

Native American women and AIDS-preventive behavior : a test of the information-motivation-behavioral skills model
by Dakota Dawn Syvrud Meeks

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Montana State University
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Abstract:
Native American women are at high risk for exposure to the AIDS virus. J. Fisher and Fisher's (1992) Information-Motivation-Behavioral skills.(IMB) model has been found to generalize to high-risk populations such as homosexual men and college students. However, its generalizability to the Native American population remains unknown. It was predicted that the IMB model would generalize to the target population of Native American women. A path analysis was conducted on data from an intervention study designed from prior research on minority women's safer-sex knowledge, behavior, and attitudes (Hobfoll, Jackson, Lavin, Britton, & Shepherd, 1993; 1994). The study was coordinated at Montana State University using four site locations throughout Montana. The purpose of the original study was to examine effects of a culturally sensitive AIDS intervention program compared to a control condition. More data were collected in the original study than was needed for the present study, thus, only a portion of the original data from the pre-intervention questionnaires was analyzed. A total of 160 single Native American women, ages 16 - 29, from various tribal affiliations throughout Montana participated. Partial support was found for the generalizability of the IMB model to Native American women, which will be an essential component to understanding, developing, and implementing future AIDS prevention programs targeted specifically to Native American women.

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Dakota Dawn Syvrud Meeks

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Dakota Dawn Syvrud Meeks

This thesis has been read by each member of the thesis committee and has been found to be satisfactory regarding content, English usage, format, citations, bibliographic style, and consistency, and is ready for submission to the College of Graduate Studies

Charles A. Pierce — Charles A. Pierce (Signature) — 4/10/00 (Date)

Approved for the Department of Psychology

A. Michael Babcock — (Signature) — 4/11/00 (Date)

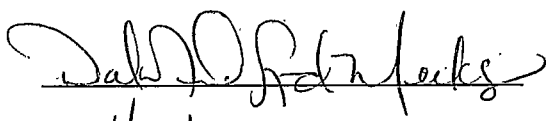
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ABSTRACT

Native American women are at high risk for exposure to the AIDS virus. J. Fisher and Fisher's (1992) Information-Motivation-Behavioral skills (IMB) model has been found to generalize to high-risk populations such as homosexual men and college students. However, its generalizability to the Native American population remains unknown. It was predicted that the IMB model would generalize to the target population of Native American women. A path analysis was conducted on data from an intervention study designed from prior research on minority women's safer-sex knowledge, behavior, and attitudes (Hobfoll, Jackson, Lavin, Britton, & Shepherd, 1993; 1994). The study was coordinated at Montana State University using four site locations throughout Montana. The purpose of the original study was to examine effects of a culturally sensitive AIDS intervention program compared to a control condition. More data were collected in the original study than was needed for the present study, thus, only a portion of the original data from the pre-intervention questionnaires was analyzed. A total of 160 single Native American women, ages 16 - 29, from various tribal affiliations throughout Montana participated. Partial support was found for the generalizability of the IMB model to Native American women, which will be an essential component to understanding, developing, and implementing future AIDS prevention programs targeted specifically to Native American women.

INTRODUCTION

HIV/AIDS Statistics

Human Immunodeficiency Virus (HIV) and Acquired Immune Deficiency Syndrome (AIDS), the world's deadliest infectious disease, has infected more than 47 million people worldwide and has claimed a total of 2.28 million deaths (World Health Organization, 1998). Since the beginning of the AIDS epidemic, 688,200 cases have been reported in the United States (Center for Disease Control and Prevention [CDC], 1999b). During 1998, the most recent full year of reported cases, 297,135 people were reported to be living with AIDS in the United States, which was a 10% increase from 1997 (CDC, 1999b). Although these statistics are staggering, the startling realization is that such data represent the minimum number of AIDS cases, as not all people with AIDS get tested and not all states participate in the CDC reporting (CDC, 1998).

When examining these data on a global level, it can be easy to distance oneself from the devastating impact of the disease, especially if one is a member of a minority group in which societal norms, at times, do not apply. Unfortunately, denying one's susceptibility to the virus can have disastrous effects. Within the first six months of 1998, the reported AIDS cases among minority groups totaled 15,556, which accounted for 68% of all AIDS cased reported in the United States (CDC, 1999b). Native American women, a subgroup of the minority population, are not exempt from this disease and are at high risk for AIDS.

Native Americans and AIDS

It is important to be aware of the fact that Native Americans, representing 1% of the United States population, are not all the same. The federal government recognizes over 550 tribes, each with its own traditions and culture (Bureau of Indian Affairs [BIA], 1998; Weaver, 1997, 1999). Due to such diversity, one must be cautious when making broad generalizations.

As of December 1998, the CDC received 1,911 reported cases of Native Americans with AIDS, a figure that has more than doubled since December 1993 (CDC, 1999b). Currently, the number of Native Americans living with AIDS is 971, an increase from 559 in 1993 (CDC, 1999b). In addition, STD occurrence has been found to be an indicator of AIDS incidence (Renton & Whitaker, 1994). Syphilis rates have declined for every ethnic group except Native Americans and high rates of chlyamidia and gonorrhea exist in many Native American communities (Asetoyer & Rush, 1992; CDC, 1998; Rowell, 1998).

