

Determinants of condom use among Haitian youth: improving the validity of quantitative findings through qualitative methods

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Introduction

The Caribbean region has the second largest HIV/AIDS infection rate in the world with Haiti being one of the most affected countries. In 2005, there were an estimated 330,000 persons living with HIV/AIDS [PLWHA] in the region with a rate of 1.6% among adults. In 2005 in Haiti, the rate was approximately 3.8% (UNAIDS 2006). Most new infections are among adolescents and young adults age 15 to 24 years (UNICEF 2002). While the rate of infection has declined in Haiti since the early 1990s when an estimated 9.4% of the adult population was living with HIV/AIDS, there are trends among young Haitians which suggest the potential for a reversal in this trajectory. These trends include sexual debut at an earlier age, decreased frequency of condom use among adolescents and young adults, and greater proportion of youth who are sexually active (UNAIDS 2006; Low, Broulet, Adu-Sarkodie, et al 2006).

The Pan American Health Organization (2007) has noted the need to “strengthen the promotion of sexual and reproductive health and disease prevention” for youth living in the region and reaffirmed that “...the consistent use of condoms (are) the safest and most effective way to prevent HIV among the sexually-active population”. Beyond the control of HIV, condoms have also been shown to effectively reduce risk for other sexually transmitted infections (STIs) including gonorrhea, Chlamydia, and syphilis (Low, Broulet, Adu-Sarkodie, et al 2006). Among youth, research suggests that those using condoms at sexual debut are more likely to report subsequent condom use (Shafii, Stovel, Robert, Holmes 2004). Such data indicate the need for early interventions to increase consistent condom use among adolescents and young adults and reduce transmission of HIV and other STIs in this population..

The use of theory has been identified as a key factor in designing effective HIV/AIDS programs for adolescents in the United States (Jemmott, & Jemmott, 2000; Kirby, 2002; Kim, Stanton, Li, Dickersin, & Galbraith, 1997). Researchers have also utilized and adapted individual level Western-based theories of behavior change (e.g., Protection Motivation Theory, Theory of Reasoned Action, Theory of Planned Behavior) and related instruments/measures for use with HIV/AIDS prevention research among youth in non-Western countries (Kaljee, Genberg, Riel, Cole, Tho, Thoa, et al 2005, Stanton, Fitzgerald, Li, Shipena, Ricardo, Galbraith et al. 1999; Bandawe & Foster, 1996; St. Lawrence, Marx, Scott, Uwakwe, Roberts & Brasfield, 1995; Wilson, Zenda, McMaster & Lavelle, 1992; Wilson, Manual, & Lavelle, 1991. Astatke & Serpell, 2000; Mulatu, Adamu, & Haile, 2004; Adih & Alexander, 1999; Bandawe & Foster, 1996; St. Lawrence et al., 1995). However within resource-poor countries, these theory-based studies of HIV-related risk and protective behaviors remain scarce and the use of multi-item scales to measure theoretical determinants is even less common. In addition, few researchers report on the methodological steps required for adapting theories and associated scales for use in socio-cultural environments other than where they were developed (Astatke and Serpell, 2000).

Theory-based research provides a means by which the relationships between determinants of behavior (e.g., self-efficacy for condom use) and the actual behavior (e.g., consistent condom use) can be hypothesized and tested. Programming and other prevention efforts can utilize these data in order to target specific determinants and decrease risk behaviors and increase protective behaviors. However, in order to test these relationships within theories of behavior change, the creation of culturally appropriate measures is essential for the reliability and validity of the scales and the outcome data (Zeller, 1993).

The effectiveness of HIV/AIDS prevention programs for Haitian youth in large part depends on adaptation of behavior change theories and the development of valid and reliable measurements for associated theoretical determinants within the socio-cultural context of Haiti. In two theory-based studies, condom use among Haitian youth has been associated with self-efficacy, peer norms, barriers, HIV/AIDS susceptibility and perceived quality of parental relationship (Holschneider & Alexander, 2003; McBride et al, 2005). In the current study among Haitian youth ages 15 to 24 years, we used qualitative and quantitative methods to identify and define determinants of condom use and to develop and adapt measures of these determinants. Both the qualitative and quantitative components were guided by the Population Services International (PSI) Behavior Change Framework. Within this framework, factors associated with health behavior change are opportunity, ability, and motivation (OAM). Opportunity is defined as institutional or structural factors that influence an individual's chance to perform a promoted behavior. Ability is an individual's skills or proficiencies needed to perform a promoted behavior. Motivation is an individual's arousal or desire to perform a promoted behavior. Within these three factors, are specific determinants for risk and/or protective behaviors.

