Determinants of Condom-Use Behavior from Studies Using the Theory of Planned Behavior: A Literature Review

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ABSTRACT

This is a review of publications addressing aspects of the Theory of Planned Behavior (TPB) in predicting condom-use behavior. Six articles were identified as the most relevant and are included in the bibliography based on the coverage of variables in theory that were studied in the articles. There are various results from Six articles that discussed the Theory of Planned Behavior, the results suggest that the TPB provides a strong predictive power for condom-use behavior. The findings suggest that the TPB predictors of Attitude towards the behavior, Perceived Behavioral Control and Self Efficacy proved to be the most significant elements of the TPB model in explaining condom use intentions, and that intentions is appropriate for at least partially explaining condom use behavior. Intention, however, are not necessarily implemented. The present paper demonstrates that the TPB offers a rigorous empirical tool for demonstrating the validity of their argument. The TPB may be one of the few theoretical frameworks on offer that can do justice to the dynamic relationship that exists between individual and collective levels of explanation in predicting condom use behavior. There are also some recommendations to be considered for future study of the theory.

Key words: *theory of planned behavior, condom-use*

INTRODUCTION

This is a review of publications addressing aspects of the Theory of Planned Behavior in predicting condom-use behavior. A large body of literature exists on the positive impacts of condom-use as a protective tool against HIV/AIDS. One of the well known theory to predict condom use behavior is the theory of planned behavior (TPB). Much has been written on the effectiveness of this theory in predicting condom use behavior in order to minimize the risk of infection by HIV/AIDS.

Initially, this review was concerned with bringing together literature on the theory of planned behavior in predicting HIV/AIDS preventive behavior in general. However, so many articles were found that the review was narrowed down according to a specific behavior, which is condom-use behavior. Key studies and academic articles that have examined both theories on predicting condom-use behavior are organized by the year of publication with the aim of stating clearly what is known and not known about the variables influencing condom use behavior by the theory. Thus, this literature review aims to highlight recent findings on the theory of planned behavior in predicting condom-use behavior; it is intended as a resource for all who are engaged in researching, designing, implementing or evaluating HIV/AIDS prevention programs.

BACKGROUND

Worldwide, at least 33 million people are living with HIV/AIDS, and another 14 million have died. An estimated 16,000 new infections occur every day. About 6 of every 10 new HIV infections are to women, and many newborns contract the virus from infected mothers. Worldwide the number of men, women and children living with HIV or AIDS is estimated to be 42 million and the number continues to rise. With the current rate of over 16,000 new infections per day, there are an unprecedented number of people living with HIV/AIDS needing care and support. It is estimated that 95% of individuals with HIV/AIDS lives in developing countries. Globally, the fight against the AIDS pandemic has been predominately driven by research as well as massive education and behavior change efforts, and harm reduction campaigns to reduce the rate of HIV infection. The prospects for developing means for destroying the virus within the body (i.e., a vaccine) are encouraging albeit a cure remains undiscovered. Since the late 1980s, public health professionals, sociologists and psychologists have declared that the most hopeful approach to the prevention of AIDS is through the strategy of education and behavior modification.

At the end of 1998 at least 33 million people had HIV/AIDS, and another 14 million people had died as a result of HIV/AIDS. Globally, an estimated 333 million new cases of the four major curable STIs-gonorrhea, Chlamydia, syphilis, and trichomoniasis-occur each year among adults, with at least one-third of these in adults under 25 years of age (WHO, 1995). Prevalence and incidence of curable STIs are particularly high in developing countries (Feldblum, 1998; WHO, 1998). Among women of reproductive age in developing countries, STIs are the second most frequent cause of

sickness and death, behind only maternal causes (World Bank, 1993). Many of these cases of STIs could be prevented through correct and consistent use of condoms and other preventive behaviors.

Education concerning AIDS prevention focuses almost exclusively on safer sex practices and safer injection drug use. Considering that condoms are an important means of preventing the transmission of HIV, STDs and hepatitis, there exists a proliferation of studies that have investigated the determinants of condom use. Generally such studies provide valuable information for developing effective condom promotion interventions or programs and for assessing trends in preventive health behavior change. Efforts to increase condom use are considered to be a good social, economic, and health investment. More condom use would reduce rates of HIV infection and slow the spread of AIDS so that emphasis could shift from dealing with the consequences of AIDS to meeting other health needs.