Evidence suggests that the number of AIDS cases in the Native American population is underreported, with the actual number totaling from two to four times what has been reported (Duke, 1992; Kauffman & Joseph-Fox, 1996; Tafoya, 1989; Weaver, 1999). In fact, between June 1990 and August 1992, it was found that the number of Native Americans with AIDS had been underreported by 21% (CDC, 1994; Weaver, 1999). Reasons for the underreporting are varied. Native Americans are at times listed as "other" in statistics reported by ethnic group (Tafoya, 1989; Weaver, 1999). It has

been found that between two-thirds and three-fourths of Native Americans with AIDS were misrepresented as white or Hispanic (National Commission on AIDS, 1992). In addition, some Native Americans who died from AIDS-related causes had other causes of death listed on death certificates to avoid the stigma associated with AIDS (Native American Leadership Commission on Health and AIDS [NALCHA] 1994; Weaver, 1999). The true impact of AIDS within the Native American population has also been blurred by the challenges of conducting research in the Native American communities, which stem from the historically negative images of researchers, difficulty in obtaining permission within the social structure, and former lack of culturally appropriate methodology (Weaver, 1997).

Low socioeconomic status (SES) has been related to a high prevalence and incidence of most chronic and infectious disorders (Adler, Boyce, Chesney, Folkman, & Syme, 1993; Macintyre, 1997; Taylor & Repetti, 1997; Williams & Collins, 1995). AIDS is no exception in the Native American communities (Kauffman & Joseph-Fox, 1996). Compared to all races in the United States, the Native American population has a higher proportion of its people living in poverty, higher unemployment rates (LaFromboise, Berman, & Sohi, 1994; Morbidity and Mortality Weekly Report [MMWR], 1998; National Native American AIDS Prevention Center [NNAAPC], 1994), substandard living conditions (LaFromboise et al., 1994), and younger median age (MMWR, 1998; NNAAPC, 1994). Native Americans have larger families than any other U.S. ethnic group (LaFromboise et al., 1994; Snipp & Aytac, 1990) and 21 to 45% of the households are headed by women (Kauffman & Joseph-Fox, 1996; LaFromboise et al.,

1994; Pollard & O'Hare, 1999; Snipp & Aytac, 1990). In addition, compared to all persons living with AIDS, a higher proportion of Native American's living with AIDS reside in rural areas (MMWR, 1998).

Native American Women and AIDS

Presently, women account for approximately 20% of the people living with AIDS, which has increased from 13.8% in 1992 (CDC, 1999a). Shedding an unfortunate light on the future of the AIDS epidemic, 62% of the 1998 reported HIV infection cases among adolescents (ages 13 - 19) were females, which is a tremendous over representation (CDC, 1999a). Shockingly, over 70% of women diagnosed with AIDS are women of color (CDC, 1999a). Heterosexual contact has been the leading form of exposure for women followed by injection drug use (CDC, 1999a). Although few actual AIDS cases are reported among Native American women (due to the small percentage of the Native American population as compared to the total U.S. population), the rate of AIDS cases among Native American women is twice the rate among white women (CDC, 1999b).

On a macro level, poverty, geographic isolation, and community denial of risk behaviors associated with HIV transmission contribute to an increased risk of AIDS among Native American women. On a micro level, factors that contribute to their high risk of exposure to AIDS include high-risk sexual contact with men who themselves have high-risk histories for AIDS, substance abuse, and domestic violence (Klein, Williams, & Witbrodt, 1999; Weaver, 1999).

Abuse (physical, sexual and emotional) of women and children is prevalent within Native American communities (LaFromboise et al., 1994). Various characteristics associated with abuse are risk factors for AIDS such as multiple partner relationships, early age at first coitus, and partner control of the relationship (Champion & Shain 1998; Greenberg, Magder, & Aral, 1992; Koss & Heslet, 1992; Marx, Aral, Rolfs, Sterk, & Kahn, 1991; Zierler, Feingold, Laufer, & Velentgas, 1991). Lack of personal power in their relationships place women at risk for multiple forms of abuse that increase the risk of HIV infection, including coercion into unwanted sexual acts (Farmer, Connors, & Simmons, 1996; Kalichman, Williams, Cherry, Belcher & Nachimson, 1998). Furthermore, a woman may face a potential threat of violence when she notifies her partner of a possible STD. Therefore, to prevent conflict and potential verbal and/or physical abuse, women may choose not to notify their partner of the infection or they may not obtain treatment for themselves (Champion & Shain, 1998). The threat of sexual and non-sexual violence creates a significant obstacle to women's ability to practice risk-reducing behaviors (Kalichman et al., 1998).

Although each tribe's values and traditions may vary, generally a Native American woman's identity is grounded within the balance of her physical being, spirituality, family, and tribe (Allen, 1986; Green, 1980; Jaimes, 1982; Jenks, 1986; Kauffman & Joseph-Fox, 1996; LaFromboise et al., 1994; Welch, 1987). It is imperative that prevention efforts be developed at the local level and tailored to the needs of women in each community (Brassard, Smeja, & Valverde, 1996; CDC, 1994; DePoy & Bolduc, 1992; LeMaster & Connell, 1994, Sullivan, 1991; Weaver, 1999).

