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Implicit Hopelessness and Condom Use Frequency:  
Exploring Nonconscious Predictors of Sexual Risk Behavior

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## Abstract

Current models of affect and health posit that affective disturbance influences health through behavioral pathways. The current research explores this hypothesis in the domain of sexual risk behavior by testing explicit and implicit hopelessness as predictors of condom use. Sixty male and female undergraduates completed implicit and explicit measures of depression and hopelessness and self-reported condom use frequency. Findings revealed that implicit hopelessness predicted less condom use; however this relationship was moderated by gender such that implicit hopelessness predicted less condom use for men, but not women. The applicability of the findings to broader health theories is discussed.

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Theorists have posited many models to explain the adoption of preventive health behaviors [e.g., health belief model (Becker & Rosenstock, 1984), subjective expected utility theory (Edwards, 1954), protection motivation theory (Maddux & Rogers, 1983), and the theory of reasoned action (Ajzen & Fishbein, 1980)]. Most theories of health behavior assume a rational process in the initiation of health behavior that is marked by a consideration of behavioral options as well as an evaluation of the consequences or outcomes of those options (Gibbons, Gerrard, Blanton, & Russell, 1998). These social cognition models most often emphasize conscious cognitive factors because of their role in proximally determining social behavior as well as mediating the relationship between a multitude of other variables (e.g., race, social class) and behavior (Conner & Norman, 2003). While these theories have demonstrated success in predicting a wide variety of health behaviors, they are especially useful in predicting goal-oriented, health-promoting behaviors (e.g., dieting, exercise, health screening) that fit well within a rational framework (Gibbons et al., 1998). Accordingly, researchers using these models have experienced difficulty in predicting health-compromising behavior such as sexual risk behavior because of the premise of rational forethought that underlies each of the models (Gibbons et al., 1998). Consequently, social cognition models have been criticized for focusing too closely on rational decision-making alone (e.g., Ingham, 1994), especially within the context of behaviors that impair one's health or well-being (e.g., having sex without a condom; Gibbons et al., 1998).

More recently, psychologists have acknowledged the limits of consciousness and rationality in predicting behavior and thus, have become increasingly interested in nonconscious

influences on behavior (Nosek, Greenwald, & Banaji, 2006). Although less widely known, the study of implicit processes and theories in health represents a rapidly growing field because researchers recognize that implicit processes may fill a gap in previous health theories that rely on explicit assessment of constructs thought to predict health behavior (Krank & Swift, 1994; Nosek et al., 2006; Stacy, 1997). Explicit measures refer to self-reported attitudes and accounts of behavior while implicit measures are those measurement techniques that avoid directly asking participants for information (Fazio & Olson, 2003). Unlike explicit measures, implicit measures can reveal traces of past experience that people are unwilling to communicate when directly asked for a verbal report (Fazio & Olson, 2003; Nosek et al., 2006). Moreover, implicit measures can unveil information that is not available to introspective access even if people were motivated to retrieve and express it (Nosek et al., 2006). Thus, exploring the role of implicit cognition (thoughts and feelings that exist outside of conscious awareness or conscious control) can extend our understanding of the processes implicated in health behavior both by circumventing social desirability issues and by uncovering information that is unavailable to introspective access (Nosek et al., 2006).

Within the context of health behavior, nonconscious influences have been identified in health behavior and risk behavior such as substance abuse, obesity, smoking, and sexual behavior. For example, Stacy (1995, 1997) identified memory activation (e.g., drug-related memory associations) as a predictor of alcohol and marijuana use. Roefs and Jansen (2002) found that obese people are characterized by a significantly stronger implicit negative attitude toward high-fat foods than are normal weight controls. Swanson, Rudman, and Greenwald (2001) evidenced significant differences between smokers and nonsmokers in automatic associations regarding the valence of smoking and the degree to which smoking was associated

with the self relative to others. In the domain of sexual risk behavior, Stacy, Newcomb, and Ames (2000) established a relationship between implicit sexual cognitions (i.e., sex-related memory associations) and condom use.