Recent surveys concerned with HIV/AIDS suggest that condom use has been rising and is often substantial among unmarried men and women. Surveys of contraceptive use among married couples indicate low levels of condom use and little increase in recent years. Estimating condom use is difficult. Surveys of AIDS-related behavior provide different data about condom use than do family planning surveys. The estimate of 6 to 9 billion condoms used worldwide each year is based partly on surveys of actual use and also assumes that, of the 8 to 10 billion condoms produced each year, 10% to 20% are never used (**http://www.infoforhealth.org/pr/h9edsum.shtml#contents**).

Worldwide, condoms rank near the bottom among contraceptive methods used by married couples. About as many couples rely on vasectomy. Only female barrier methods, spermicides, and injectables are used by fewer married couples (UN, 1999). In developing countries the prevalence of condom use among married women of reproductive age is between 2% and 6% in about half of the countries surveyed and below 2% in the other half. In some countries where overall use of contraception is at low levels, condoms account for a substantial proportion of all methods used. In Cameroon, Ghana, and Zambia, for example, fewer than 4% of couples use condoms, but condoms account for more than 10% of all contraceptive use (UN, 1999).

Through research on the correlates and predictors of condom use, a number of psychosocial factors, which are included in general models of health-related behaviors, have emerged as significant predictors of condom use. A model of condom use behavior would be beneficial in pinpointing those variables that are of greatest importance in predicting, explaining and understanding condom use. This information could also be used in developing curricula to prevent HIV/AIDS and other sex related diseases, evaluating educational programs, and in long-range forecasting of these behaviors. The TPB has been used in research to predict condom use behavior and has a potential value to this purpose.

The current study assesses the plausibility and robustness of the TPB in predicting and explaining condom use behavior. This study is unique in that it provides information about condom use among different kinds of participants and in countries.

METHODOLOGY

Internet searches were conducted using databases that specialized in the social sciences and Health Sciences. Most source of journals were used in both the initial research and the update are Pub Med, Blackwell Synergy, Sage Journals Online, Science Direct, Springer Link and Swetswise.

The keywords that have been used to locate the articles used in this literature review are:

- Theory of Planned Behavior
- Theory of Planned Behavior/TPB + Condom Use
- Theory of Planned Behavior/TPB + HIV/AIDS

A search was performed for articles that linked TPB and condom-use behavior. Approximately 60 relevant articles were located in the above databases. Of these, Six articles were identified as the most relevant and are included in the bibliography. The selections of these six articles are based on the coverage of variables in theory that were studied in the articles. In certain rare circumstances, an outstanding study that did not come up in the searches has been included as well. The full title and abstract of each of these articles, as well as the website where the article can be accessed, are included in this document. All of the information included in this document is taken from the results of these searches and is drawn from the websites and publicly available publications. This review does not present all relevant studies, but nonetheless the selection of papers that was made will illuminate the broad field that is currently being examined, and reveals areas requiring further study.

LIMITATION

This bibliography does not purport to be a comprehensive list of articles and organizations that engage with the TPB and condom-use behavior. At this time, the bibliography is limited to English- journal articles and other publications. This research was limited to internet-based searches in an effort to ensure that all of the resources included here are easily accessible.

THE THEORY OF PLANNED BEHAVIOR

In the late 1970s, Fishbein and Ajzen developed a model of behavioral intentions based on their theory of reasoned action (TRA). The theory was developed to both predict and explain behaviors of social relevance that are under a person's volitional control. In 1985, the TPB

expanded the TRA. This expanded model is appropriate for both volitional and non-volitional behaviors. In both theories, the central variable is *intention* to perform a behavior and it is the immediate determinant of the behavior.

In the TRA, *intention* is viewed as a function of two other determinants; *attitude* toward the behavior and *subjective norms*. *Subjective norms* are a function of the individual's beliefs that specific social referents (parents, friends, peers, etc.) think he/she should or should not perform the behavior as well as his/her motivation to comply with those referents. The TPB adds *perceived control* over the behavior as a third determinant of *intention*.