Information-Motivation-Behavioral Skills Model

Researchers have applied various theories to the AIDS crisis in an attempt to enhance AIDS prevention efforts (J. Fisher, Fisher, Williams, & Malloy, 1994), such as social-cognitive theory (Bandura, 1986), theory of reasoned action (Ajzen & Fishbein, 1980), health belief model (Becker, 1974), and AIDS-risk-reduction model (Catania, Kegeles, & Coates, 1990). The Information-Motivation-Behavioral skills (IMB) model of AIDS-preventive behavior (J. Fisher & Fisher, 1992) incorporates prior theories and research into a unified model that can be tested empirically. The generalizability of the IMB model has been successfully demonstrated with populations at risk for AIDS such as homosexual men and college students (J. Fisher et al., 1994; J. Fisher & Fisher, 1996). However, the external validity of the IMB model within the Native American culture remains unknown. Therefore, the primary objective of the present study was to test its fit to the target population of Native American women.

According to the IMB model (J. Fisher & Fisher, 1992), the essential components of AIDS-preventive behaviors (APB) are information, motivation, and behavioral skills specific to AIDS prevention (see Figure 1). First, information specifically related to AIDS exposure and prevention (e.g., knowledge regarding transmission of the HIV virus and methods to prevent exposure) is a necessary component for performing APB. Second, motivation is essential for a person to engage in APB. Motivation specific to AIDS prevention can be personally oriented (e.g., one's attitudes toward behaviors that prevent AIDS), socially oriented (e.g., one's perceived social support for engaging in

such behaviors), as well as one's perceived suceptibility to HIV. Third, behavioral skills represent the last critical factor for engaging in APB. This component is comprised of several skills such as (a) self-acceptance of one's sexuality, (b) acquisition of behaviorally relevant information, (c) initiating discussion and negotiating AIDS prevention with one's partner, (d) engaging in public prevention acts (e.g., condom purchasing and HIV testing), (e) consistent AIDS prevention, and (f) a sense of self-efficacy (e.g., a self-belief in one's ability to use the skills necessary for prevention) (J. Fisher & Fisher, 1992).

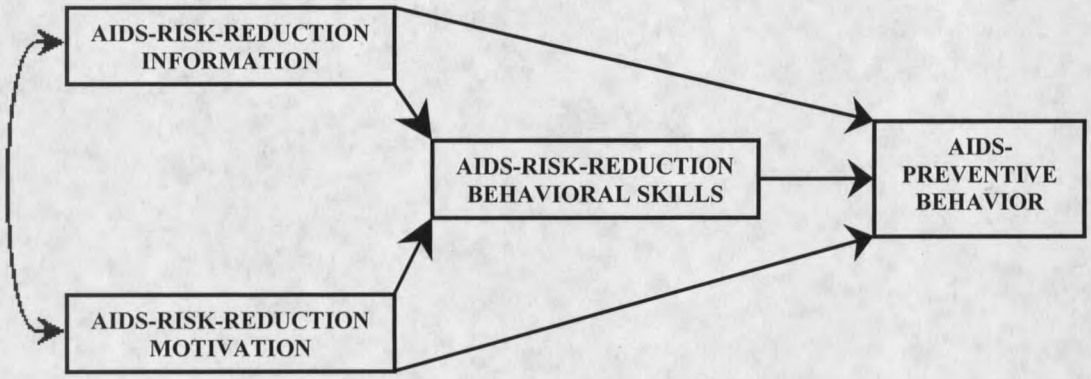


Figure 1. The Information-Motivation-Behavioral Skills Model (J. Fisher & Fisher, 1992)

The model has several assertions. First, the model indicates that AIDS preventive information and motivation are generally considered to be independent components within the IMB model. Although AIDS preventive information combined with motivation make it more likely that one's behavioral skills will affect APB, a strong relationship between the two constructs is not necessary. For example, a person can be highly knowledgeable about AIDS, but unmotivated to engage in preventive behavior.

Alternatively, an individual can be highly motivated to perform APB, but lack a solid knowledge base. Therefore, it is predicted that these two constructs are not significantly correlated. Second, both information and motivation are positively associated with APB when complex or unique behavioral skills are not needed for prevention. For example, information can affect APB without influencing one's behavioral skills when an individual learns that using a condom lubricated with nononxynol-9 decreases the chances of becoming infected with HIV better than using a condom that is not lubricated with the spermicide. In this case, behavioral skills are not necessary to change APB. Similarly, an example of motivation directly effecting one's performance of APB is an individual's choice to remain abstinent. In this situation, complex behavioral skills, such as negotiating condom use and discussing a partner's sexual history, are not necessary for preventing AIDS. Third, it is the assumption of the IMB model that information and motivation are positively associated with behavioral skills, which, in turn, predict APB.

The content of the IMB model's constructs is an essential factor when assessing its generalizability. Not only should the content be specific to the target population (e.g., heterosexual women vs. homosexual men), but it should also be specific to APB (purchasing condoms vs. discussing a partner's sexual history). For example, the information, motivation, and behavioral skills needed for a heterosexual woman to purchase condoms may differ, as opposed to those necessary to discuss her partner's sexual history. Furthermore, the information, motivation, and behavioral skills necessary for a heterosexual woman to perform such APB may differ from a homosexual man's information, motivation, and behavioral skills to perform the same APB.