Through qualitative methods, culturally sensitive and valid determinants and scales can be developed from existing theoretical frameworks and measures (Chwalow 1995). Qualitative methods can be utilized to elicit information from the target population on a specific topic [e.g. social norms for condom use] (George, Mackinnon, Kong, Stewart 2006; Chen, Chen, Lotus, Tang 2007). At one level, qualitative data provide statements which can be used to generate scale items. At a second level, these data can be used for adaptation and creation of determinants and modification/generation of behavior change theory (Greenhaigh, Chowdhury, Wood 2006).

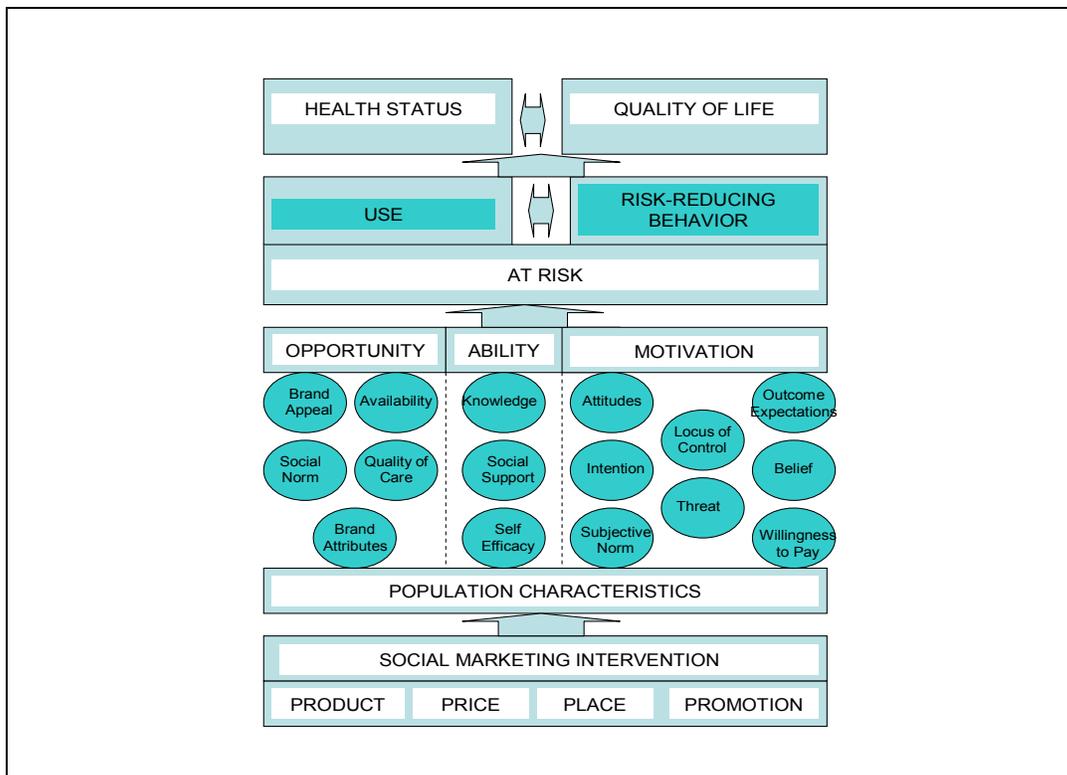
Through quantitative pilots, exploratory factor analysis (EFA) is used for determining the dimensionality of a scale. Scale dimensionality refers to the different aspects of a concept that are measured in depth by a scale. In addition, piloting provides data on scale reliability, or whether a scale measures a single idea and therefore the scale is internally consistent. Internal consistency analysis assesses the reliability of scales by examining the correlation between items that measure a single concept (Netmeyer, Bearden and Sharma, 2003).

In this paper, we will present both details regarding the methodological steps utilized for defining determinants and developing/adapting scales for condom use among Haitian youth, as well as outcomes from the final survey. This study represents an initial step at PSI toward refining and documenting methods for undertaking theory-driven prevention-intervention research for various health outcomes across diverse socio-cultural environments.