According to the theory of planned behavior, specific behavioral intentions are considered the major determinants of behaviors. Behavioral intentions are in turn determined by attitudes toward the behavior, subjective norms regarding it, and perceived control over it. Such is the case of condom use, where women's decision to use a condom may depend on the cooperation of their sexual partners (Bogart *et al.*, 2000) and power dynamics in their relationships.

In the theory of planned behavior, behavior is explained by behavioral intention, which is influenced by attitudes toward a specific behavior, subjective norms (perceived social pressure to perform the behavior), and perceived behavioral control. The latter is related to internal and external factors that can either facilitate or hinder an individual's behavioral performance (Godin *et al.*, 1996; Monta˜no *et al.*, 1997), and it is said to predict intention and behavior.

Attitude, subjective norm, and perceived behavioral control are in turn influenced by underlying beliefs. For instance, individuals' attitudes toward a behavior are determined by their beliefs and evaluation of the consequences of the behavior. Others' influence on individuals' behavior (subjective norm) are determined by individuals' perception of what others want them to do (normative beliefs) and their motivation to comply with others. An individual's degree of control over a behavior (perceived behavioral control) is determined by her or his control beliefs (beliefs that one has the necessary skills and resources to perform a behavior) and by the degree to which such skills and resources facilitate the behavior. In other words, if a woman has a positive attitude toward using condoms, perceives social pressure to use condoms, and feels control over condom use, she will be more likely to attempt using a condom.

Attitude toward behavior is seen as reflecting an individual's beliefs about performing the behavior in question (behavioral beliefs) and the positive or negative consequences associated with engaging in the behavior. A positive consequence of abstinence and condom use is that pregnancy, sexually transmitted disease, and HIV infection is avoided. Subjective norms are seen as reflecting normative beliefs concerning significant referents and their approval or disapproval of particular behaviors.

Perceived behavioral control reflects the perception that a person has sufficient resources and skills to perform the behavior and the confidence to do so adequately. This concept is closely related to self-efficacy, a construct central to social cognitive theory. Condom use may not be under or perceived to be under one's control. Several control beliefs have been identified as salient in relation to sexual intercourse and condom use behavior. For example, confidence in one's ability to negotiate condom use or refuse to have sex if a condom is not used have been identified as predictive of condom use by adolescents.

Availability beliefs refer to adolescents' confidence that they can obtain condoms and have them available when needed. Impulse control reflects adolescents' confidence that they can control themselves enough to use condoms when sexually excited. Technical skills reflect the individual's ability to use condoms with ease without affecting the mood or sexual pleasure. Finally, negotiation beliefs reflect the adolescents' confidence that they can persuade their sexual partners to use condoms, even if he or she does not want to use them.

Meta-analyses have provided support for the TPB as a means of predicting and explaining both intention and behavior (Armitage and Conner, 2001) and, in the context of condom use, have concluded that there is a medium to strong relationship between intentions to use condoms and actual behavior (Sheeran *et al*., 1999). However, the theory has been criticised for its focus on 'the individual decision maker' (Joffe, 1996; but see Abraham *et al.*, 1999).

CONDOM

Condoms provide a highly effective protection against HIV infection when used correctly with every act of intercourse. All 10 cohort studies conducted in 1995 that evaluated condom use among heterosexual couples showed that consistent condom use protected against HIV (Feldblum *et al.*, 1995). Widespread and consistent use of condoms could reduce the number of people infected with HIV enough to slow the spread of HIV/AIDS (Peter Lin *et al*. 2005). Condoms may help prevent AIDS over the long term not only by blocking transmission of HIV but also by protecting against other STIs. People with STIs, particularly those that cause genital ulcers-chancroid, genital human papillomavirus (HPV), herpes simplex, and syphilis-are two to seven times more likely to become infected with HIV than people who do not have STIs (Feldblum, 1998; Laga *et al*., 1991, 1993; Pepin *et al*., 1991; Plummer *et al*., 1991).

For condoms to be effective, however, people must use them consistently and correctly. Even in the face of AIDS, people are unlikely to use condoms for every act of sexual intercourse. Still, some use is better than none (Pinkerton and Abramson, 1996). Although not providing perfectly "safe sex," condoms substantially reduce the risk of individual infection. Laboratory tests show that no STI, including HIV, can penetrate an intact

latex condom (Conant *et al*., 1986, 1984; Feldblum, 1998; Katznelson *et al.*, 1984; Rietmeijer, 1988; Smith JR *et al.*, 1998). (Infectious organisms can sometimes pass through condoms made from lamb's intestine, often called natural skin condoms, so they should be used only for contraception, not infection prevention (Cates and Stone, 1992; Minuk *et al*., 1986).