Hypotheses

In summary, the IMB model has been shown to generalize to different populations such as homosexual men and college students. However, it is not known whether this model generalizes to the Native American population. By applying the concepts of the IMB model to Native American women, the present study tested the following hypotheses (see also Figure 2):

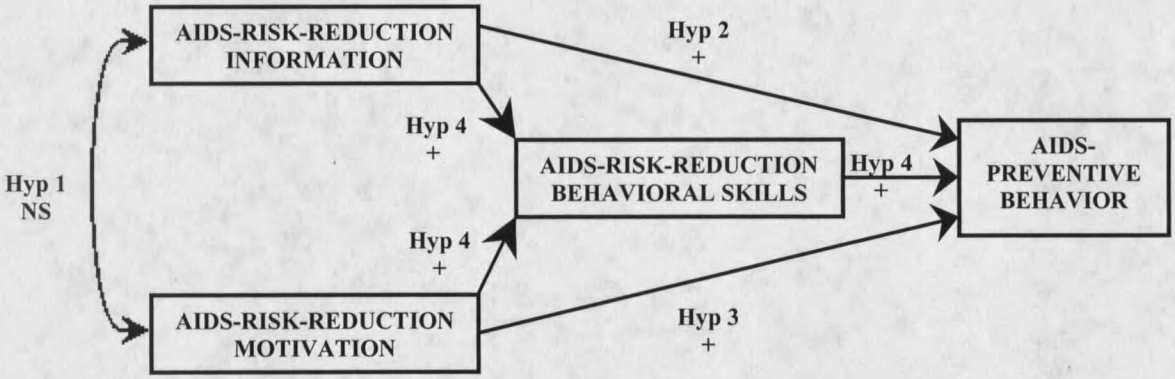


Figure 2. Hypothesized IMB Model Results for Native American Women .

Hypothesis 1

Native American women's AIDS prevention knowledge and motivation levels are not significantly correlated with one another.

Hypothesis 2

Native American women's AIDS prevention knowledge is positively associated with their AIDS-preventive behavior.

Hypothesis 3

Native American women's motivation to engage in AIDS prevention is positively associated with their AIDS-preventive behavior.

Hypothesis 4

Native American women's AIDS prevention knowledge and motivation levels are positively associated with their behavioral skills which, in turn, are positively associated with their AIDS-preventive behaviors.

METHOD

In order to examine the generalizability of the IMB model within the Native American population, existing data were analyzed from an intervention study designed from prior research on minority women's safer-sex knowledge, behavior, and attitudes (Hobfoll et al, 1993; Hobfoll, Jackson, Lavin, Britton, & Shepherd, 1994). The study was coordinated through Montana State University (MSU), using four site locations throughout Montana (Browning, Lame Deer, Bozeman, and Billings). The purpose of the original study was to examine effects of a culturally sensitive AIDS intervention program compared to a control condition. More data were collected in the original study than was needed for the present study and, thus, only a portion of the original data from the pre-intervention questionnaires was analyzed.

Participants

The project targeted a total of 160 Native American women, ages 16 to 29 ($\underline{M}$ = 19.72), who were single or living with their partner for less than six months. The women were associated with the following Montana tribes: Assininboine, Blackfeet, Crow, Gros Ventre, Northern Cheyenne, and Sioux. Participants were recruited through local universities (Montana State University and Montana State University-Billings) and community colleges (Blackfeet Community College and Dull Knife Memorial College).

Procedure

In the original study, participants' self-reported AIDS related sexual knowledge, attitudes, and behavior were measured via a questionnaire prior to, immediately following, and two months after the intervention. Participants were paid $25.00 for each session attended. Female facilitators, familiar with the Native American culture, administered the 279-item questionnaires. Each item on the questionnaire was read to the participants, either individually or in a group setting, to ensure similar interpretation of the information. Participants in the control condition did not receive the intervention, but simply completed the questionnaires during the same time period as the intervention condition. The women's self-reported measures of personal mastery, communal mastery, social support, depression, and stressors were also measured. Again, only the data from the pre-intervention questionnaires were analyzed in the present study.

Confidentiality was a key concern due to the explicit information in the questionnaire. Therefore, each participant was assigned an identification (ID) number, which was written on her questionnaire. Upon completion, each participant was instructed to seal her questionnaire within an envelope marked confidential. The sealed envelopes were then collected by the facilitator and sent to MSU. The MSU staff recorded the participants' attendance, processed their payment, and sent the sealed envelopes to KSU for data entry. The KSU staff only had access to the participants' ID numbers. This process ensured that neither the facilitators nor the MSU staff would view the completed questionnaires and the KSU staff was unaware of the women's identities.

Measures of the IMB Model Constructs

Initially a multiple indicator, latent variable model was examined via a structural equations modeling analysis. However, a solution to this analysis could not be achieved using the present data set. Therefore, single indicators that best represent each construct were chosen and a path analysis was conducted instead. In accordance with the IMB model, each construct was examined using the following observed indicators.

Information

According to J. Fisher and Fisher (1992), indicators of the information construct within the IMB model include knowledge of methods to avoid HIV exposure, one's understanding of the transmission of HIV, as well as general knowledge regarding AIDS. The best indicator of the information construct for the population sampled was one's knowledge of preventing exposure to the HIV virus through sexual contact. Six items, taken from the National Public Health Service AIDS Information Survey (U.S. Public Health Service, 1988), assessed participants' knowledge regarding methods to lower one's risk of exposure to AIDS through sexual contact. The items were used in a similar study by Hobfoll, Jackson, Lavin, Britton and Shepherd (1993). The items assessed the participants' perceived effectiveness of several safer-sex practices (1 = very effective to 3 = not at all effective to 4 = don't know). The split-half reliability of the items is .64 and the test-retest reliability is .57 (Hobfoll et al., 1993). The Cronbach's alpha estimate in the present study was .72.