In addition to examining nonconscious predictors, investigating the effects of affective disturbance extends beyond the limits of presuming rationality while predicting health behavior (Armitage, Conner, & Norman, 1999). Existent models of affect and health posit that affective disturbance, such as depression and hopelessness, influences health through behavioral pathways (e.g., health behavior; Cohen & Rodriguez, 1995). In addition to a direct effect on behavioral pathways, affective disturbance also influences cognitive pathways (e.g., the interpretation of symptoms and health decision processes) that in turn influence behavioral pathways in ways that may encourage or discourage health behavior (Cohen & Rodriguez, 1995). For example, explicit assessments of affective disturbances, generally, and depressive symptoms, more specifically, have been linked to higher incidence rates of unhealthy behaviors, such as sedentary lifestyle, smoking, and over-eating (Goodman & Whitaker, 2002; Rosal et al., 2001).

The present project aims to extend this previous work by exploring both the role of implicit (nonconscious) and explicit (conscious) affective disturbance (i.e., depression and hopelessness) in men and women's proclivity towards condom use. Both general depressive symptoms and the more specific symptom of hopeless expectations regarding the future will be explored. Because these expectations can function automatically, hopelessness will be explored both nonconsciously and consciously. This study represents the first preliminary test of the link between implicit hopelessness and condom use.

*Hopelessness and Sexual Risk Behavior*

Hopeless expectations concerning the future are a fundamental component of depression. In Beck's model of depression, there are three components that are theorized to contribute to depressed mood and the other affective and motivational correlates of depression: A negative view of the self, of the world, and of the future (Beck, 1967). Hopelessness refers to the expectation that "highly desired outcomes will not occur or that highly aversive outcomes will occur and that no response in one's repertoire will change the likelihood of the occurrence of these outcomes" (Abramson, Metalsky, & Alloy, 1989, p. 359). Hopeless expectations regarding the future are especially salient in the decision to engage in health behaviors in that an individual is unlikely to engage in a behavior if he/she does not have a hopeful outlook regarding the future as people's health behaviors are tied to future outcomes. When an event becomes inevitable (e.g., a negative future), then it also becomes counterintuitive to expend effort or engage in behavior that may prevent the undesired outcome.

In a more general sense, if an individual has a pessimistic view concerning his/her future, he/she may not engage in behaviors to protect that future. Bolland (2003) examined the role of explicit hopelessness in health behavior by testing whether adolescents living in the inner city react to their futures by abandoning hope and subsequently engaging in high levels of risk behavior. He found that almost 50% of boys and 25% of girls had moderate or severe feelings of hopelessness. Moreover, explicit hopelessness predicted violent and aggressive behavior, substance use, accidental injury, and, importantly, sexual behavior.

With the exception of Bolland (2003), few studies have examined the link between hopelessness and risk behavior. However, several studies examining explicit depression suggest that depression is tied to risk behaviors such that more depressive symptoms predict more risk

behavior (Allgower, Wardle, & Steptoe, 2001; Brooks, Harris, Thrall, & Woods, 2002; Yarcheski, Mahon, & Yarcheski, 2002). More specifically, depression has been linked to sexual risk behavior such as choosing risky partners and infrequent condom use (Brown et al., 2006; Mazzaferro, Murray, Ness, Bass, Tyus, & Cook, 2006; Rohde, Noell, Ochs, & Seeley, 2001; Shrier, Harris, Sternberg, & Beardslee, 2001; Stiffman, Dore, Earls, & Cunningham, 1992). In one study, Shrier and colleagues (2001) found that young men's, but not young women's, explicit depression predicted infrequent condom use.

### *Implicit Hopelessness*

Previous work has found that some people have an automatic tendency for hopelessness (Andersen, Spielman, & Bargh, 1992). Accordingly, we propose that hopelessness may operate at a nonconscious level to affect condom use. Moreover, automatic associations may help explain health behaviors that are not well represented by health theories that rely on rational decision processes (Stacy, 1995, 1997). Thus, we believed that an implicit measure of hopelessness would be a more sensitive predictor of sexual health behavior (i.e., condom use).