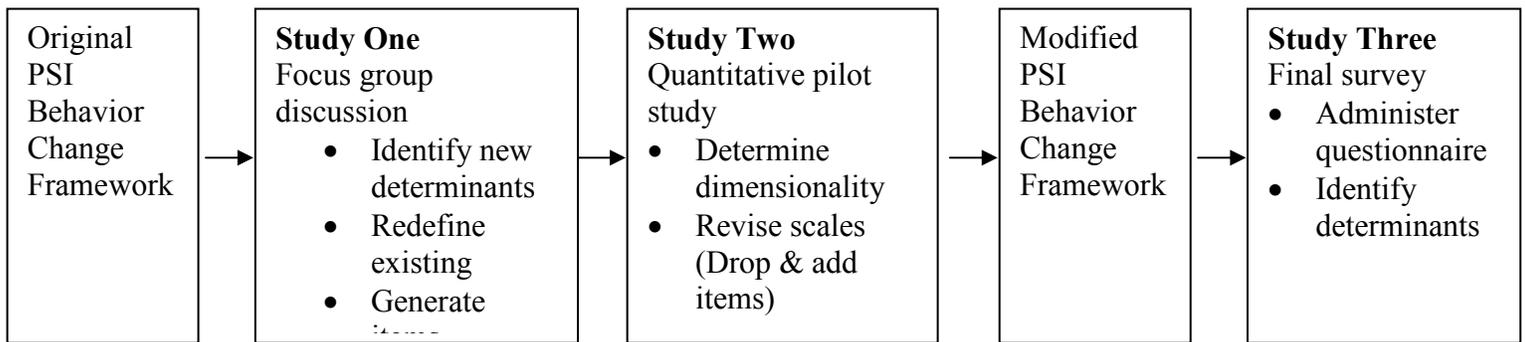
Methods

Theoretical Model. The PSI Behavior Change Framework which is embedded within PSI's PERformance Framework for social Marketing (PERForM) proposes a relationship between a number of psychosocial determinants and preventive health behaviors (see Figure 1). This framework is based on research and theory from several disciplines including the fields of psychology, health communication and social marketing (Patel & Chapman, 2004). Up to sixteen determinants are included in the PSI Behavior Change Framework. These determinants are categorized as opportunity, ability or motivation variables and were chosen using the following criteria: 1) experience of researchers and programmers, 2) extent to which they are mutable by social marketing interventions, 3) ease with which they can be measured; 4) findings from empirical studies; and, 5) incorporation in previous behavior change theories.

Figure 1: PERFORM and the PSI Behavior Change Framework



Methodological Framework. Three consecutive studies, one qualitative and two quantitative were conducted to improve the validity of findings on determinants of condom use among Haitian youth through a process that allowed for modification of the guiding Behavioral Change Framework (see Figure 1). This was done using results from the qualitative study to incorporate new determinants into the framework and modify the definition of existing determinant so that they reflect aspects specific to the target group and country context. Multi-item scales were developed based on these definition and qualitative data. The dimensionality and reliability of these scales were assessed using results from the pilot study and revisions were made to improve their psychometric properties. Revised scales were incorporated into a final study that examined the relationships posed by the PSI behavior change framework.



Research Site and Population. This study was conducted among adolescents and young adults between the ages of 15 to 24 living in Haiti. The qualitative study was conducted in neighborhoods located in residential districts within the capital city of Haiti, Port Au Prince. The pilot study was also conducted in Port Au Prince. The final study was conducted among a nationally representative sample of youth.

Study 1: Qualitative study to develop multi-item scales

Participants and design. For the qualitative study, youth were purposefully selected by gender and age. Focus group participants were recruited from their homes by members of the research team. Snow ball sampling was used to select youth for focus group discussion. At each site one or two youth that meet the selection criteria for one of the focus groups were approached (male ages 20 to 24) and if they agreed to participate were asked to invite friends.

The focus groups were conducted with 8 to 10 youth each. A total of eight focus group discussions were completed with 16 younger male and 16 older male groups, and 16 younger female and 16 older female groups. Separate groups were conducted for younger and older youth in order to capture differences anticipated for determinants of condom use by age. Separate male and female groups were conducted because of

potential differences in determinants by gender as well as the possibility of compromise in the contribution of participants in mixed-gender groups. .