It is important to note that as long as the items are clear, low reliability estimates for knowledge is an indication of poor knowledge. This is evident in the scoring of 100% on the items by a panel of 11 experts, signifying the instrument's validity (Hobfoll et al., 1993). Hobfoll et al. (1993) also found that the items were accurate in depicting women's AIDS knowledge and that the items encompass the broad variation of such knowledge among women.

Motivation

J. Fisher and Fisher (1992) indicate that measures for motivation within the IMB model encompass one's motivation to engage in APB, perceived social support for the performance of APB, as well as one's perceived susceptability to HIV. Within the population sampled, one's perceived risk of exposure to the HIV virus was the best indicator of motivation to engage in APB, which was assessed by the participants' perceived risk (1 = no risk to 4 = high risk) of the likelihood of being infected with HIV due to their own sexual behavior. Estimates of reliability were not calculated because only one item was used.

Behavioral Skills

Indicators of behavioral skills in J. Fisher and Fisher's (1992) IMB model consist of one's ability to discuss safer sex and negotiate condom use with a partner. Within the population sampled, the best indicator of behavioral skills was one's reported ability to

discuss AIDS and AIDS prevention with a partner. Behavioral skills were assessed by the participants' response regarding whether they discuss AIDS and AIDS prevention with their partner(s). Once again, because one item was used, internal consistency estimates were not calculated.

AIDS-Preventive Behavior

J. Fisher and Fisher (1992) indicate that measures of the APB construct consist of one's ability to engage in preventive behaviors, such as refusing unsafe sex, using condoms during sexual intercourse, and convincing partners to engage in safer sex. Within the present study, APB was assessed through items extracted from previous research on AIDS risk activities (Backer, Batchelor, Jones, & Mays, 1988; Francis & Chin, 1987; Kelly & St. Lawrence, 1988; Kelly, St. Lawrence, Hood, & Brasfield, 1989; Koop, 1986). The participants indicated the frequency of their sexual behavior within the past six months in regard to vaginal, oral, and anal sex. It is important to note that this measure was simply the frequency of sexual behavior, not specifically preventive behavior. However, for the population sampled with the particular data used, this was the best indicator of the APB construct within the IMB model. To fully explore APB within this population, participants' number of partners and frequency of condom use during these sexual acts was also examined.

Prior research conducted by Hobfoll et al. (1993) with minority women found that such items did not produce significant responding biases. In addition, it was found that women did not portray themselves in an overly positive manner, nor did they appear to be

changing their safer-sex behaviors simply due to their participation in the AIDS project. Estimates of reliability were not calculated due to the fact that the participants reported only the frequency of their sexual behavior.

RESULTS

Demographic Characteristics

Table 1 reports the mean, standard deviation, and range of the participants' age in years, as well as the frequencies and percentages of the participants' (a) ethnic background, (b) tribal affiliation, (c) employment status, (d) educational status, and (e) estimated annual household income.

As indicated in Table 1, the majority of participants were (a) between the ages of 16 and 20, (b) unemployed, (c) still in school, (d) and earning less than $25,000 annually. Although the unemployment rate was high within this population, it may have been due to the fact that the majority of the participants were still in school and that the mean age was 19.72. The majority of the participants reported that their ethnic background was fully Native American with only 5% reporting mixed ethnicity. The most common tribal affiliations were that of the Blackfeet (25%), Crow (22.5%), and Northern Cheyenne (26.3%).

In addition to the information shown in Table 1, 75.6% of the participants reported that they have never had an STD, which contradicts prior research indicating high percentages of STD's within the Native American population. Furthermore, 40% of the participants reported that they have been tested for HIV, and 99.4% reported that they have not tested positive for the HIV virus.

Table 1. Descriptive Statistics for Demographic Variables

Variable	M	SD	Range
Age in Years	19.72	3.45	16 - 29
	n		% of N
Ethnic Background			
Native American	152		95.0
Native American & Hispanic	4		2.5
Native American & White	4		2.5
Tribal Affiliation			
Assininboine	6		3.8
Blackfeet	40		25.0
Crow	36		22.5
Gros Ventre	2		1.3
Northern Cheyenne	42		26.3
Sioux	7		4.4
Other	23		14.4
Missing	4		2.5
Employment Status			
Employed	53		33.1
Not Employed	104		65.0
Missing	3		1.9
Education Status			
Not in School	44		27.5
Still in School	114		71.3
Missing	2		1.3
Estimated Annual Household Income			
Less Than $10,000	61		38.1
$10,001 to $15,000	32		20.0
$15,001 to $25,000	37		23.1
More Than $25,000	26		16.3
Missing	4		2.5

Correlations Between Study Variables

Table 2 reports the means, standard deviations, internal consistency estimates, and intercorrelations for the study variables. As is evident, the six-item measure for information was internally consistent, whereas reliability estimates were not calculated for the other variables because they were measured by only one item.