Although there is extensive research on the role of explicit perceptions related to sexual health behavior (for a meta-analysis, see Albarracin, Johnson, Fishbein, Muellerleile, 2001; Basen-Engquist, 1992), there is markedly less research on nonconscious influences on sexual health behavior. Marsh, Johnson, and Scott-Sheldon (2001) examined implicit and explicit attitudinal predictors of sexual behavior. Interestingly, explicit measures (i.e., target-specific attitude measures and affective attitude measures) predicted condom use with committed partners while implicit measures [i.e., an Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998) assessing the automatic association of condom images with "good" compared to non-condom objects with "bad"; Marsh et al., 2001] predicted condom use with casual

partners. Czopp, Monteith, Zimmerman, and Lynam (2004) reported similar results when using vignettes indicative of either a high cue situation or a low cue situation to test whether explicit or implicit attitudes are predictive of condom use. In the high cue situation, participants listened to a scenario in which he/she flirts with a coworker at a bar for several hours before going to his or her apartment for a drink, and eventually, sex. In the low cue situation, participants listened to a scenario in which he/she goes to dinner and a movie with a girlfriend or boyfriend of 8 months before going to his or her apartment for a drink, and eventually sex. Czopp and colleagues (2004) found that implicit attitudes toward condoms predicted condom use in the low cue situation while explicit attitudes toward condoms predicted condom use in the high cue situation. Taken together, these studies suggest that implicit attitudes may be predictive of condom use, especially in situations where deliberate and rational thought is not primed, which may be characteristic of most sexual behavior (Stacy et al., 2000).

### *Present Study*

Because sexual activity is often spontaneous rather than planned (Brooks-Gunn & Furstenberg, 1989; Brown, DiClemente, & Reynolds, 1991; Loewenstein & Furstenberg, 1991), rational models of health behavior may overlook perceptions that are predictive of condom use. Accordingly, the present study sought to examine perceptions related to the future as predictors of condom use. More specifically, we will evaluate the association between implicit and explicit assessments of hopelessness and condom use while controlling for implicit and explicit depressive symptoms. We hypothesized that implicit hopelessness would predict condom use.

### Method

#### *Participants*

Participants ( $n = 60$ ) in this study were undergraduates from a university participant pool; they received course credit for their participation. Thirty-seven percent ( $n = 22$ ) of the participants were male and 63% ( $n = 38$ ) were female. Participants ranged in age from 17 to 27 years old, with a mean age of almost 19 years ( $M = 18.93$ ,  $SD = 1.89$ ). Sixty-seven percent of the sample identified themselves as “Caucasian,” 12% as “Hispanic/Latin American,” 8% as “Black/African American,” 8% as “Asian,” and 5% as “other.” All of the participants had engaged in sexual intercourse during the past year and 62% ( $n = 37$ ) had used a condom the last time that they had sex (i.e., responded “yes” to “Did you use a condom the last time you had sexual intercourse?”). Participants were mostly dating one person exclusively at the time of the study ( $n = 37$ ; 62%).

### *Materials*

#### *Implicit Measures*

The IAT (Greenwald et al., 1998) utilizes differences in response latency to assess automatic associations. This computer task is based on the premise that the strength of association between two concepts will be reflected in the ease of responding to exemplars of both concepts when responses are mapped on to the same key press (e.g., responding to an example of a flower and an example of a pleasant word by pressing the “;” key). In the task, facilitation is indexed by response latency, or the speed that the exemplars can be sorted into their respective categories. The faster the categorization is made, the stronger the association between the concepts.

Take the example of a practice IAT developed by Greenwald and colleagues (1998) assessing implicit attitudes toward flowers relative to insects. During the IAT, the participant is seated at a computer and places one finger from their left hand on the ‘A’ key and one finger

from their right hand on the ‘;’ key. There are practice blocks for the participant to become comfortable with the task and critical blocks to collect data. In the critical blocks, the two keys (i.e., “A” and “;”) each correspond to two concepts (i.e., there are exemplars from four concepts that must be categorized to one of two keys). For example, in one block the ‘A’ key corresponds to the categories *flower* and *good* and the ‘;’ key corresponds to the categories *insect* and *bad*. Exemplars of each of the four categories (e.g., *flower*: daffodil, rose; *good*: sunshine, paradise; *insect*: cricket, bug; *bad*: evil, war) appear one at a time in the middle of the screen. The participant must categorize the exemplars as quickly and as accurately as possible.