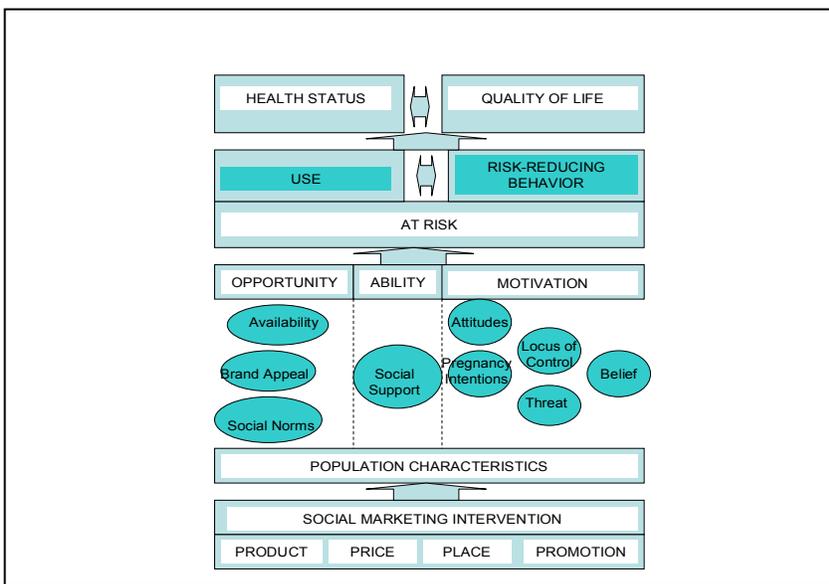
Procedures. A trained facilitator and a note-taker moderated the groups. The interviews were conducted in French. The focus groups were moderated in a way that allowed for spontaneous suggestion of determinants of condom use as well as exploration of theoretical determinants in the PSI Behavior Change Framework. A free listing activity provided an opportunity for participants to list reasons that youth use or do not use condoms to generate possible determinants of condom use. Following the free-listing activity, focus group participants were asked about the relevance of determinants in the PSI Behavior Change Framework in relation to youth condom use in Haiti. Participants were provided with simple explanation of the determinants and asked about the importance of each determinant. Throughout the focus group discussion, open ended questions and follow up probes were used to gather contextual information.

Data analysis. Data were transcribed, translated into English, and coded using a coding dictionary that included both determinants and their definitions from within the PSI Behavior Change framework as well as determinants which emerged during the discussions. Coded data were compiled according to the determinants across the eight focus group discussions. A total of 30 potential determinants were identified. Eight determinants that were mentioned in at least six focus group discussions were selected for an item generation workshop.

Item generation. A two-day workshop was convened to generate items for measuring each of the eight determinants. Workshop participants included three peer educators, three researcher staff and three program staff involved in the design of communication activities. The workshop included an introduction session on scales, criteria for developing good scale items, and an overview of the PSI Behavior Change Framework and the eight selected determinants. During the workshop participants worked in small groups including one researcher, one peer educators, and one program staff. These small groups reviewed compiled data on each determinant to reach agreement on the interpretation of relevant text and to generate scale items.

Results

Findings from the focus group data suggest two kinds of modification to the PSI Behavior Change Framework. First, the findings suggest the inclusion of ‘pregnancy intentions’ as a determinant of condom use. Based on the qualitative findings pregnancy intention was defined as the desire to become pregnant or have a child for reasons including financial and social benefits. Secondly, eight determinants in the PSI Behavior Change Framework were not included in the final model (See Figure 2 on the modified PSI Framework).



The qualitative findings also suggested the modification of the construct definitions for the determinants in the PSI framework to include contextually specific elements. Data from the focus group discussion were used to adapt the definitions for the following determinants: social norms, social support, locus of control, attitudes, beliefs, response efficacy and severity.

The construct definitions for attitudes, beliefs, response efficacy and severity were modified to include contextually relevant information for condom use in Haiti. No changes were made to the structure of the definitions for these determinants. However, for social norms, social support and locus of control the contextual data from the focus group discussions suggested the need for more extensive changes to the definitions and the inclusion of possible new dimensions..

Within the PSI Behavior Change Framework, **social norms** are defined as the perceived standards for behavior accepted as usual practice. In the Haitian study, this definition was further modified to include the following three types of social norms: social norms for using condoms with different types of partners, social norms for different situations where condoms are used, and perceived peer social norms for condom use.

.In the PSI Behavior Change Framework **social support** is defined as the assistance that an individual gives/receives. Three types of social support are suggested as a part of the PSI determinant definition including emotional, instrumental, and informational support (Seeman & Berkman, 1988). Emotional support is defined as activities that an individual does to make others feel loved and cared. Instrumental support is tangible help that an individual receives/provides. Informational support is help that an individual gets/offers through information. Based on the focus group data, the definition for social support was modified to include specific types of support from three different sources: emotional and instrumental support from parents, emotional social support from the community and emotional and instrumental social support from friends

In the PSI Behavior Change Framework, **locus of control** is defined as perceptions about external or internal site of control in an individual’s life in relation to the promoted behavior. An **external locus of control** suggests that an individual’s health is under the control of powerful others or is determined by fate, luck, or chance. An **internal locus of control** suggests that an individual’s health is directly controlled by him/herself (Rotter, 1966). Based on data from the qualitative study, this definition was modified to include perceptions about one’s site of control over three types of external factors: emotions, time constraints, and sexual partners. Emotions included love, passion and sexual pleasure. The identification of emotions and time constraints required the expansion of the definition of external locus of control beyond other people to situations and ones own feelings.