Table 2. Means, Standard Deviations, Internal Consistency Estimates and Intercorrelations for Study Variables

	Variable	M	SD	1	2	3	4
1.	Information	4.10	1.69	**.72**			
2.	Motivation	1.75	0.87	.11	---		
3.	Behavioral Skills	0.33	0.47	-.02	.20**	---	
4.	AIDS Preventive Behavior	12.81	28.25	.23**	.18*	.21**	---

Note. N ranged from 150 - 160. Cronbach's alpha appears in bold on the main diagonal.
*p < .05, **p < .01

Frequencies for IMB Model Variables

As previously indicated, the content of the IMB model's constructs is an essential factor. Therefore, to fully understand the fit of the IMB model to Native American women, it is necessary to examine first the basic information provided by the constructs' indicators, shown in Table 3. Within the information construct, almost half of the participants (49.4%) had below average knowledge of AIDS prevention methods through

sexual contact, followed by 25% with above average knowledge. As an indicator of the motivation construct, the majority of the participants (81.9%) perceived that they were at no to low risk for getting AIDS. With regard to the behavioral skills construct, the majority of the participants (66.9%) reported that they do not discuss AIDS and AIDS prevention with their partners. In addition, the majority of the participants (67.5%) engaged in sexual behavior in the past six months.

Table 3. Frequencies for IMB Model Variables

Variable	n	% of N
Information (Knowledge of AIDS Preventive Behavior)		
Below Average (0 - 69%)	79	49.4
Average (70 - 89%)	31	19.4
Above Average (90 - 100%)	40	25.0
Missing	10	6.3
Motivation (Perceived Risk)		
No Risk	77	48.1
Low Risk	54	33.8
Moderate Risk	21	13.1
High Risk	8	5.0
Behavioral Skills (Discuss AIDS w/ Partner)		
No	107	66.9
Yes	53	33.1
AIDS Preventive Behavior (Sex in Past 6 Months)		
No	52	32.5
Yes	108	67.5

Path Analysis

Initially a structural equations modeling analysis was conducted using Amos 4.0 (Arbuckle & Wothke, 1999) to examine the IMB model's fit to the present data. However, a multiple indicator, latent variable model could not be fit to the data. Therefore, a path analysis was conducted using observed variables and a completely standardized solution; thus the findings are in Z-score or standard deviation units. The structural model is comprised of four variables with five structural parameters representing hypothesized predictor-criterion associations, in addition to one structural covariance (correlation) representing the relationship between information and motivation. The relationships among the four variables are represented by the specified parameters described in the IMB model. The validity of the model is supported to the extent that the observed pattern of covariances conforms to the theoretical specification.

As reported in Figure 3, findings support Hypothesis 1, which indicates that the exogenous variables, information and motivation, were independent, as evident by their nonsignificant correlation, $r = .12$, $p > .05$. Support was also found for Hypothesis 2, evident by the significant path between information and AIDS preventive behavior, $\beta = .25$, $p < .001$. Hypothesis 3 was not supported, such that the path between motivation and AIDS preventive behavior was nonsignificant, $\beta = .12$, $p > .05$. Hypothesis 4 was not fully supported. Although the path between information and behavioral skills was nonsignificant, $\beta = -.02$, $p > .05$, the path between motivation and behavioral skills was

found to be significant, $\beta = .21$, $p < .01$. In addition, the path between behavioral skills and AIDS preventive behavior was significant, $\beta = .18$, $p < .05$.

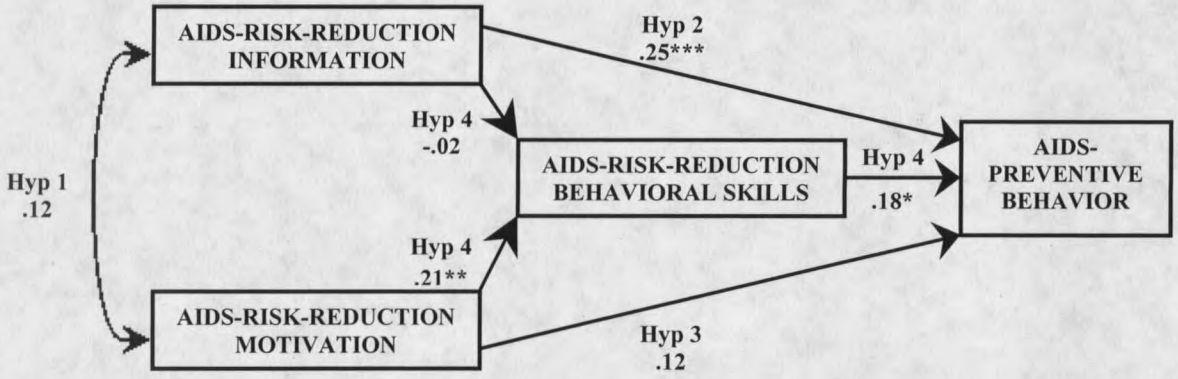


Figure 3. IMB Model Results for Native American Women. Path coefficient for Hypothesis 1 is a correlation (r). Path coefficients for Hypotheses 2-4 are standardized regression weights (βs). *$p < .05$, **$p < .01$, ***$p < .001$

Additional Findings Related to Hypotheses 2 - 4

Because the last three hypotheses are related to APB, it is important to discuss the variables used to measure the APB construct and additional data that will be helpful to understand the population sampled. As indicated in Table 4, 67.5% of the participants have engaged in sexual behavior (vaginal, oral or anal) in the past six months. This is important because not all participants are engaging in sexual acts. Although it is not assumed that the participants who have not engaged in sexual behavior in the past six months have never had sexual relations, the two groups were considered to be different within this analysis. According to the IMB model, the skills necessary to engage in APB are not the same for a person who remains abstinent versus a person who must negotiate condom use with a partner. Therefore, the two sub-populations (have vs. have not

engaged in sexual behavior in the past six months) are examined separately in Table 4, which reports each group's level of information, motivation and behavioral skills. Findings reported in Table 4 are discussed within the context of the hypotheses.

