reservations about discussing sex were more predictive of actual discussions than were both the quality of the parent-teen relationship and quality of general communication. Dllorio and colleagues (2000) found that mothers who expressed high levels of confidence in discussing sex with their adolescents and who expected more positive outcomes from such discussions talked more with their adolescents. Additional study of parental characteristics is important in identifying strategies that parents can use to teach their children about sexuality. Yet, further study depends on the availability of reliable and valid measures of parental characteristics.

The purpose of the present article is to describe the development and psychometric evaluation of two scales designed to assess the concepts of self- efficacy and outcome expectancy related to parent-child discussions about sex. Understanding how parents feel about their confidence in talking with their children about important sexual health issues and the outcomes they expect as a result of such discussions can be useful in guiding both the development and refinement of educational programs to promote parent-child discussions about sexual issues.

CONCEPTUAL ORIENTATION

For more than two decades, social cognitive theory has served as an explanatory model for a wide variety of health behaviors. Self-efficacy, a central concept within this theory, has been linked to numerous health behaviors including exercise, weight control, smoking cessation, and the self-management of chronic disorders (Dilorio, Faherty, & Manteuffel, 1992; Gecht, Connell, Sinacore, & Prohaska, 1996; Grembowski et al., 1993; King, Marcus, Pinto, Emmons, & Abrams, 1996; Strecher, DeVellis, Becker, & Rosenstock, 1986). According to social cognitive theory, people who maintain strong beliefs in their capability of organizing and executing behaviors (self-efficacy) that lead to desired outcomes are more successful in achieving those outcomes than those who are uncertain about their capabilities (Bandura, 1997). For example, a mother who feels confident that she can talk to her son about spontaneous erections is more

likely to explain these physiological events to her son than a mother who believes that the obstacles to such a discussion are too difficult for her to overcome.

Closely related to self-efficacy is the concept of outcome expectancy. Outcome expectancy refers to the outcome expected to occur upon attempts to perform a behavior. People who associate positive outcomes with performance of a specific behavior are more likely to attempt to perform the behavior and to persevere if they are not initially successful (Bandura, 1997). People who hold more positive views of behavioral outcomes are also more likely to succeed in performing the behavior, whereas those who hold more negative views of potential outcomes are likely to give up or attribute their failure to external factors or their lack of innate talent in the area (Bandura, 1997). A mother who believes, for example, that talking to her son about sexual responsibility will reduce his chances of impregnating a girl is more likely to talk with him than a mother who believes such discussions will be interpreted as her approval for her son to have sexual intercourse.

Bandura (1986) advocates a behavior-specific approach to the development of instruments to assess self-efficacy and outcome expectancy. He argues that general measures of these traits are unlikely to capture an individual's beliefs associated with specific behaviors, that is, parent-child discussions about sex. Thus, to measure self- efficacy and outcome expectancy associated with talking to adolescents about sex, two behavior-specific instruments were developed. The development and assessment of the psychometric properties of these instruments are discussed below.

DEVELOPMENT OF SCALES

For the purpose of this study, self-efficacy was defined as the parent's overall belief in his or her capability to talk with his/her adolescent about specific sex-related topics. Three aspects of sex-based discussions were identified:

1. physiological processes (e.g., menstruation),
2. practical issues (e.g., where to get condoms), and
3. safer sex messages (e.g., he/she should use condoms if he/she decides to have sex).

Indicators of the three aspects were obtained from a review of the literature on self- efficacy, social cognitive theory, parent-adolescent sex-based discussions, and information on puberty. This review was augmented with transcripts from focus group discussions with mothers about sex-based discussions held with their children.

Outcome expectancy was defined as the parents' expectation about the outcomes associated with talking with their adolescent about sex-related topics. Bandura (1997) notes that outcome expectancy can be classified into three categories: self-evaluative, social, and physical. Self-evaluative expectancy refers to those outcomes that would affect one personally (e.g., I would feel more responsible). Social expectancy refers to those outcomes that might affect others or society (e.g., others would approve of my behavior). Physical outcome expectancy refers to physical changes that might be expected as a result of performing a specific behavior. For example, a person who consistently exercises might expect that such behavior would lead to a stronger heart or leaner body. Because physical outcome expectancy was not applicable to the

present instrument, only items assessing self-evaluative and social outcome expectancies were written. Items for the scale were derived from a review of the literature and from focus groups conducted with mothers of adolescents.