| Table One: Revised Determinant Definitions Based on Focus Group Data | | | |
|--|---|---|--|
| Determinant | PSI Definition | Example Text from FG | Revised Definition |
| Social Norms | The perceived standards for behavior accepted as usual practice | <p>“People don’t use one when it’s the first time.”</p> <p>“One should use condoms with prostitutes (BRASÈ), but none with one’s preferred lovers.”</p> <p>“All the young people in my class use condoms.”</p> | Separated into three categories: social norms for using condoms with different types of partners, social norms for different situations where condoms are used, and perceived peer social norms for condom use. |
| Social Support | The assistance that an individual gives/receives including emotional, instrumental, and informational support | <p>“When my father finds my condoms, he throws them away. That’s why I hide them with my friends.”</p> <p>“I have a friend who gives me condoms. He’s my lover. I’m not going to tell you what his name is, but he’s in this room.”</p> <p>“Does society encourage you to use condoms?”</p> <p>“Yes and no. Sometimes people take us for tramps.”</p> | Divided into specific types of support from three different sources: emotional and instrumental support from parents, emotional social support from the community and emotional and instrumental social support from friends |

| | | | |
|------------------|---|---|--|
| Locus of Control | The perceptions about external [fate, luck, chance] or internal [self-directed] site of control in an individual's life in relation to the promoted behavior. | <p>“When people are carried away by love and desire, they put off using condoms.”</p> <p>"We're on our guard; it's something we do secretly and in that case we don't have time to use a condom."</p> <p>"During sex, one experiences enormous pleasure, sensations, and often we don't have time to use a condom."</p> <p>“Sometimes it's the girls who don't let us use condoms.”</p> | Modified to include perceptions about one's site of control over three types of external factors: emotions, time constraints, and sexual partners. |
|------------------|---|---|--|

Study 2: Quantitative pilot study

Methods

Instruments. The multi-item scales generated through the qualitative study were included in a survey instrument along with questions on socio-demographic variables and sexual behaviors (sexual experience, number and type of sexual partners and condom use). This questionnaire was pilot tested using a sample of 101 (48 female and 53 male) youth ages 15 to 24. A purposeful sample of youth residing in Port au Prince was used for the pilot. The survey was administered by interviewers.

Data analysis: Pilot data were examined using exploratory factor analysis and internal consistency analysis. Exploratory factor analysis were used to determine whether the scales developed were one or multi-dimensional. Internal consistency analysis was used to assess the reliability of one-dimensional scales and each dimension or subscale of multi-dimensional scales..

Items that loaded onto factors that were difficult to label and had a reliability score below .65 were dropped (see social norms in Table Two). Items that loaded onto factors with only two items were also dropped (see attitudes in Table Two) if additional information was not available to create new items. Items were retained if they met the following conditions: 1) had a factor loading above .30, 2) the factor that they loaded onto appeared

to measure the determinant; or, the dimension the scale was intended to measure and 3) the factor had a .65 or higher reliability score. Items were also retained if they met the first two conditions mentioned above but loaded onto factors that did not have a .65 or higher reliability score). In such cases additional items were generated to improve reliability. These items were generated using information in other items already in the scale or by revising items that were suppose to be dropped (see social support & locus of control in Table Two).

Results

Demographics. A total of 101 male and female youth ages 15 to 24 were interviewed for the pilot study. The sample consisted of slightly more male (52%) than female (47%) respondents. Only a small number of the youth interviewed (4%) were married. Forty seven percent were between the ages of 15 to 19. A large majority (80%) had attended high school and 65% had graduated high school.

Results on the dimensionality and reliability of scales developed using data from the pilot quantitative study are reported in Table Two.

| Determinant | EFA | Reliability | Decision |
|------------------------------------|--|-------------|---------------|
| <i>Social norms</i> | Factor 1=Type of partner use condom with (9 items) | .87 | |
| | Factor 2=Perceived peer condom use (5 items) | .77 | |
| | Factor 3=no label (4 items) | .61 | dropped |
| | Factor 4=Situations where condoms are used(2 items) | | dropped |
| <i>Social support</i> | Factor 1=negative reactions from parents and community(6 items) | .78 | |
| | Factor 2=emotional and instrumental support from friends-positively worded (3 items) | .67 | |
| | Factor 3=Emotional and instrumental support from friends and community-negatively worded (5 items) | .56 | Improve items |
| | Factor 4=no items load above .30 | | dropped |
| | Factor 5= emotional and instrumental support from parents positively worded (1 item) | | dropped |
| | Factor 6=Emotional and instrumental support from friends and community-negatively worded (2 items) | | dropped |
| <i>Condom use attitudes</i> | Factor1= Assessment about the effect of condom use on sex (11 items) | .95 | |
| | Factor 2=assessment about using | .75 | |