Table 4. Additional Findings Related to Hypotheses 2 - 4

Variable	n	% of N
Sex (Vaginal, Oral & Anal) in Past 6 Months		
No	52	32.5
Yes	108	67.5
Knowledge of APB with No Sexual Behavior		
Below Average (0 - 69% Correct)	35	70.0
Average (70 - 89% Correct)	8	16.0
Above Average (90 - 100% Correct)	7	14.0
Knowledge of APB with Sexual Behavior		
Below Average (0 - 69% Correct)	44	44.0
Average (70 - 89% Correct)	23	23.0
Above Average (90 - 100% Correct)	33	33.0
Perceived Risk with No Sexual Behavior		
No Risk	41	78.8
Low Risk	10	19.2
Moderate Risk	1	1.9
Perceived Risk with Sexual Behavior		
No Risk	36	33.3
Low Risk	44	40.7
Moderate Risk	20	18.5
High Risk	8	7.4
Discussion of AIDS with No Sexual Behavior		
Do Not Discuss AIDS with Partner	40	76.9
Discuss AIDS with Partner	12	23.1
Discussion of AIDS with Sexual Behavior		
Do Not Discuss AIDS with Partner	67	62.0
Discuss AIDS with Partner	41	38.0

In addition, frequencies of condom use show that the majority of participants are not engaging in safer-sex. Table 5 examines the number of partners and condom use within the sub-population that have engaged in sexual behavior in the past six months. Slightly over half of the participants reported to have engaged in sexual behavior with only one partner. However, it is important to recall that the participants were single or living with their partner for less than six months. This may be a possible indication of serial monogomy, in which an individual has one partner for the duration of the relationship rather than multiple partners simultaneously. Although this is a positive finding, risk still remains for exposure to HIV because the women may not be in long-term monogomous relationships with one person, rather short-term monogomous relationships with different partners. Of the 66.3% of participants who engaged in vaginal sex, 64.2% used condoms seldom to never. Of the 76.3% of participants who engaged in oral sex, 94.6% used condoms seldom to never. Of the 5% of participants who engaged in anal sex, 87.5% used condoms seldom to never. This is a strong indication that the women sampled in this population are not practicing safer-sex on a regular basis.

Table 5. Condom Use for Sexual Behavior in the Past 6 Months

Variable	n	% of N
Sex (Vaginal, Oral & Anal) in Past 6 Months		
No	52	32.5
Yes	108	67.5
Number of Partners		
One	61	56.5
Two - Four	43	39.8
Five or More	4	3.7
Vaginal Sex		
No	53	33.1
Yes	106	66.3
Missing	1	0.6
Condom Use with Vaginal Sex		
Never - Seldom	68	64.2
Usually - Every Time	38	35.9
Oral Sex		
No	122	76.3
Yes	37	23.1
Missing	1	0.6
Condom Use with Oral Sex		
Never - Seldom	35	94.6
Usually - Every Time	2	5.4
Anal Sex		
No	151	94.4
Yes	8	5.0
Missing	1	0.6
Condom Use with Anal Sex		
Never - Seldom	7	87.5
Usually - Every Time	1	12.5

DISCUSSION

Results of the present study provide partial support for the IMB model of AIDS-preventive behavior for Native American women. Additional data specific to the population sampled is also provided.

Hypotheses

Hypothesis 1

First, support exists for Hypothesis 1, which predicted that Native American women's AIDS prevention knowledge and motivation levels are not significantly correlated with one another. As with other populations, Native American women's knowledge base is not necessarily indicative of their level of motivation. Indicated previously by J. Fisher and Fisher (1992), an individual highly knowledgeable about AIDS may lack the motivation to engage in APB. Alternatively, an individual can be highly motivated to perform APB, but lack a solid knowledge base about AIDS.

Hypothesis 2

Support was found for Hypothesis 2, which predicted that Native American women's AIDS prevention knowledge is positively associated with their AIDS-preventive behavior. Indicated previously in Table 3, the majority of all participants

(68.8%) had average to below average knowledge regarding APB. As reported in Table 4, 70% of the participants who have not engaged in sexual behavior scored below average on the six-item test and 44% of the participants who have engaged in sexual behavior scored below average on the test. It appears as though Native American women's knowledge regarding AIDS prevention is be a necessary component within the IMB model as well as sufficient, in and of itself, to predict APB.

Hypothesis 3

Support was not found for Hypothesis 3, which predicted that Native American women's motivation to engage in AIDS prevention is positively associated with their AIDS-preventive behavior. Previously indicated in Table 3, the majority of all participants (81.9%) believe they are at no to low risk for AIDS due to their current sexual behavior. Not surprisingly, Table 4 indicates that of the participants who have not engaged in sexual behavior, 98.0% believe they are at no to low risk of exposure to the HIV virus. However, of the participants who have engaged in sexual behavior, 74.4% believe they are at no to low risk. It is important to note that this study has only examined one's perceived risk for exposure to HIV through their sexual behaviors. It has not examined other methods of transmission such as IV drug use. Lack of support for this hypothesis may be because behavioral skills act as a mediating factor in the link between motivation and APB, which was found to be significant (refer to Hypothesis 4). It appears as though motivation could be a necessary component of the IMB model, but not sufficient, in and of itself, to predict APB. Simply because someone is motivated does

not mean that they will have the ability to engage in APB. However, the combination of high motivation and developed behavioral skills increases the likelihood that one will participate in APB.

