Assessing the Influence of Exposure to Violent Living Condition, Knowledge, and Personal Motivation on Human Immunodeficiency Virus Infection Prevention Behavior among Historically Black College Students

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Authors' contributions

This work was carried out in collaboration between all authors. Author MM designed the study, performed the statistical analysis, wrote the protocol, and wrote the first draft of the manuscript. Authors NL and KW managed the analyses of the study. Author CI managed the literature searches. All authors proof-read and approved the final manuscript.

Research Article

ABSTRACT

Aim: This study assesses the effects of prevention education, prevention personal motivation, prevention knowledge, and past exposure to violent living conditions on human immunodeficiency virus (HIV) infection prevention behavioral skills among historically black college and University (HBCU) students.
Study Design: Quasi-experimental One-shot Case Study Design.
Place and duration of study: Fayetteville State University; November 2012 to May 2013.
Methodology: Survey data of indicators of the four Information-Motivation-Behavioral skills (IMB) model's latent constructs prevention information or knowledge, prevention

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motivation, and prevention behavioral skills, and past exposure to violent living conditions (PEVLC)prevention was collected from students attending an HBCU. Exploratory principal component factor analysis and Cronbach's alpha test were performed to identify the factorial structure of the PEVLC questionnaire and reliability of the violent exposure subscales, respectively. Structural equation modeling analysis was performed to estimate the overall model fit indices and the magnitude of effects of prevention motivation, PEVLC prevention and prevention information or knowledge on the prevention behavior of the students.

Results: The analysis found that personal motivation to prevent HIV infection and knowledge of HIV prevention had a positive moderate and significant effect on HIV prevention behavior. Witnessing violence with weapons prevention had a large, but insignificant effect on HIV prevention behavior. Exposure to physical violence prevention and weapon victim prevention had no effect on HIV prevention behavior. HIV prevention knowledge, witnessing violence prevention, and violence victimization prevention had no meaningful effect on prevention behavior of HBCU students.

Conclusion: Collectively, these findings suggest that to be effective, the focus of HIV prevention programs in HBCUs may be on promoting personal motivation and HIV education, and identifying and treating students who have been exposed to past weapon and sexual violent living conditions for post-traumatic stress disorder.

1. INTRODUCTION

The continued rise in human immunodeficiency virus (HIV) infection among college students in the United States has become a major health concern. Despite increased investments in HIV prevention programs on college campuses in the United States, high risk sexual behavior continues to occur among college students [1,2,3]. Moreover, an examination of recent data indicate that while the trend in HIV infection seems to have stayed even or slightly reduced among college students in general, the trend among African American college students and African Americans aged 18-25 continues to rise [4,5]. Independent research indicate that the incidence and spread of human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) and other sexually transmitted diseases among heterosexual college students attending Historically Black Colleges and Universities (HBCUs) in the United States continue to rise at an alarming rate, despite increased investment in HIV prevention programs aimed at reducing engagement in risky sexual behavior among students on college campuses [4,6,7,8,9,10,11,12,]. Qualitative studies suggest that the most salient barriers to HIV prevention among black college students are negative views of condoms, trust issues, spontaneity, young age, non-monogamous relationships, and perhaps most important, lack of prevention behavioral skills [12,13,14,15]. Other researchers found that black college students are, for the most part, quite knowledgeable about HIV/AIDS, but this knowledge is not a predictor of safe sex among the college students [14,16,17,18,19].

HIV prevention programs are more likely to succeed when they are based on empirical evidence and theory [20,21]. Researchers have identified a number of factors that contribute to health risk behaviors. Among these factors are past exposure to violent living conditions

and lack of personal prevention motivation. Past exposure to violent living conditions (PEVLC) is witnessing or being a victim of excessive behavior such as fist fighting, shooting, muggings, robberies, gang-related deaths, sexual assault, etc. at home, school, community, workplace, television or the environment[22,23,24]. Personal motivation is conceptualized as personal attitudes towards performing preventive behavior [25,26]. In principle, behavioral skills refer to an individual's sense of self-efficacy necessary to engage in preventive behavior [25]. Thus, an individual would need to perceive that he or she possesses the behavioral skills necessary for health risk prevention.

With regards to past exposure to violent living conditions, a recent national study found that about 55% of urban adolescents have been exposed to some type of violence in their communities during their lifetime [27]. Other researchers found that the rate of violent exposure differ greatly depending on the type of violent exposure (e.g., witnessing a violent act, victim of a violent act or both), the type of population being assessed (e.g., children or adolescents), and geographic location (e.g. rural versus urban) [28]. Despite the widespread incidence of violence in the United States, it has been found to be higher among racial minorities living in large, urban cities and within impoverished communities [29]. Moreover, official crime statistics and homicide rates show that violence is higher among young males and racial minorities than their counterparts. For example, the Center for Disease Control and Prevention (CDC) reported that males aged 15-19 years are four time more likely than females to die from homicide. Additionally, in 2006, homicide rate for black teenage males was nearly 20 times (66.4% per 100,000) higher than the rate for white teenage males (3.4% per 100,000), twice more than Hispanic teenage males (28.4% per 100,000), 4 times more for American Indian teenage males (16.9% per 100,000), and 6 times more than Asian American teenage males (11.5% per 100,000) [30].