Incorrect use of condoms may results in pregnancies and infections. Breaks or tears can result from incorrect use such as unrolling the condom before putting it on, trying to put on the condom with the rolled rim held toward the body rather than away from it, snagging the condom with fingernails or rings, and reusing condoms (Spruyt *et al.,* 1988). Other poor practices allow unprotected contact-starting intercourse and then withdrawing to put on the condom, or not holding the condom rim while withdrawing after ejaculation, allowing the condom to slip off and spill semen (Oakley and Bogue 1995; Spruyt *et al.*, 1988).

Using lubricated condoms or appropriate lubricants with condoms can help reduce breakage. Lubricants used with latex condoms must not contain oil, however. If poor-quality condoms are distributed, people suffer, money is wasted, and the image of condoms is hurt. Exposure to ultraviolet light, heat, humidity, and ozone makes latex deteriorate and thus weakens latex condoms (Baker *et al.*, 1988; Free and Srisamang, 1989; Usher, 1999; Voeller, *et al*., 1989). The longer condoms are exposed to these conditions, the more easily they break. A new standard from ISO covers condoms intended for tropical climates. These requirements include packaging in impermeable foil laminate, which completely prevents oxidative deterioration even at high temperatures (Free, 1999; Free *et al*., 1996).

During the past decade a few new types of condoms have reached the market, and other new condoms are being designed and tested. Perhaps the most important event has been the introduction of the female condom, which has proved popular and is now used in over 30 countries (Usher, 1996). One important advantage of the female condom is that women have more involvement in initiating use (Free, 1998). Still, power issues, communication skills, and the complex skills of negotiation and joint decision-making are important for successful use of the female condom, as with the male condom (Ankrah and Attika, 1997; Cabral *et al*., 1998). Studies report that men's objections have led to discontinuation of use by some women (Brown, 1998; Murphy *et al.*, 1997; Young, 1997). Many studies are currently underway about negotiation and other aspects of the use of female condoms (Mobley, 1998).

The female condom also has disadvantages. The fact that it covers the external genitalia makes it unattractive to some. Also, it can be noisy, and some women find it painful to use, especially due to the inner ring. It can be difficult to manipulate and insert, especially for inexperienced users. It can be displaced during intercourse. It may not appeal to some women if they associate it, like the male condom, with prostitution and infidelity (Ankrah and Attika, 1997; Chilufya, 1998; Kalckmann *et al*., 1998; Pool *et al.*, 1998).

Male condoms are now being made from plastics as well as latex and in new designs. These condoms are intended to be easier to use and more comfortable and pleasurable. The new plastic condoms are approximately the same thickness as latex condoms (Free, 1998; Gilmore, 1998), are less constricting, not harmed by oil-based lubricants, and do not cause allergic reactions (Frezieres and Walsh, 1999; Nelson *et al*., 1996; Stone, 1998). They deteriorate more slowly than latex condoms, although if latex condoms are packed in laminated foil they also are very stable (Fee, 1999).

The AIDS epidemic and rise of other STIs have increased interest in finding new condom lubricants, especially those that may also be effective against infections. Some condoms are lubricated with the spermicide nonoxynol-9 (N-9). N-9 kills HIV and some, but not all, other STIs in the test tube (Hermonat *et al.*, 1992; Palacio, 1997; Wittkowski, 1997). In addition, N-9 may irritate the vaginal lining and increase the risk of urinary tract infections (Acton and O'meara, 1997; Steiner and Cates, 1998; Warner and Hatcher, 1998).

DESCRIPTION AND DISCUSSION OF FINDINGS

Study 1 Hispanic Adults' Beliefs, Attitudes, and Intentions Regarding the Female Condom (Bogart and Pinkerton, 2000)

Mirroring other surveys of Hispanic individuals (Catania *et al*., 1992), participants in the present study were at risk for HIV and other STDs through their current and previous sexual behavior. This study found differences in the prediction of intentions to use the female condom between men and women, in that the TPB predicted intentions for women but not for men. For women, positive attitudes toward the female condom and higher self-efficacy to use the female condom were associated with intentions to use the female condom. For men, lower levels of knowledge about AIDS predicted intentions.