DESCRIPTION AND SCORING

Sixteen items were written to measure the three aspects of self-efficacy, and 15 items were written to measure the two aspects of outcome expectancy. Because we were interested in assessing self-efficacy and outcome expectancy of parents of older children and adolescents ages 11 to 14 years, item development was limited to content that would be appropriate for adolescents in this age range. For the self-efficacy scale, each item is worded positively and rated on a 7-point scale anchored with the terms not sure at all (1) and completely sure (7). Total scores are found by summing responses to individual items. Total possible scores range from 16 to 112 with higher scores corresponding to a higher degree of self-efficacy to discuss sex-related issues with adolescents. Each item begins with the same stem—"How sure are you that you can always explain to your adolescent .. ." In the administration of the instrument, the adolescent's name is substituted for the term your adolescent so that the parents' responses refer to a specific adolescent.

Items for the outcome expectancy scale are rated on a 5-point scale anchored by the terms strongly disagree (1) and strongly agree (5). Of the 15 items, 10 are positively worded and 5 negatively worded. Total scores are found by first reverse coding the negatively worded items, and then summing responses to individual items. Total possible scores range from 15 to 75 with higher scores corresponding to more positive outcomes associated with talking with one's child about sexual issues. Each item begins with the same stem- "If you talk with your adolescent about sex topics . . ." In the administration of the instrument, the adolescent's name is substituted for the term your adolescent so that the parent's responses refer to a specific adolescent.

Prior to use, both instruments were reviewed by researchers who were familiar with social cognitive theory and the concepts of self-efficacy and outcome expectancy. In addition, each of the reviewers had experience in the development of scales to measure theoretically based concepts including self-efficacy and outcome expectancy. Based on their review and assessment of the individual items in each scale, wording changes were made to better reflect the intent of items. All items were retained for the final version of the scales.

METHODS

Procedures

Data for the psychometric assessment of the self-efficacy and outcome expectancy scales were obtained from the baseline interviews conducted with mothers enrolled in an HIV prevention study entitled Keepin' it R.E.A.L.!, designed for mothers and adolescents. The purpose of Keepin' it R.E.A.L.! is to encourage the delay of the initiation of sexual intercourse among sexually inexperienced adolescents and to encourage the use of HIV prevention practices among sexually active adolescents. The program is unique in that mothers enroll with their adolescents and are taught HIV-risk reduction skills along with skills to enhance their role as their adolescent's sex educator. The study was approved by the institutional review board of the researchers' institution and the community-based organization (CBO) where the study was conducted.

Mothers and their adolescents were recruited for the study from a CBO serving disadvantaged youth in a large southeastern city. Mothers of adolescents aged 11 to 14 years were approached either in person at the CBO or contacted by telephone. Mothers who were interested in the study were invited along with their adolescents to participate in a baseline assessment. In order to participate in the intervention study, both the mother and her adolescent were required to volunteer. Mothers and adolescents were also required to have lived together throughout the past year. Adolescents were required to be 11 through 14 years of age at the time of the baseline interview and members of the CBO. An adult female other than the mother could participate if she was the legal guardian of the adolescent and had lived with the adolescent and performed the mother's role for the previous year.

The baseline interview for the mother included the assessment of self-efficacy and outcome expectancy related to parent-adolescent communication about sex. Information was collected on other variables including sex-based discussions with adolescents, general communication, parenting, and self-esteem. Items on the assessment were written to obtain information about the mother's relationship with a specific adolescent. Thus, mothers who were enrolled in the study with more than one adolescent completed an assessment for each adolescent. Background personal information including age, race, education, and marital status was also collected. Following the baseline assessment, mothers and their adolescents attended one of two treatment conditions or the control condition. Follow-up assessments were conducted at 4-, 12-, and 24-months after the baseline assessment to assess both the short- and long-term efficacy of the intervention.