In a second critical block, the task is the same, but the pairing of the categories has changed such that the ‘A’ key corresponds to *flower* and *bad* and the ‘;’ key corresponds to *insect* and *good*. Again, participants must categorize exemplars as quickly and as accurately as possible. In the above example, most participants would categorize the exemplars faster when *flower* and *good* and *insect* and *bad* were mapped onto the same key press than when the reverse pairings existed. A difference score of the average response latencies in the two blocks would reflect stronger automatic associations between flower and good and insect and bad, which would be interpreted as an automatic preference for flower over insect. For the present study, we used an IAT created by Friedman, Nosek, Miller, Gordon, and Banaji (2004) to measure implicit hopelessness and depression.

*Implicit hopelessness.* Hopelessness is characterized as an association of the future with negative meaning (Friedman et al., 2004). To measure this construct implicitly, the concepts *future* and *past* were categorized with the evaluations *sad* and *happy*. Participants were said to display implicit hopelessness to the extent that the association of *future* with *sad* was stronger than the association of *future* with *happy*. The observed scores reflect negative associations with

the future relative to negative associations with the past [i.e., a difference score is created by subtracting the response latency on the compatible task (e.g., pairing of past with sad and future with happy) from the response latency on the noncompatible task (e.g., pairing of future with sad and past with happy)]; thus, positive milliseconds represent faster performance on the compatible task while negative milliseconds represent faster performance on the noncompatible task]. This ensures that implicit hopelessness is not encompassed by negative views of the past and future, but negative views of the future that are above and beyond negative views of the past (for a list of exemplars, see Appendix A).

*Implicit depression.* Depression is characterized as an association of the self with sadness (Friedman et al., 2004). To measure this construct implicitly, the concepts *self* and *other* were categorized with the evaluations *sad* and *happy*. Stronger associations of the *self* with *sad* compared to the *self* with *happy* were interpreted as an indicator of implicit depression (for a list of exemplars, see Appendix B).

### *Explicit Measures*

*Hopelessness.* Hopelessness was measured with the Life Orientation Test-Revised (LOT-R; Scheier, Carver, & Bridges, 1994), which assesses pessimistic-optimistic orientations. The LOT is a 6-item self-report measure (along with 4 filler items) assessing generalized expectancies for positive versus negative outcomes. Three of the 6 scored items are worded in a positive direction (e.g., “In uncertain times, I usually expect the best”) and 3 items are worded in a negative direction (e.g., “I hardly ever expect things to go my way”). Items worded in a positive direction were reverse scored such that higher scores indicate greater hopelessness. Participants were asked to indicate the extent to which they agreed with each statement using a

5-point scale ranging from 0 (strongly disagree) to 4 (strongly agree). In the present study, the LOT-R demonstrated good internal consistency ( $\alpha = .84$ ).

*Depressive symptoms.* The Beck Depression Inventory (BDI; Beck, 1967) was administered to assess depressive symptoms. The BDI is a 21-item self-report rating characteristic attitudes and symptoms of depression. It includes items related to sadness, pessimism, sense of failure, dissatisfaction, and dislike of self. Participants must choose the level of each item that corresponds to how they have been feeling the past week on a scale of 0-3, with higher scores indicating stronger symptoms of depression. For example, the item related to sadness is comprised of four statements, 0) I do not feel sad, 1) I feel sad, 2) I am sad all the time and can't snap out of it, and 3) I am so sad or unhappy that I can't stand it. Internal consistency for the BDI ranges from .73 to .92 with a mean of .86 (Beck, Steer, & Garbin, 1988). In the present study, the BDI demonstrated good internal consistency ( $\alpha = .87$ ).

*Condom use frequency.* Condom use frequency was assessed with a single item (i.e., "Over the past year, of all the times you had sexual intercourse, how often did you use condoms?"). Participants were asked to indicate their response from 0 (never) to 8 (always) (adapted from Ross & Schumacher, 2004). In previous research, the condom use item demonstrated adequate test-retest reliability ( $r = 0.62$ ; D. Ross, personal communication, April 25, 2007).

*Demographics.* A demographic questionnaire ascertained basic information, such as the participant's age, sex, class year, and race/ethnicity. Based on the work suggesting that implicit attitudes might be a better predictor for casual sexual partners (Czopp et al., 2004; Marsh et al., 2001), we also assessed relationship status in the demographic questionnaire.