| Table Two: Pilot Study EFA and Reliability Results | | | |
|--|---|-------------|---|
| Determinant | EFA | Reliability | Decision |
| | condoms (3 items) | | |
| | Factor 3=condom use and time (2 items) | | Dropped |
| Condom beliefs | Factor 1 =condom use outcome expectations related to side effects, effectiveness and effects on sexual intercourse (11 items) | .78 | |
| Pregnancy intentions | Factor 1=desire to have a child for economic gain, increased social status or partner physical attractiveness (8 items) | .88 | |
| Locus of Control | Factor 1=External site of control - emotional factors that hinder condom use (8 items) | .82 | |
| | Factor 2=External site of control - emotional factors that facilitate not using condoms (5 items) | .88 | Dropped |
| | Factor 3=External site of control –time and partner related (7 items) | .82 | |
| | Factor 4=Internal site of control –sense of personal responsibility (3 items) | .74 | Add items |
| | Factor 5=Internal site of control-ability to stop having sex if don't have a condom (4 items) | .67 | Dropped |
| Response efficacy | Factor 1=condoms are effective in preventing HIV, sexual disease and death (8 items) | .90 | |
| | Factor 2= condoms are effective in preventing diseases and STIs (3 items) | .52 | Dropped |
| Perceived HIV/AIDS Severity | Factor 1= knowledge about HIV/AIDS transmission | .70 | Dropped and replaced with new items on severity |
| | Factor 2= personal susceptibility for HIV infection and pregnancy | .70 | |

Study 3: Quantitative cross-sectional survey

Methods

Participants and design. A cross-sectional survey was conducted with youth ages 15 to 24 (N=2155). Data collection was stratified by age so that equal number of younger (15 to 19) and older (20 to 24) youth were selected for the study. A three stage sampling procedure was used. Enumeration areas were selected with population proportional to

size in the first stage, followed by households and youth. Households were selected using a systematic selection strategy and eligible youth were selected randomly to participate in the survey.

Instruments. The following multi-item scales were revised based on the results of the pilot study and were included in the final cross-sectional questionnaire. Coefficient alpha scores for multi-item scales used in the final analysis ranged from .79 to .92. All scales used a four point likert scale with the following response options: Strongly Disagree, Disagree, Agree and Strongly Disagree.

Seven items were used to measure **peer social norms for condom use**. This scale measured perceptions about peer behavior related to condom use. A five item scale was used to measure **partner social norms for condom use** (alpha=.83). This scale measured social norms for using condoms with different types of partners (alpha=.82).

A two dimensional support scale was developed to measure **social support from parents and adult community** and **social support from friends**. Six items were used to measure positive and negative reactions of parents and adult community members about condom use by youth (alpha=.79) A three item scale was used to measure instrumental and emotional support from friends (alpha=.88).

Locus of control for situation factors was measured using a six item scale (alpha=.84). This scale measured perceptions about ones control over situational factors that can affect whether or not the promoted behavior is practiced. Eight items were used for **Locus of control for emotional reactions** defined as youth's perceptions about one's control over emotional reactions that can affect condom use (alpha=.92). A five item scale was used to measure **Locus of control for condom use** defined as perceptions that one has personal responsibility over whether or not a condom is used (alpha=.82).

A one dimensional sixteen item scale was used to measure **attitudes about using condoms** (alpha=.96). This scale measured assessment about the effect of using condoms on sexual intercourse.

An eight item scale was used to measure **condom use beliefs** as related to side effects, effectiveness, and sexual intercourse related outcome expectations (alpha=.81).

An eight item **pregnancy intention** scale was used to measures youth's desire to become pregnant/have a child (.89).

A scale with eight items was developed to measure **response efficacy**. This scale included items about the effectiveness of using condoms for preventing sexually transmitted diseases (.92).

A five item scale on the seriousness of HIV/AIDS was used to measure **HIV/AIDS severity** defined as an individual's perceptions about the seriousness of the public health problem (.78).

An eight item scale of **perceived condom availability**. This scale measures accessibility of condoms during different times, e.g., late at night and on different occasions when youth need condoms (.92)

A five item scale was used to measure **brand appeal**. This scale included items on respondents' perceptions about the level of identification with the condom brand as well as the value they placed on brands (.82).

Data analysis. Descriptive statistics were used to examine condom use and patterns of sexual partners. The correlation among independent variables was examined to identify highly correlated variables and combine or drop variables as appropriate. Logistic regression analysis was used to identify statistically significant determinants of behaviors. Separate analyses were conducted for sexually active.