Prior to the baseline assessment, interviewers gave a detailed description of the study and the role of the mothers and their adolescents. Mothers were required to sign a consent form for themselves and one for their adolescent; adolescents were required to sign an agreement (assent) to participate in the study. Trained interviewers conducted separate assessments for mothers and adolescents. Each assessment took about 60 minutes to complete, and participants were each paid $20.00 for the baseline assessment. Because we were interested in assessing the psychometric properties of two scales developed for mother participants, only data from mothers were included in the present analysis.

Sample

Four-hundred ninety-one mothers completed the baseline assessment. Of these participants, 113 had more than one adolescent participate with them in the study. For this analysis, mothers' responses for the first adolescent to participate in the study were used, and responses for subsequent adolescents were excluded. Of the mother participants, 90.8% were biological mothers, 4.7% were grandmothers, 1.8% were adoptive mothers, 1.6% were stepmothers, and .8% were aunts. Mothers ranged in age from 25 to 68 years with a mean of 37.9 years (SD = 6.9). Thirty-three percent of participants were married; 25.9% were divorced, 25.5% were never married, 11.6% were separated, and 3.9% were widowed. Participants were primarily African American (96.7%), and 89.2% had completed high school with 38.4% attending trade school or college, 14.3% obtaining a college degree, and 2.7% obtaining a master's degree. Eighty-three percent of mother participants reported receiving income from a job. Almost half of the participants (46.7%) reported attending religious services more than once per week, and 85.3%

indicated that religion was very important to them. The adolescents ranged in age from 11 to 14 years, and 61.5% were male.

Data Analysis

The reliability of the self-efficacy and outcome expectancy scales was first assessed using Cronbach' s alpha. Newly developed scales with an alpha value of 0.70 or higher meet the accepted standard of internal consistency reliability (Nunnally & Bernstein, 1994). As part of the reliability assessment, inter-item correlations, and item-to-total correlations were evaluated to determine the presence of weak items.

To assess the underlying dimensions of the scales, an exploratory maximum likelihood common factor analysis using oblique rotation was conducted. Oblique rotation is the preferred method when factors are expected to be correlated as in the present case for both self-efficacy and outcome expectancy scales (Nunnally & Bernstein, 1994). The following criteria were used to evaluate items:

1. item factor loadings of 0.30 or higher,
2. ability to interpret the factors, and
3. items loading at 0.15 higher on one factor than all others (Carmines & Zeller, 1979).

Construct validity of the scales was assessed using hypotheses testing. Based on social cognitive theory, it was expected that mothers with higher levels of self-efficacy and outcome expectancy related to discussing sexual health topics would be more likely to actually discuss these topics with their adolescents (Bandura, 1997). We expected that mothers who express a higher quality of general communication and report greater involvement with their adolescent, would be more likely to express higher levels of self-efficacy and outcome expectancy related to sex-based discussions. We also expected that mothers expressing higher levels of self-efficacy would report higher levels of self-esteem. Based on the literature showing that mothers talk more with daughters than sons, we expected that mothers of daughters would report a higher level of self-efficacy and more positive outcome expectancy than mothers of sons.

Additional Measures

For these analyses, mother-adolescent sex-based communication was measured by a 25-item scale developed by the investigators. This scale is composed of a list of specific topics about sex to which mothers respond yes (they talked about it) or no (they did not talk about it) with their adolescent. A sample item is: "Have you ever talked to your adolescent about birth control pills?" The interviewers substituted the adolescent's first name for the term your adolescent so that the information reported was specific to the adolescent enrolled in the study. Positive responses are summed to yield a total score. Based on the current responses, the Kuder Richardson coefficient for this scale was 0.91. The quality of general communication with one's adolescent was assessed with an 18-item Parent-Adolescent Communication Scale. Items for the scale were adapted from Armsden and Greenberg' s (1987) inventory of parent and peer attachment and from Barnes and Olson' s (1985) parent-adolescent communication scales. Prior to use in a previous study of parent-adolescent communication, the items were reviewed by a panel of experts and pre-tested. Each item is rated from 1 never true to 5 always true, with higher scores corresponding to more positive mother-adolescent general communication. A sample item