#### *Procedure*

Participants were recruited from introductory psychology classes at a large, public university. Participants were required to take part in research as a component of their course obligations. Thus, participants received course credit for their participation.

Upon arriving at the study site, participants were greeted and asked to take two copies of a consent form. Following the informed consent procedure, participants were led to a computer for the implicit measures (Inquisit, 2006). The procedural design and data analysis of the implicit measures followed the standard format for the IAT outlined by Greenwald and colleagues (1998). The order of the two implicit tests, the order of the critical tasks within each test, and the order of the stimuli within each task were randomized across participants (Friedman et al., 2004). Instructions were given to participants to respond both as quickly and as accurately as possible during the implicit association tests.

After the completion of the implicit association tests, participants were given the packet of study questionnaires to complete. After participants turned in their completed questionnaires, they were given a debriefing statement detailing the specific hypotheses being tested and experimental methods used. The administration of the implicit measures and explicit measures took approximately 60 minutes to complete.

## Results

Following the procedure outlined by Greenwald, Nosek, and Banaji (2003), the  $D$  statistic was computed, which has been shown to outperform the conventional scoring procedure (Greenwald et al., 2003; Nosek et al., 2006). The  $D$  statistic eliminates trials with latencies that are greater than 10,000ms and eliminates participants with latencies that are less than 300ms for more than 10% of the trials (Nosek et al., 2006). To adjust differences between means for the

effect of underlying variability, the  $D$  statistic divides the difference between test block means by the standard deviation of all the latencies in the two test blocks (Greenwald et al., 2003).

Descriptive statistics for the implicit measures, psychological well-being and condom use are presented in Table 1. Overall, participants showed happy associations with the future relative to the past on the measure of implicit hopelessness (i.e., implicit hopefulness). Likewise, participants showed happy associations with the self relative to others on the measure of implicit depression. Table 2 shows the bivariate correlations for the main variables of interest. To explore the hypothesis that implicit hopelessness may be a unique, independent predictor of condom use, we examined the correlations between implicit hopelessness and condom use. As expected, we found a significant correlation between implicit hopelessness and condom use. No correlation was found for implicit depression and condom use or any other of the explicit measures of psychological well-being such as depression and hopelessness and condom use.

To explore whether gender moderated these results and whether the relationship between implicit hopelessness and condom use persisted while controlling for demographic variables (e.g. age) and explicit assessments of psychological well-being (e.g., depression, hopelessness), we regressed frequency of condom use on gender, age, depression, hopelessness, implicit hopelessness, and the interaction of gender and implicit hopelessness. The interaction term was created by centering gender and implicit hopelessness and then multiplying gender by implicit hopelessness to test whether gender moderated the link between condom use and implicit hopelessness (Aiken & West, 2000). We found a significant main effect of implicit hopelessness ( $\beta = -0.30, p < .05$ ) and a significant interaction between gender and implicit hopelessness ( $\beta = -0.35, p < .01$ ). Results of this analysis are summarized in Table 3. Follow-up analyses revealed

that implicit hopelessness predicts condom use for men ( $\beta = -0.70, p < .001$ ), but not women ( $\beta = 0.03, p > .05$ ). Results of these analyses are summarized in Table 4.

### Discussion

We hypothesized that implicit hopelessness would be a unique, independent predictor of condom use, controlling for explicit hopeless and depressive symptoms. Specifically, we hypothesized that automatic associations between the concepts *future* and *sad* (i.e., implicit hopelessness), controlling for explicit psychological distress (i.e., hopelessness, depression), would predict condom use. The hypothesis was supported: implicit hopelessness predicted condom use. Moreover, this relationship was moderated by gender such that implicit hopelessness predicted men's condom use, but not women's.