Hypothesis 4

Hypothesis 4 predicted that Native American women's AIDS prevention knowledge and motivation levels are positively associated with their behavioral skills which, in turn, are positively associated with their AIDS-preventive behaviors. This hypothesis was not fully supported to the extent indicated in the IMB model because not all paths were found to be significant. However, in analyzing the content of the indicators in combination with the specified paths, partial support was found.

First, information was not found to predict behavioral skills. Therefore, simply because an individual has a high knowledge base of AIDS preventive behaviors, it does not mean that she has the desire or the skills to discuss AIDS prevention with her partner. Second, motivation was found to predict behavioral skills. Thus, the higher perceived risk a woman has regarding her likelihood of getting AIDS, the more likely it will be that she will be motivated to discuss AIDS prevention with her partner. Third, behavioral skills were found to predict AIDS preventive behavior. Table 3 indicated that the majority of all participants (66.9%) do not discuss AIDS and AIDS prevention with their partners. It is not surprising, as indicated in Table 4, that the majority of the participants (76.9%) who have not engaged in sexual behavior do not discuss AIDS with their partner.

However, 62.0% of the participants who have had sexual relations do not discuss AIDS or AIDS prevention with their partner.

Summary of Results

Partial support was found for the generalizability of the IMB model to Native American women. The IMB model's fit within this population is important because, as indicated in Table 5, the participants are not regularly using condoms. Combine this with the overall findings of below average knowledge of APB, the low perceived risk of exposure to HIV, and the tendency to not discuss AIDS with their partner, and it may result in a deadly combination. Such a combination calls for further research and intervention within this population.

Directions for Future Research

Because Native American tribes can be so diverse, this study represents the first step in empirically examining the generalizability of the IMB model to women within the Native American population. Although women from various tribes participated in the study, it would be advantageous to encompass a broader range of tribal affiliations as well as geographic locations to fully generalize the findings. In addition, the present study focused on women ages 16-29 from various regions of Montana, both on and off the reservation. Future research should dissect even this population's dynamics, which was not possible with the present data set due to its relatively small sample size. First,

evident in the study's findings, not all of the participants were engaging in sexual behavior, which translates into different motivation and behavioral skills for the two sub-populations. It would be important to examine the generalizability of the IMB model to Native American women who are sexually active versus those who are not by using construct measures that are applicable to each group. For example, behavioral skills for sexually active women (e.g., negotiating condom use) will be different from those who are not sexually active (e.g., remaining abstinent). Second, although the present study focused on a specific age group, the variance within the group may be large. There can be quite a difference in the social skills and self-efficacy of a 16-year-old when compared to a 29-year-old. Future research should analyze the varying age groups separately, such as ages 16-21 and 22-29 or focus on high school students versus college students versus those not in school. Third, participants in the present study were from both on and off the reservation. Future research should focus on the women living on the reservation versus those living off of the reservation, as the social dynamics can vary drastically. Although many Native American women living off of the reservation maintain strong ties with those living on the reservation, the daily life in the "white world" can affect numerous individual choices and behavior patterns.

In addition to further generalizability research for the IMB model, follow-up intervention research is suggested using an additional set of operations proposed by the IMB model: (a) elicitation research, (b) population-specific interventions, and (c) evaluation research (J. Fisher & Fisher, 1992; J. Fisher & Fisher, 1996). First, elicitation research empirically identifies a population's level of AIDS-prevention information,

motivation, behavioral skills and APB to assess existing deficits or barriers for engaging in AIDS prevention. Second, population-specific interventions are created to address the deficits found in the elicitation research through a tailored prevention program. Third, methodologically rigorous evaluation research is conducted to assess the short- and long-term changes of the intervention program using the IMB model constructs as measures. Such research should be focused on a broad scale (e.g., Native American women as a whole) as well as with a specialized focus (e.g., rural Native American teenage girls who are sexually active).

Potential Study Limitations

The first potential limitation to the present study is that it analyzed a data set that was not originally designed to test the IMB model. Therefore, there were few actual measures for each construct. It is suggested that future research in this area formulate its measures from those specified in Fisher, Fisher, Williams, and Malloy's (1994) study. Another potential limitation to the present study is its relatively small number of participants. The original study, for which the data set was intended, recruited women to participate in an intervention program that was extended over at least a two-month period. The present study analyzed only the pre-survey data. A greater number of participants may have been possible if the women were recruited to participate in a cross-sectional study with one questionnaire administered. In addition, due to time constraints and funding limitations, only five female facilitators were recruiting women from four

different geographical regions in Montana. Seven reservations exist in Montana with many Native American women living on and off the reservation. Potential exists for future research involving a greater number of participants. Lastly, the present study analyzed self-reported measures, which can lead to inaccurate or missing data. Numerous reasons exist for misrepresentations such as one's concern of confidentiality, a subjective view of one's self, the inability to accurately remember exact behavior over long time periods, as well as a possible misunderstanding of the material covered in the questionnaire. Although it is at times unavoidable, it is important to be cautious of limitations of self-reported data.

Concluding Remarks

Determining the generalizability of the IMB model to Native American women is an important component in understanding, developing, and implementing culturally appropriate AIDS prevention programs for this high-risk population. The importance of the Native American culture to its people is apparent. Therefore, prevention efforts that are tailored to the needs of each community through empirical research efforts are invaluable.

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