is: "Your adolescent can talk to you about things that are important to him/her." The interviewer substituted the adolescent's first name for the term your adolescent. Responses to individual items are summed to yield a total score. The alpha coefficient for this scale based on the current responses was 0.83.

Involvement with one's adolescent was measured by a 14-item parenting scale based on the work of Lamborn, Mounts, Steinberg, and Dornbusch (1991). Each item is rated on a 5-point scale from 1 strongly disagree to 5 strongly agree. A sample item is: You help your adolescent when he/she has a problem." As with the previous scales, the adolescent's name was substituted for the term your adolescent. Item responses were summed to yield total scores that could range from 14 to 70 with higher scores corresponding to the perception of greater maternal involvement. Cronbach's alpha for responses from the current sample of participants was 0.82.

Self-esteem was assessed using the Rosenberg Self-esteem Scale (Rosenberg, 1965). This scale is composed of 10 items, five of which are positively worded and five that are negatively worded. Each item is rated on a 4-point agree/disagree scale. Following reverse coding of negatively worded items, responses are summed to yield a total score with higher scores corresponding to a higher level of self-esteem. An example of an item is, "I feel that I have a number of good qualities." The alpha coefficient for the responses of this group of participants was 0.82.

Pearson product moment correlation coefficients were used to assess the degree of association between self-efficacy and outcome expectancy and the variables of sex- based communication, general communication, parenting, and self-esteem. A t-test was used to assess the mean differences in self-efficacy and outcome expectancy between mothers of daughters and mothers of sons.

RESULTS

Reliability

Self-Efficacy. Cronbach' s alpha computed to assess the internal consistency reliability of the self-efficacy scale was 0.85 indicating an acceptable level of internal consistency among the items. Means of individual items ranged from 4.46 to 6.76 with standard deviations ranging from 0.78 to 2.25. Although all response categories were selected, the participants tended to endorse responses at the higher end of the scale leading to a negative skew (skewness = -1.24). Correlations between items ranged from 0.05 to 0.70, indicating no redundancy among items defined by an item- item correlation greater than 0.85 (Nunnally & Bernstein, 1994). The mean inter- item correlation was 0.28. Item-to-total correlations ranged from 0.32 to 0.68. On the basis of these analyses, we elected to retain all of the items for further testing.

Outcome Expectancy. Cronbach' s alpha computed to assess the internal consistency reliability of the outcome expectancy scale was 0.83 indicating an acceptable level of internal consistency among the items. Means of individual items ranged from 3.15 to 4.50 with standard deviations ranging from 0.60 to 1.25. Although all response categories were selected, the participants tended to endorse responses at the higher end of the scale leading to a slight negative skew (skewness = -0.08). Correlations between items ranged from 0.07 to 0.81 indicating no redundancy among items (Nunnally & Bernstein, 1994). The mean inter-item correlation was

0.27, and item-to-total correlations ranged from 0.24 to 0.61. Item 8—"Your adolescent will do what he/she wants no matter what you say"—had the lowest item-to-total correlation and also demonstrated several weak (< 0.1) correlations with other items. Because of the exploratory nature of the analysis, we retained Item 8 as well as the remaining items for further psychometric assessment.