However, perceived norms for female condom use was not a significant predictor of intentions for either men or women. Previous research on male condom use intentions also has found that attitudes may be a more important predictor than norms for both women (Adler *et al*., 1990; Jemmott and Jemmott, 1991; Richard and van der Pligt, 1991;Wilson *et al*., 1991, 1992) and men (Fisher *et al*., 1995; Morrison *et al*., 1995; Richard and van der Pligt, 1991; Wilson *et al*., 1992). In the present study, it is possible that perceived norms were not related to intentions because the female condom is too unfamiliar a device for individuals to know how significant others would perceive it. Thus, women used their own attitudes, rather than significant others' attitudes, as a gauge of whether they would use the female condom.

Self-efficacy was a significant predictor of female condom use intentions for women. This is in accordance with previous research on the male condom among Hispanics (Gomez and Marin, 1996) and other samples (Basen-Engquist and Parcel, 1992; Morrison *et al*., 1995). The presence of traditional gender roles within Hispanic culture, which dictate that "good" women are sexually passive, may help to explain why Hispanic women's self-efficacy to use female condoms was low (Marin, 1996; Worth, 1990). Such beliefs about roles may affect women's perceived and actual ability to take the initiative to use the female condom. In addition, because the female condom is a relatively unfamiliar device, women may be unsure about how to use it, as well as how to inform their partner that they would like to use it. This would lead to lower ratings of perceived self-efficacy, as observed in the present study.

In contrast to previous research, which has frequently found no relationship between knowledge and intentions to use the male condom (Jemmott and Jemmott, 1991), the present study found a moderate relationship between knowledge and intentions to use the female condom for men. Surprisingly, men who had higher levels of knowledge about AIDS were *less* likely to intend to use the female condom and more likely to hold negative beliefs about the female condom.

Study 2 Determinants of Female and Male Condom Use Among Immigrant Woman of Central American Descent (Salabarria-Pena *et al*., 2003)

The theory of planned behavior was useful in determining factors influencing participants' intentions to use female and male condoms, a theoretical predecessor of behavior. Attitude, normative beliefs, and perceived behavioral control accounted for a good proportion of the variability of intentions and figured as predictors of intentions to use male and female condoms. Low/no intention to use the female condom would not have been surprising since none of the respondents had ever used this condom and most were unfamiliar with it, yet intentions to use a condom were higher for the female condom.

In this study, current male condom use by a woman increased the chances of having control over condom use and intentions to use it next time she has sex. The purpose of condoms and sexual/physical discomfort affected women's attitudes toward both female and male condoms. Beliefs related to the purpose of condoms (prevention of STIs, pregnancies, and vaginal infections) were considered positive outcomes of condom use. Also, in this study distrust between respondents and their sexual partners stemming from condom use appears to be a more important issue for attitudes toward female condom use than for male condom use. Unfamiliarity with female condoms may also create distrust between couples. However, in studies on female condoms among Latinas the trust issue as a barrier to female condom use has not been previously reported, but women have expressed their willingness to use them (Bogart *et al.*, 2000; Gil, 1995; Schilling *et al.*, 1991).

Female friends' opinions and mothers' opinions predicted subjective norms for the male condom and the female condom, respectively. The literature is mixed in findings related to the influence of others and condom use. In one of the few studies on female condom use among Latinas (mainly Mexican or Mexican American), perceived norms did not predict intentions to use female condoms (Bogart *et al.*, 2000). Friends' influence over condom use has been reported among young adults (Fang *et al.*, 1998; Lear, 1995). Male condom use by Latino women's female friends has been reported as a predictor of its use (Go´mez and VanOss-Marı´n, 1996; Organista *et al.*,1997).

Condom negotiation (convincing the partner and having control over the decision to use a condom) and accessibility (having a condom ready) affected perceived behavioral control over both condom types in the target population. Although the female condom is designed for women and they may feel more control over its use, in this population it is still important to negotiate its use with male sexual partners. Also, skills on how to use a condom, such as how to insert it into the vagina, affected perceived control over the female condom more strongly than perceived control over the male condom.