These preliminary findings support the notion that health behavior decisions may not be solely the product of a rational cost-benefit analysis (Gibbons et al., 1998; Ingham, 1994). Rather, the findings suggest that automatic associations between concepts (i.e., *future* and *sad*) may influence health behavior (i.e., condom use). Thus, these results are in accordance with research that has evidenced implicit cognition as a predictor of condom use (Czopp et al., 2004; Marsh et al., 2001; Stacy et al., 2000). Furthermore, these findings extend previous associations of condom use with implicit attitudes regarding condoms to include implicit attitudes indicative of psychological distress (i.e., hopelessness). These findings are supported by previous research that found explicit mental health symptoms (e.g., suicidality, depression) to be related to AIDS risk behaviors (Brown et al., 2006; Mazzaferro et al., 2006; Rohde et al., 2001; Shrier et al., 2001; Stiffman et al., 1992).

Moreover, the findings are relevant to the more general health literature evidencing the association of implicit processes with health behavior (Roefs & Jansen, 2002; Swanson et al.,

2001; Stacy, 1995, 1997). Specifically, attending to implicit cognition can facilitate the explanation of health behaviors that are not easily accounted for by theories focusing on rational processes (Stacy et al., 2000). Additionally, the different results for the implicit and explicit measures support the utility of assessing multiple components of attitudes and beliefs. For example, Teachman & Brownell (2001) found implicit anti-fat bias among health professionals who did not evidence explicit anti-fat bias, which suggests that multiple assessment strategies can be particularly useful when investigating attitudes and behaviors that may be influenced by social desirability.

Unexpectedly, implicit depression was not associated with condom use. One reason for this might be that hopelessness may actually precede depression (Abramson et al., 1989). In the present sample, reported depression levels were low (i.e., the mean score for the BDI was 7.00). Based on minimum cut-off scores for clinical depression (Beck et al., 1988), the current sample is well within the normal range for depressive symptoms; however, it is plausible that some of the sample may perceive the future in such a way (i.e., associating the future with sadness) that serves to precipitate depression. Hopelessness may be sufficient to instigate the onset of depression at a future time point (Abramson et al., 1989). Therefore, implicit hopelessness may be a more sensitive measure of negative mood in this nonclinical population. It is also possible that the implicit depression measure itself was not sensitive enough to assess the construct. A possible weakness of the implicit depression was the use of “other” as the comparison category due to the ambiguity associated with this category. It is unclear whom participants conceived of as “other,” which complicates the interpretation of the relative IAT score (Pinter & Greenwald, 2005).

Interestingly, the association of implicit hopelessness with condom use was moderated by gender such that implicit hopelessness predicted men's, but not women's, condom use. Previous research conducted by Shrier and colleagues (2001) supports our finding. In a sample of 7<sup>th</sup>-12<sup>th</sup> graders who had reported sexual intercourse in the last year, Shrier and colleagues (2001) found that depressive symptoms were associated with an increased risk of condom nonuse at last sexual intercourse for boys, but not girls. One possible reason for this gender difference might be the social context of sexual decision-making. Men may have greater control over condom use than women. Thus, internal processes such as implicit hopelessness may play a more important role in this type of sexual risk behavior. This is consistent with research suggesting that women may experience less control over condom use and other sexual risk behaviors because of gender norms at play in sexual interactions (Wingood & DiClemente 1995). Future research should test whether implicit hopelessness predicts other risk behaviors in women when the behavior is under the woman's control (e.g. female-specific contraceptive use).

Not so surprisingly, but noteworthy, our explicit and implicit measures of affective disturbance were unrelated. Explicit and implicit measures of seemingly similar constructs frequently show little or no correlation with each other (e.g., Aberson, Shoemaker, & Tomolillo, 2004; Greenwald et al., 1998; Rudman, Greenwald, & McGhee, 2001). There are a host of factors that influence the relationship between implicit and explicit assessments including motivational biases in explicit self reports, lack of introspective access to implicitly assessed representations, factors influencing the retrieval of information from memory, method-related characteristics of the two measures, or complete independence of the underlying constructs (Fazio & Olson, 2003; Hofmann et al., 2005). Moreover, the lack of connection between implicit and explicit measures supports the notion that implicit and explicit constructs are theoretically

distinct from one another, assessing different aspects of cognition (Fazio & Olson, 2003; Greenwald & Banaji, 1995).