Factor Analysis

Self-Efficacy. The initial factor analysis procedures revealed three factors with eigenvalues greater than 1.0, explaining 51.0% of the variance in the self-efficacy scale. Because the third factor was composed of only one item, a second analysis was run forcing a 2-factor solution. The two resulting factors explained 43.9% of variance with the first factor explaining 33.7% of the variance before rotation. The first factor was composed of 10 items that represented physiological events, practical issues, and safer sex messages (Table 1). Because the factor included items from the three prespecified areas and seemed to be addressing the provision of information, it was labeled a basic information factor. Factor 2, named relationship-based information, was composed of

TABLE 1. Factor Loading and Factor Structure for Communication About Sex Self-Efficacy Scale (N = 491)

Items	Factor 1	Factor 2
You can always explain to your adolescent		
how to use birth control pills	.887	
where to buy or get birth control pills	.824	
how birth control pills keep girls from getting pregnant	.741	
where to buy or get condoms	.641	
how to put on a condom	.634	
why an unmarried person should use a condom when they have sex	.488	
that he/she should use condoms if he/she decides to have sexual intercourse	.484	
what is happening when a girl has her period	.459	
why wet dreams occur	.410	
how someone can get AIDS if they don't use a condom	.324	.206
what you think about adolescents his/her age having sex	.285	.323
how to tell if a boy/girl really loves him/her	.241	.299
why he/she should wait until he/she is older to have sexual intercourse		.669
how to make a boy/girl wait until he/she is ready to have sex		.660
how to tell a boy/girl no if he/she does not want to have sex		.570
ways to have fun with a boy/girl without having sexual intercourse		.422

six items addressing issues such as how to encourage a partner to wait, how to tell a partner No, and how to have fun without sex. Three items had similar numeric loadings on both factors and failed to meet the criterion of a 0.15 difference between loadings on Factor 1 and Factor 2. Moreover, one of these items had a factor loading of less than 0.30 on its primary factor.

Outcome Expectancy. For the outcome expectancy scale, the initial factor analysis procedures revealed four factors with eigenvalues greater than 1.0 explaining 59.6% of the variance. Because Factor 4 had only one item, a second factor analysis was conducted in which three factors were requested. The three resulting factors explained 52.6% of variance and provided a better interpretation of the data than did the 4-factor solution. The first factor was composed of three items representing a cognitive self-evaluative component (Table 2). Factor 2 was composed of six items that represented an emotional self-evaluative component, and Factor 3 was composed of six social outcome expectancy items. One item on Factor 3 also loaded on Factor 2 at less than the prespecified difference criterion of 0.15. This item and one other on Factor 3 had factor loadings of less than 0.30 on their primary factor.

TABLE 2. Factor Loadings and Factor Structure for Communication About Sex Outcome Expectancy Scale (*N* = 491)

Items	Factor		
	1	2	3
If you talk with your adolescent about sex topics			
you will feel like a responsible parent	.944		
you will feel that you did the right thing	.903		
you will be proud	.526		
you will be embarrassed		.737	
you will feel comfortable		.676	
you would find some things difficult to talk about		.632	
it would be unpleasant		.473	
you will feel ashamed		.470	
you will find these issues easy to talk about		.467	
you think he/she will listen		.204	.217
your adolescent will be less likely to get pregnant/get a girl pregnant			.700
your adolescent will be less likely to have sexual intercourse as a young teen			.667
you think it will do some good			.411
you will feel relieved			.382
your adolescent will do what he/she wants no matter what you say			.275

Additional Reliability Testing

Cronbach' s alphas for responses that composed the factors for self-efficacy and outcome expectancy scales were computed and are displayed in Table 3. Cronbach's alpha for the basic information factor of the self-efficacy scale was 0.84 and for the relationship-based information factor 0.67. For the cognitive self-evaluative factor of the outcome expectancy scale, Cronbach' s alpha was 0.82; for the emotional self- evaluative factor, the Cronbach's alpha was 0.77; and for the social outcome expectancy factor, Cronbach's alpha was 0.67. Alpha coefficients for the total self- efficacy and outcome expectancy scales as well as the three of the five subscales derived from factor analysis were all above the 0.70 deemed acceptable for a new scale by Nunnally and Bernstein (1994).