Study 3 Models of Health-Related Behavior: A Study of Condom Use in Two Cities of Argentina (Glasman and Albarrac´ın, 2003)

This study is the first to determine that at-risk heterosexual Argentines from Buenos Aires state report very low condom use, particularly in the context of steady sexual relationships. Only 10% and 30% of participants used condoms every time they had sex with main and occasional partners, respectively, relative to 30–40% among other heterosexual populations (Bajos *et al.*, 1995; Brown *et al.*, 1992). In fact, the percentages of reported condom use with main partners are comparable with those of people living in high-risk neighborhoods of New York City (28% in Argentina vs. 32% in New York City, respectively; for the latter, see Friedman *et al.*, 2001), and percentages of people who reported frequent condom use with occasional partners were only moderately higher than those of some urban communities of the sub-Saharan Africa (30% in Argentina vs. 25% in sub-Saharan Africa).

Consistent with past research (Albarrac´ın *et al.*, 1998; Cochran *et al.*, 1992; Fishbein *et al.*, 1995; Fisher *et al.*, 1995; Middlestadt *et al.*, 1995; for reviews, see Albarrac´ın *et al.*, 2001; Sheeran *et al.*, 1999), this study showed that the theories of reasoned action and planned behavior are useful for understanding different aspects of condom use. Specifically, in the Argentine sample analyzed, perceptions of control were the most important determinant of intentions to use condoms and actual condom use with both main and occasional partners. Attitudes and norms also had an influence. Positive attitudes predicted stronger

intentions to use condoms. A positive partner norm increased condom use with main partners, and a positive norm from family and friends increased condom use with occasional partners.

In the study, Argentines who felt that they were competent enough to use condoms had more favorable intentions to use condoms and actually used condoms to a greater extent than individuals who doubted their ability to carry out their intentions. The greater influence of control perceptions compared to attitudes does not imply that Argentines do not hold expectancies regarding the outcomes of condom use. Thus, the participants in the sample appeared to make decisions based on their perceived ability to succeed at condom use and paid less attention to the probable outcomes of the behavior.

This study also showed that perceptions of competency to use condoms may be equally important for men and women, implying that condom use may be perceived as difficult by Argentines regardless of their gender. However, this study complements prior arguments and highlights that the influence of control perceptions on intentions and behaviors may relate not only to women's disadvantaged position for condom use, but also to males' difficulties in impulse control as prescribed by machismo beliefs. Current attitudes were unrelated to participants' earlier behavior, factors less likely to change as a result of people's reevaluations of the consequences of risky behaviors (i.e., norms and control perceptions) did predict participant's past condom use.

Study 4 Predictors of Sexual intercourse and Condom Use among Spanish-Dominant Latino Youth : A Test of Planned Behavior Theory (Villarruel *et al*., 2004)

This study, consistent with a number of previous studies, documented both the sexual risk and protective behaviors of Spanish-dominant or low acculturated Latino youth. As compared with the adolescents in the 1999 Youth Risk Behavior Survey (Centers for Disease Control, 2002), the Latino youth in this study were less likely to report that they had ever engaged in sexual intercourse (35% vs. 49.9%), had engaged in sex during the preceding 3 months (15.2% vs. 36.3%), and had used a condom at their last sexual intercourse experience (16.7% vs. 58%). More importantly, this study built on previous research in this area by attempting to identify predictors of sexual risk and protective behaviors.

In relation to condom use, separate multiple regression analyses showed that attitudes, subjective norms, behavioral beliefs, and self-efficacy were significant predictors of intentions to use condoms. In other words, youth who had a positive attitude toward condom use, who perceived that significant others in their lives approved of condom use, who expressed greater confidence in their ability to use condoms, and who expressed greater confidence in their ability to use condoms even when sexually aroused reported stronger intentions to use condoms.

The importance of partner approval for sexual intercourse shown in this study is consistent with previous research among Latino and other adolescents supporting the influence of partners on sexual behavior (Jemmott *et al.,* 2002). The importance of parental pride and career goals as predictors of abstinence for Spanish-dominant Latino youth is consistent with findings among both Mexican and Latino youth (Lammers *et al.,* 2000; Liebowitz *et al.,* 1999). Consistent with other studies (Jemmott *et al.,* 2002; Upchurch *et al.,* 1998), this study confirmed the importance of family, even in sexual decision making, by showing that adolescents' behavioral belief in their parents' pride about their decision not to have sex was a significant predictor of sexual intercourse intentions and behavior, and also that normative belief and parental approval were significant predictors of condom use intentions.