### *Limitations and Future Directions*

The present research has limitations that should be acknowledged. First, the research design was correlational in nature. Therefore associations between variables are merely associations and not necessarily causal relations; however, prospective research examining the association between explicit affective disturbance and condom use supports the direction of our hypotheses. Brown and colleagues (2006) examined depressive symptoms as a predictor of sexual risk among a community sample of African American adolescents and young adults. The researchers collected baseline data on demographics, psychosocial context and depressive symptoms. At a six-month follow-up, data were collected regarding sexual activity in the past 90 days. Results indicated that the odds that African American adolescents who reported depressive symptoms at baseline would report inconsistent condom use at six-month follow-up were approximately four times greater than that of their peers who did not report depressive symptoms at baseline (Brown et al., 2006).

Unexpectedly, our explicit measures of affective disturbance did not predict condom use. One reason for the null finding for explicit depression may be that depression and condom use were assessed using different time frames. Depression was assessed for the previous week while condom use was assessed for the previous year. Future research should employ a global assessment of depression. Moreover, the absence of a relationship between explicit measures and condom use could also be due to the inability of explicit assessments to access information which was unavailable through introspection or that participants were unwilling to report (Fazio & Olson, 2003; Hoffman, Gawronski, Gschwendner, Le, & Schmitt, 2005). Lastly, the power to

detect a significant relationship between explicit measures of affective disturbance and condom use would be enhanced by a larger sample size.

An additional limitation of the study was that we relied solely on a single item, single time point self-report of condom use to examine sexual risk taking behavior. Future studies might explore implicit measures of sexual risk attitudes or utilize bogus pipelines to increase the accuracy of self-reports by reducing socially desirable responding (Alexander & Fisher, 2003). Moreover, future studies should include additional measures of sexual risk taking behavior to increase the validity and scope of the findings to other types of sexual risk taking behavior. Important questions also remain regarding the generalizability of the findings. For example, do these findings generalize to adolescent populations and more ethnically diverse populations?

### *Conclusion*

Although the research is not without its limitations, the present findings are an important first, albeit preliminary, step in identifying implicit hopelessness as a predictor of condom use with possible implications for general health risk behavior. Previous health theories far too often rely on rational decision-making processes, which are unable to explain health-risk behavior. The present study offers another measure of affective disturbance, namely hopelessness, and demonstrates its utility for predicting sexual risk behavior among young men. These results may help identify additional methods for identifying people who are likely to engage in sexual risk behaviors. In addition, our results suggest that a focus on hopelessness and its relation to health risk behavior is an important avenue for future research and possible interventions.

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Table 1

*Descriptive Statistics*

| Variable                    | Mean   | SD     | Range<br>(Possible Range)      |
|-----------------------------|--------|--------|--------------------------------|
| I. hopefulness ( <i>D</i> ) | 0.41   | 0.29   | -0.32 - 1.13                   |
| I. hopefulness (ms)         | 304.01 | 224.90 | -517.80 - 831.89               |
| I. depression ( <i>D</i> )  | 0.25   | 0.17   | -0.15 - 0.75                   |
| I. depression (ms)          | 196.62 | 123.92 | -81.81 - 556.67                |
| Hopelessness                | 8.98   | 4.20   | 1.00 - 18.00<br>(0.00 - 24.00) |
| Depression                  | 7.00   | 6.30   | 0.00 - 39.00<br>(0.00 - 66.00) |
| Condom use                  | 5.70   | 2.45   | 0.00 - 8.00<br>(0.00 - 8.00)   |

Table 2

*Pearson Correlation Coefficients Among Main Study Variables*

| Variable                        | 1     | 2       | 3     | 4       | 5     | 6      | 7     | 8  |
|---------------------------------|-------|---------|-------|---------|-------|--------|-------|----|
| 1. Age                          | --    |         |       |         |       |        |       |    |
| 2. Gender                       | 0.14  | --      |       |         |       |        |       |    |
| 3. Rel. status                  | 0.06  | -0.10   | --    |         |       |        |       |    |
| 4. I. hopelessness ( <i>D</i> ) | 0.13  | -0.34** | 0.07  | --      |       |        |       |    |
| 5. I. depression ( <i>D</i> )   | 0.11  | -0.01   | 0.04  | 0.15    | --    |        |       |    |
| 6. Hopelessness                 | -0.03 | -0.45** | -0.06 | 0.14    | 0.05  | --     |       |    |
| 7. Depression                   | -0.06 | -0.35** | 0.15  | 0.19    | -0.09 | 0.59** | --    |    |
| 8. Condom use                   | -0.21 | 0.11    | 0.02  | -0.34** | -0.17 | -0.18  | -0.08 | -- |