Results

Demographics. Two thousand and fifty-five male and female youth ages 15 to 24 were interviewed for the final study. Forty-four percent of the respondents were male and fifty-six were female. Few youth (2%) were married. Sixty-two percent of the respondents were between the ages of 15 to 19. A majority had attended (80%) school and 72% had completed high school.

| INDICATORS | % |
|--|------------------|
| <i>Ever sex</i> | 68% ¹ |
| <i>Had sex in the last six months</i> | 77% ² |
| <i>Had at least one non-marital non-cohabitating partner in the last six months</i> | 61% ³ |
| <i>Had a non-marital non-cohabitating partner and used a condom with last sexual partner</i> | 71% ⁴ |

¹ Among all respondents (N=2155)

² Among those who have ever had sex (N=1479)

³ Among those who have had sex in the last six months (1149)

⁴ Among those who had a non-cohabitating partner in the last six months (N=695)

Sexual risk and protective behaviors. Sixty eight percent of all respondents were sexually experienced and seventy percent of sexually experienced youth had sex in the last 12 months. Sixty-one percent of youth who had sex in the last 12 months had at least one non-marital non-cohabitating partner (regular, casual or paid partner) during this time period. Seventy-one percent of these youth used a condom with the last partner they had sex with (spouse, regular casual or paid).

Determinants of condom use: Indicative that the determinants as a whole set were good in predicting who among the sample used a condom with their last partner, the test of the

full model for younger youth was significant when compared to the constant-only model, $\chi^2 [56, N = 281] = 321.68, p < .001$. The model correctly predicted 81.7 % of those who used condoms and 51,8% of those who did not use condoms, with an overall correct prediction of 69.8%. Nagelkerke R^2 was .181, suggesting that the set of predictors accounted for 18.1% of the variation in condom use.

The test of the full model for older youth was significant when compared to the constant-only model, $\chi^2 [61, N = 269] = 304.657, p < .001$, indicating the determinants as a set were good in predicting who among the sample used a condom with their last partner. The model correctly predicted 80.1 % of those who used condoms and 49.6 % of those who did not use condoms, with an overall correct prediction of 67.3%. Nagelkerke R^2 was .204, suggesting that the set of predictors accounted for 18.1% of the variation in condom use.

Opportunity and ability related variables in the PSI Behavior Change Framework were found to be associated with condom use among youth ages 15 to 19 with non-marital non-cohabitating partner. Higher perceived condom availability, condom brand appeal, social support from parents and adults in the community, and pregnancy intentions were significantly associated with condom use at last sex with any partner. Using condoms was associated with higher scores on perceived availability of condoms ($p > .01$) and brand appeal ($p > .01$). Using condoms was also associated with higher scores on social support from parents and adults in the community ($p > .01$) and lower scores on pregnancy intentions ($p > .01$).

Among older youth motivation related and demographic variables were associated with condom use. Positive attitudes about condoms and internal locus of control predicted condom use. Male youth were more likely to use condoms than female youth. Using condoms was associated with higher scores on condom attitudes ($p > .01$) and internal locus of control ($p > .0$). Older male youth are 2.25 times more likely to use condoms than older female youth.

Table Four: Determinants of condom use at last sex with any partner among 15 to 19 year old youth who have at least one non-marital or non-cohabitating partner

| INDICATORS | OR | 95.0% C.I for OR | |
|--|--------|------------------|-------|
| | | Lower | Upper |
| OPPORTUNITY | | | |
| <i>Availability</i> | 2.57** | 1.45 | 4.60 |
| <i>Brand Appeal</i> | 2.28** | 1.15 | 4.52 |
| <i>Peer social norms for condom use</i> | .67 | .34 | 1.32 |
| <i>Partner social norms for condom use</i> | .89 | .42 | 1.89 |
| ABILITY | | | |
| <i>Social support from friends</i> | 1.98** | 1.14 | 3.45 |

| | | | |
|--|-------|-----|------|
| <i>Social Support from parents and adults in the community</i> | .80 | .45 | 1.42 |
| MOTIVATION | | | |
| <i>Condom use attitudes</i> | 1.36 | .67 | 2.75 |
| <i>Condom beliefs</i> | .92 | .43 | 1.97 |
| <i>Pregnancy Intentions</i> | .39** | .19 | .70 |
| <i>Locus of Control for Emotional Factors</i> | .68 | .33 | 1.39 |
| <i>Locus of Control for Situational Factors</i> | .93 | .45 | 1.91 |
| <i>Locus of Control for condom use</i> | 1.11 | .51 | 2.44 |
| <i>Response Efficacy for condom use</i> | 1.80 | .76 | 4.23 |
| <i>Perceived HIV/AIDS Severity</i> | .70 | .31 | 1.57 |
| POPULATION CHARACTERISTICS | | | |
| <i>Age</i> | 1.18 | .95 | 1.46 |
| <i>Gender (male)</i> | 1.21 | .65 | 2.26 |
| <i>Education (High school or above)</i> | 1.20 | .62 | 2.32 |
| <i>Socio-economic Status</i> | 1.15 | .92 | 1.43 |
| <i>Marital Status (single)</i> | 1.01 | .33 | 3.08 |
| <i>Religion (Christina)</i> | .53 | .26 | 1.10 |