One control belief (impulse control) was shown to be a significant predictor of intention to use condoms. The importance of impulse control beliefs as a predictor of condom use was similar to previous findings in samples of Latino college students (Jemmott *et al*., 2002; Marín *et al*.,1998; Upchurch *et al*., 1998). In contrast to other studies with Latinos (Jemmott *et al*., 2002; Kaiser Family Foundation, 1998; Marín *et al*., 1998; San Doval *et al*., 1995), this study found that behavioral beliefs and normative beliefs were not significant predictors of condom use intentions.

Study 5 Condom use in African adolescents: The role of individual and group factors (Gilesi and Bydawell, 2005)

The results of this study provide strong support for the predictive power of the Theory of Planned Behavior and show that intentions concerning condom use among young rural South Africans can be predicted successfully by social cognition variables. Specifically, 67% of the variance in intention was explained by the Theory of Planned Behavior Model. This compares favorably with the findings of various meta-analyses (Albarracin *et al*., 2001; Armitage and Conner, 2001; Conner and Sparks, 1996; Farley and Ryan, 1981; Godin and Kok, 1996), which indicate that TPB constructs can typically explain 40–50% of the variance in intention and is somewhat higher than that reported in a number of African studies (20–30% in the context of condom use), many of which have relied exclusively on the belief- based measures of the various constructs (Bosompra, 2001; Fekadu and Kraft, 2001; Lugoe and Rise, 1999; Manstead and Parker, 1995).

In this study, self-efficacy and subjective norm comprised the significant elements of the Theory of Planned Behavior model; neither attitude nor perceived control contributed significantly to the prediction of intention. At follow-up, self-efficacy retained its predictive validity when actual condom use was examined. These findings have both theoretical and practical implications.

From a theoretical point of view, the differential roles played by self-efficacy and perceived control in the prediction of both intention and behavior provide some justification for their distinction and may suggest that self-efficacy is not only important in the context of condom use (Fisher and Fisher, 1992; Catania *et al*., 1990) but may be the preferred measure within the TPB (Abraham *et al*., 1998; de Vries *et al*., 1988).

The finding here that the normative component is important in determining safe-sex behavior is perhaps not surprising given the dyadic nature of condom use and the findings elsewhere that one's partner has a significant role to play in this decision-making process. However, finding that family influences are more important adds weight to the suggestion that the normative component will have more relevance where individual decisions are responsive to group norms than in cultures where the decision making process is more individualistic (Bosompra, 2001; Fekadu and Kraft, 2002).

Study 6 Condom Use Among South African Adolescents: Developing and Testing Theoretical Models of Intentions and Behavior (Bryan *et al*., 2006)

The data show that the TPB may have potential utility in predicting behavioral intentions and behavior among a sample drawn from a developing country context The inclusion in the intentions model of positive outlook as a latent variable, comprising the observed variables of self-esteem and control over the future, is an addition that extends the TPB beyond its original form. In addition to being significantly associated with self-efficacy, a positive outlook was also associated with a positive attitude towards condoms and perceptions regarding norms of condom use, all of which in turn were significantly related to condom use intentions.

For girls (and not significant for boys), attitudes regarding condoms were significantly correlated with the level of correct information they had about HIV transmission and the use of condoms to prevent it. One possible explanation is that the risk of both unwanted pregnancy and HIV/STD infection is more salient for girls than for boys. Possibly for girls the use of condoms is seen as a means to reduce both the possibility of pregnancy and the likelihood of HIV infection. Having a correct understanding of the effectiveness of condoms is thus more likely to be associated with positive attitudes about their use among girls.

In general, boys were more likely than girls to use condoms, and this is consistent with prior research in both Western and non-Western samples, though is somewhat at odds with the TPB. For girls there was no reliable relationship between control over the sexual encounter and condom use, while for boys we found an unexpected negative relationship between control and condom use. Boys who reported less control over sexual encounters were more likely to use condoms than boys who reported more control. At the same time, girls in the sample perceived significantly higher control over the sexual encounter than boys. This phenomenon may be explained by the likelihood that, other than in cases of forced sex, girls are often the ones who decide whether or not sexual activity will take place, and due to this "gate keeper" role perceive higher control over the sexual encounter than boys (Bryan *et al*., 2001).