\* &lt; .05

\*\* &lt; .01

Table 3

*Summary of Results of Hierarchical Regression Analysis Predicting Condom Use Frequency*

| Condom use frequency     |              |                      |          |             |         |
|--------------------------|--------------|----------------------|----------|-------------|---------|
| Predictor variables      | $\Delta R^2$ | $\Delta F$ for $R^2$ | <i>B</i> | <i>SE B</i> | $\beta$ |
| Step 1                   | 0.06         | 1.96 <sup>a</sup>    |          |             |         |
| Age                      |              |                      | -0.30    | 0.17        | -0.23   |
| Gender                   |              |                      | 0.71     | 0.65        | 0.14    |
| Step 2                   | 0.10         | 2.22 <sup>b</sup>    |          |             |         |
| Age                      |              |                      | -0.23    | 0.17        | -0.18   |
| Gender                   |              |                      | -0.20    | 0.76        | -0.04   |
| Depression               |              |                      | 0.01     | 0.06        | 0.32    |
| Hopelessness             |              |                      | -0.64    | 0.57        | -0.18   |
| Implicit hopelessness    |              |                      | -2.61    | 1.17        | -0.30*  |
| Step 3                   | 0.11         | 8.16 <sup>c **</sup> |          |             |         |
| Age                      |              |                      | -0.35    | 0.16        | -0.27*  |
| Gender                   |              |                      | -0.36    | 0.72        | -0.07   |
| Depression               |              |                      | 0.03     | 0.06        | 0.08    |
| Hopelessness             |              |                      | -0.71    | 0.53        | -0.20   |
| Implicit hopelessness    |              |                      | -2.23    | 1.10        | -0.30*  |
| Gender x I. hopelessness |              |                      | -6.46    | 2.26        | -0.35** |

\* < .05 <sup>a</sup> *dfs* = 2 and 57

\*\* < .01 <sup>b</sup> *dfs* = 3 and 54

<sup>c</sup> *dfs* = 1 and 53

Table 4

*Follow-up Regression Analyses Revealing Gender Differences*

|                            | Condom use (men) |             |          | Condom use (women) |             |         |
|----------------------------|------------------|-------------|----------|--------------------|-------------|---------|
|                            | <i>B</i>         | <i>SE B</i> | $\beta$  | <i>B</i>           | <i>SE B</i> | $\beta$ |
| <b>Predictor variables</b> |                  |             |          |                    |             |         |
| Age                        | -0.27            | 0.25        | -0.20    | -0.41              | 0.22        | -0.33*  |
| Hopelessness               | -1.12            | 0.95        | -0.25    | -0.51              | 0.69        | -0.14   |
| Depression                 | 0.05             | 0.17        | 0.06     | 0.03               | 0.07        | 0.76    |
| I. hopelessness            | -6.24            | 1.49        | -0.70*** | 0.30               | 1.64        | 0.03    |

\* < .05

\*\* < .01

\*\*\* < .001

## Appendix A

## Category Exemplars of Implicit Hopelessness IAT

| Past      | Future      | Sad       | Happy     |
|-----------|-------------|-----------|-----------|
| Yesterday | Days Ahead  | Depressed | Smiling   |
| Last Year | Years Ahead | Helpless  | Glad      |
| Last Week | Tomorrow    | Hopeless  | Cheerful  |
| Days Ago  | Next Week   | Gloomy    | Joyful    |
| Years Ago | Next Year   | Withdrawn | Delighted |

Appendix B

Category Exemplars of Implicit Depression IAT

| Me     | Not Me | Sad       | Happy     |
|--------|--------|-----------|-----------|
| Me     | They   | Depressed | Smiling   |
| I      | Them   | Helpless  | Glad      |
| Mine   | Theirs | Hopeless  | Cheerful  |
| Myself | Their  | Gloomy    | Joyful    |
| Self   | Other  | Withdrawn | Delighted |