Construct Validity Testing

As noted previously, Pearson product moment correlation coefficients were used to assess the degree of association between the new scales of self-efficacy and outcome expectancy and the variables of sex-based communication, general communication, parenting, and self-esteem. A t-test was used to assess the difference in the mean

TABLE 3. Cronbach Alpha Coefficients for Factors and Total Scales

Factors	Cronbach Alpha
Basic information self-efficacy	.84
Relationship-based information self-efficacy	.67
Total self-efficacy	.85
Cognitive self-evaluative outcome expectancy	.82
Emotional self-evaluative outcome expectancy	.77
Social outcome expectancy	.67
Total outcome expectancy	.83

scores of self-efficacy and outcome expectancy between mothers of daughters and mothers of sons. The results showed that self-efficacy was correlated in the predicted direction with sex-based discussion ($r = .325$, $p < .000$), general communication ($r = .371$, $p < .000$), parenting ($r = .314$, $p < .000$), and self-esteem ($r = .220$, $p < 0.000$). Likewise, the results showed that outcome expectancy was correlated in the predicted direction with sex-based discussion ($r = .389$, $p < .000$), general communication ($r = .485, p < .000$), parenting ($r = .497, p < .000$), and self-esteem ($r = .330, p < .000$). The t-test results demonstrated that mothers of daughters expressed higher levels of self- efficacy for talking about sexual topics than did mothers of sons ($t = 3.43$, $p < .000$) and more positive outcome expectancy ($t = 2.18$, $p = < 0.05$).

DISCUSSION

The purpose of this study was to evaluate the psychometric properties of two scales— one to measure the self-efficacy of parents to discuss sexual health issues with their adolescents and the other to measure outcome expectancy associated with such discussions. Assessment of reliability for both scales showed that internal consistency reliability was acceptable for the total scales scores. With the exception of one item on the outcome expectancy scale, the inter-item correlations, the mean inter-item correlations, and the item-to-total correlations meet the standard criteria for scale development for both scales. Finally, analyses conducted to assess the construct validity of the scales provided evidence to suggest that the scales measure the constructs of self-efficacy and outcome expectancy.

Although the outcome expectancy scale was developed based on Bandura' s concept of underlying components, the self-efficacy scale was not guided by a predetermined conceptualization of factor structure. Thus, an exploratory analysis was necessary to determine if patterns of items existed in the data and if these patterns could be accounted for by latent variables. For self-efficacy, a two-factor model provided the best interpretation of the underlying structure. The first factor included items related to physiology (e.g., menstruation and wet dreams), practical information (e.g., how to buy condoms) and safer sex messages (e.g., should use condoms). We originally thought that the information provided about physiological events

might be perceived as being different from that on how to use condoms or why one should use condoms. However, the combination of items in Factor 1 suggests that mothers who feel confident that they could talk with their adolescents about menstruation are also confident that they could talk to them about birth control pills. This finding might indicate that information on physiology is equally as difficult or as easy for mothers to discuss. The finding might also suggest that if an intervention program can increase a mother's efficacy to discuss important and necessary factual information about how the body works, that such instruction might indirectly affect their confidence to talk about safer sex messages such as condom use as well.

The second factor to emerge from the self-efficacy scale was labeled relationship- based information. The items in this factor seemed to address the mother's confidence in presenting information about sexual negotiation including waiting to have sex. For mothers, these social sexual kinds of conversations might be more difficult to have with their adolescents because there are no definitive answers. The combination of items within the second factor indicates that mothers who are confident that they can talk to their adolescents about why they should wait until marriage to have sex are also certain that they can discuss ways to have fun without sex and how to tell if their partner loves them.

Although the factor structure did not align with the original conceptualization of the content of the items for the scale, the exploratory factor analysis provided insight into participants' self-efficacy surrounding discussions with their adolescents. According to the results, self-efficacy is perceived similarly across topics that address basic sexual information regardless of content. Self-efficacy is also perceived similarly across conversations on issues surrounding sexual relationships regardless of the message. The factor structure, however, suggests that the participants view these two areas—discussions about basic information and discussions about relationships—differently. Further study is necessary to determine if this explanation continues to hold among the same and other samples of participants.