The *use* of control in relationships may also differ by gender. Boys who perceive they have more control over what happens in the sexual encounter are more likely *not* to use condoms. In the final analysis, however, for boys a positive outlook was associated with control over the sexual encounter, while for girls it was not. One interpretation of this finding is that boys who have a positive outlook may also feel more empowered to take charge of their lives and thus assert greater control over their sexual encounters. On the other hand, greater control over sexual encounters may also result in a positive outlook as sexually active male (but not female) adolescents often enjoy an elevated status among their peers in many South African communities.

CONCLUSIONS

Overall, the results of the study suggest that the TPB provides strong predictive power of condom-use behavior, since 67% of the variance in intention was explained in one of the article that has been reviewed (study 5). The findings suggest that the TPB predictors of Attitude towards condom use, Perceived Behavioral Control and Self Efficacy proved to be the most significant elements of the TPB model in explaining condom use intentions, and that intentions is appropriate for at least partially explaining condom use behavior.

The others variable in the TPB that also shows as a strong predictor of condom use behavior is subjective norms. It emerges as a strong predictor in 3 articles from 5 articles reviewed. Behavioral beliefs and normative beliefs only emerge each in 1 article only from a total of 6 articles. Intentions, in correlation with condom-use actual behavior, are only studied in 4 articles from total of 6 articles. In all four studies. Intention shows as significant predictors of actual condom-use behavior. However, in one of the study, which is study 3, intention shows as a significant predictor of actual condom-use behavior only for occasional partner and not for the main partner. Table 1 provides us a clearer picture of the finding.

List of studies:

Study 1 Hispanic Adults' Beliefs, Attitudes, and Intentions Regarding the Female Condom (Bogart, Cecil and Pinkerton, 2000)

Study 2 Determinants of Female and Male Condom Use Among Immigrant Woman of Central American Descent (Salabarria-Pena, Lee, Montgomery, Hopp, and Muralles, 2003)

Table 1. Significant Variables in Predicting Condom-use Behavior from Six Articles Reviewed

Variables in HBM Construct/Study	1	2	3	4	5	6
Behavioral Belief					■	
Attitude Towards Behavioral Belief	■	■	■	■		
Normative beliefs		■				
Subjective Norms			■	■	■	
Perceived Behavioral Control		■	■	■		■
Self efficacy	■			■	■	■
Intention to use a condom		■	■		■	■

■ Significantly effective in predicting condom-use behavior

Not Mentioned or Not significantly effective in predicting condom-use behavior

Study 3 Models of Health-Related Behavior: A Study of Condom Use in Two Cities of Argentina (Glasman and Albarrac´ın, 2003)

Study 4 Predictors of Sexual intercourse and Condom Use among Spanish-Dominant Latino Youth: A Test of Planned Behavior Theory (Villarruel, Jemmott, Jemmott and Ronis, 2004)

Study 5 Condom use in African adolescents: The role of individual and group factors (Gilesi, Liddelli & Bydawell, 2005)

Study 6 Condom Use Among South African Adolescents: Developing and Testing Theoretical Models of Intentions and Behavior (Bryan, Kagee and Broaddus, 2006)

RECOMMENDATION

Some recommendations for future review:

1. Theorists need to be as precise as possible in specifying the causal relations among the components in their models. General assertions that variables are related (e.g. a list of variables hypothesized to predict a behavioral outcome) are difficult to disconfirm. More (experimental and longitudinal) research is to establish causal relations between expected determinants of behavior and the actual behavior.
2. Theorists need to be more willing to address the limitations of their models.
3. Future studies in condom use behavior should incorporate the factor of partner type, or establish it as a separate and distinct variable. The partner type is identified as the most common reason for discontinuing the use of condoms for a person with either steady or multiple type partners and for initiating the use of condoms with casual or anonymous partners.
4. Old measures of health concepts need to be replaced with new measures. As behavioral change happens in an environment made up of any number of influential factors and persons, all factors cannot be identified and accounted for in a single research model

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