*: $p < .05$; **: $p < .01$; ***: $p < .001$

Table Five: Determinants of condom use at last sex with any partner among 20 to 24 year old youth who have at least one non-marital or non-cohabitating partner

| INDICATORS | OR | 95.0% C.I for OR | |
|--|---------|------------------|-------|
| | | Lower | Upper |
| OPPORTUNITY | | | |
| <i>Availability</i> | 1.22 | .64 | 2.34 |
| <i>Brand Appeal</i> | 1.42 | .71 | 2.82 |
| <i>Peer social norms for condom use</i> | 1.62 | .73 | 3.60 |
| <i>Partner social norms for condom use</i> | 1.16 | .44 | 3.09 |
| ABILITY | | | |
| <i>Social support from friends</i> | 1.37 | .68 | 2.77 |
| <i>Social Support from parents and adults in the community</i> | .59 | .32 | 1.09 |
| MOTIVATION | | | |
| <i>Condom use attitudes</i> | 3.16** | 1.54 | 6.51 |
| <i>Condom beliefs</i> | 1.15 | .50 | 2.68 |
| <i>Pregnancy Intentions</i> | .89 | .43 | 1.84 |
| <i>Locus of Control for Emotional Reactions</i> | .96 | .45 | 2.06 |
| <i>Locus of Control for Situational Factors</i> | .70 | .34 | 1.45 |
| <i>Locus of Control for condom use</i> | 6.40*** | 2.25 | 18.2 |
| <i>Response Efficacy for condom use</i> | .93 | .35 | 2.45 |

| | | | |
|---|--------|------|------|
| <i>Perceived HIV/AIDS Severity</i> | .89 | .38 | 2.07 |
| POPULATION CHARACTERISTICS | | | |
| <i>Age</i> | 1.15 | .92 | 1.44 |
| <i>Gender (male)</i> | 2.25** | 1.19 | 4.27 |
| <i>Education (High school or above)</i> | 1.19 | .52 | 2.70 |
| <i>Socio-economic Status</i> | 1.00 | .81 | 1.25 |
| <i>Marital Status (single)</i> | 2.00 | .52 | 2.70 |
| <i>Religion (Christina)</i> | 1.12 | .55 | 2.28 |

*: $p < .05$; **: $p < .01$; ***: $p < .001$

Discussion

Findings from the qualitative data allowed for the modification of the PSI Behavior Change Framework and development of locally relevant multi-item scales. One new determinant was identified in relation to intentions for pregnancy or having a child. For the remaining scales developed, extensive modifications were made to the definitions of three scales and locally relevant items were developed for four scales.

The dimensionality of all but two scales was improved during the pilot study either by dropping or adding items. While dropping items results in better measures it also means that relevant dimensions that were less well-defined and operationalized were not included in the final scale. This can be improved in the future by conducting focus groups to further clarify these dimensions, revisiting the data to see if the items can be improved or if more items can be developed and/or developing at least five to seven items for all dimensions.

The scales used in the final study had high reliability scores and included locally relevant contextual information. A number of significant predictors were identified. These findings are useful for developing theory based and locally relevant HIV prevention programs for youth in Haiti and suggest separate HIV/AIDS prevention programs for younger and older youth. HIV/AIDS prevention programming for younger youth should be aimed at all youth and address perceptions about condom availability and condom brand appeal, condom use social support and pregnancy intentions. Programming for older youth should target female youth and address condom use attitudes.

The methodological framework used in this study improves on the methods used in previous studies by using both a qualitative and a quantitative pilot study to develop culturally relevant scales. Results from the qualitative study allowed for the modification of the theoretical framework and increasing the content validity of scales. The pilot study was used to improve the psychometric properties of the measures developed. The results from the final study allow for a unique opportunity to develop a communication intervention that is theory based and reflects elements that are specific to the target group and context. Such communication interventions are likely to appeal to the target audience and potentially increase the likelihood of effecting behavioral change.. Even as new

treatments are developed for HIV/AIDS, there is an urgent need to develop and implement prevention programs and messages to decrease rates of infection, particularly in regions and countries with high rates of infection. The current study with Haitian youth suggests the potential for utilizing a mixed-methods approach for development/adaptation of scales to be used in descriptive and evaluation studies and increasing the applicability of existing behavioral change theories relevant for non-Western populations.

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