Items for the outcome expectancy scale were selected to measure two aspects of outcome expectancy identified by Bandura (1997). These were self-evaluative and social outcome expectancy. The results of the factor analysis revealed three factors (Table 2). Factors 1 and 2 could be interpreted as components of self-evaluation and Factor 3 as an expression of social outcome expectancy. The strongest factor (Factor 1) related to a cognitive evaluation of the discussions and revealed an underlying theme of responsibility—"You will feel that you did the right thing." The two items with the highest loadings on the factor addressed the theme of responsibility, but the third did not. The second factor related to an emotional self-evaluative component of discussions with all but one item addressing feelings of embarrassment, discomfort, or difficulty with discussing sexual topics. Our results suggest that self-evaluation related to parent-adolescent discussions about sex is composed of both cognitive and emotional components; the cognitive component addresses responsibility and the emotional component addresses discomfort.

Although there are relatively few studies of parent-adolescent communication, investigators who have focused on self-evaluative aspects of such discussions have only addressed comfort. Nolin and Peterson (1992) found that parents were uncomfortable talking about sex with the adolescent, and this discomfort increased as the children grew older. In contrast, Dilorio, Hockenberry-Eaton, Maibach, Rivero, and Miller (1996) found that mothers in their study

became more comfortable talking about sex as their children grew older. Our results suggest that the cognitive component, that is, feeling that parents met their responsibility and that they did the right thing, should be included in intervention programs. Acknowledging discomfort is important but perhaps motivating parents about how they will think about their actions would be beneficial as well. Because there are only three items on this factor, it is important to write other items that might define the factor. These items could include: that parents have accomplished an important goal and that they can effectively talk to their adolescent about sex.

The final factor of the outcome expectancy scale was social outcome expectancy. This factor was composed of six items that assess the outcomes expected in the adolescent as a result of the discussions. Mothers who believed their adolescent would be less likely to have sex were also likely to report that their adolescents would be less likely to get pregnant or cause a pregnancy. Despite the fact that all social outcome expectancy items were included on this factor, the internal consistency was low. To further define the factor and increase the internal consistency, it is recommended that weaker items be rewritten to better reflect the latent construct and that additional items be written. Additional items might include that the adolescents would remember their discussions when they got older, they would appreciate the parents' attempts to provide information, and they would be embarrassed or uncomfortable with their discussions.

Because the relationship-based information factor within the self-efficacy scale demonstrated less than adequate internal consistency, it is recommended that more items be developed to define the factor. Because the results demonstrated skewing of responses to the positive end of the scale, items might need to be rewritten to yield more heterogeneous responses, instructions to the respondent might be amended to encourage more varied responses, or the scale might be administered to a more heterogeneous sample. Once completed, additional analysis would be necessary to examine the presence of latent constructs. In the meantime, it is recommended that the self-efficacy scale be used as a total scale, and that total scale score be used in analyses. Likewise, because the cognitive self-evaluative subscale within the outcome expectancy scale was composed of only three items, and the social outcome expectancy subscale demonstrated less than adequate internal consistency, it is recommended that more items be developed to define these factors. As with the self-efficacy scale, additional analyses are necessary to examine the presence of latent constructs within the scale. In the meantime, it is suggested that the outcome expectancy scale be used as a total scale, and that the total scale score be used in analyses.

Limitations

The current analyses for the examination of the psychometric properties of the self- efficacy and outcome expectancy scales were derived from a sample of predominately African American mothers. Although the scale was designed for parents in general, mothers were the parent responder in the present study. Additional analyses using other samples that are more ethically diverse and include fathers are necessary to provide more evidence for the reliability and validity of these measures. Additional analyses are needed to fully appreciate the value of the measures for assessing self-efficacy and outcome expectancy of parents regarding talking to their adolescents about sex. These analyses should include an assessment of stability (test-retest reliability), further assessment of construct validity, and item analysis using item response theory. Despite the limitations of the present study, the development of the measures is a step

forward in providing a means to further explore factors associated with parent-adolescent discussions about sexual health.

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