Numerous empirical studies have established a link between past exposure to violent living conditions and HIV infection risk behavior among youths [31,32,33,34,34,35,36,37,38]. With regards to an association between HIV personal prevention motivation and HIV risk behavior, past exploratory research have found a negative link between these two variables among Historically Black College students [16,26]. However, whether a causal link between these two constructs exist remains to be established.

With regards to the effect of personal motivation on risk behavior, various behavior models have been used to predict risk behavior among college students with the goal of designing effective HIV/AIDS education and prevention programs. One theoretical model that has proven useful in explaining HIV prevention behavior and other health-promoting behaviors and providing a useful framework for developing HIV prevention and promotion programs is the Information-Motivation-Behavioral Skills (IMB) model [25,39,40,41]. In particular, the IMB model states that HIV prevention information and motivation works through prevention behavioral skills to influence risk reduction behaviors, such as safe sex practice [39]. The model considers information and motivation to be independent constructs, but may relate to the practice of behavioral skills relevant to risk behavior change. In effect, the model proposes that to practice safe sex, it is necessary for an individual to possess the information or knowledge about how to prevent HIV infection, and the motivation to prevent HIV infection. The framework is appropriate because it is considered to be parsimonious, its constructs are operationally defined, and it specifies the causal linkages between its theoretical determinants and their relation to prevention behavior [21,42]. Unlike other models, such as the theory of reasoned action [43] and theory of planned reason [44,45], used in the study of HIV/AIDS and its risk factors, the IMB model has been validated extensively as providing a more comprehensive model for identifying socio-cognitive

predictors of health behavior outcomes (such as HIV prevention) that are of theoretical and empirical importance [25,39,40,46,47,48]. In addition, the IMB model has been applicable to behaviors outside the HIV domain including voting behavior [49], breast self-examination behavior among women [41], adolescence smoking behavior [50] and oral rehydration behavior in developing countries [51]. However, few studies have sought to test the applicability of prevailing theories of HIV risk behavior among students attending HBCUs.

Previous research on information pertaining to HIV prevention has shown information to be an inconsistent predictor of HIV preventive behavior [16,52,53]. However, when assessed within the framework of the IMB model, information has been a consistent predictor of HIV preventive behavioral skills [42,54]. Motivation is theorized to include both personal motivation (that is, personal attitudes towards performing preventive behavior), as well as social motivation (that is, perceived social support for engaging in safe sex practice). In a sense, the IMB model suggest that an individual's motivation to engage in preventive behavior is determined not only by his or her own personal feelings about whether preventive behavior is good, but also whether friends and other referents provide social support for such preventive behavior. According to the IMB model, information and motivation influence risk prevention independently, and in large part, indirectly through behavioral skills needed to perform HIV preventive behavior[25,55]. In principle, behavioral prevention skills refer to an individual's sense of self-efficacy necessary to engage in preventive behavior. Thus, an individual would need to perceive that he or she possesses the behavioral skills necessary for health risk prevention.

Using the IMB model, HIV and health promotion researchers have consistently found a strong association between motivation and behavioral skills [41,42,54]. Other studies have shown that behavioral skills mediate the effects of motivation on preventive behavior and HIV prevention behavior [54,55,56]. Recent research has shown a strong positive influence of personal motivation on HIV prevention behavior among Historically Black College students [25]. In summation, the IMB model suggests that knowledgeable and motivated individuals who enact the relevant behavioral skills are more likely to practice the recommended preventive behaviors, such as HIV prevention.

The purpose of this study was to assess the effect of past exposure to violent living conditions and personal motivation on HIV risk behavior within the framework of the IMB model among Historically Black College students. Specifically, the study was aimed at providing empirically-ground answers to two research questions. First, what is the effect of past exposure to violent living conditions on HIV risk behavior among Historically Black College students? Second, what is the influence of knowledge of HIV prevention on HIV risk behavior among Historically Black College students? Third, what is the influence of personal motivation of HIV prevention on HIV risk behavior among Historically Black College students? Based on the discussion above, these three research questions translate into the three research hypotheses which were examined in this study. First, past exposure to violent living conditions has a positive effect on HIV prevention behavior. Second, Knowledge of HIV prevention has a positive effect on HIV prevention behavior. Third, personal prevention motivation has a positive influence on HIV prevention behavior.

2. METHODS

2.1 Research Design

This study employed a cross-sectional quasi-experimental one-shot case study design [57]. This design is generally considered to be most useful in exploring researchable problems or developing ideas for action research, and considered to be appropriate when exploring individuals' acquisition of relatively new or less understood phenomenon, such as HIV prevention behavior of students attending HBCUs [57]. A schematic representation of the design is displayed in Fig. 1.

Treatment	Post test
X	O_2

Fig. 1. Quasi-experimental one-shot case study design

where X is an HBCU student's past exposure to violent living conditions, HIV prevention knowledge, and HIV prevention personal motivation. O_2 is the level of a student's HIV prevention behavior. The limitations of this type of research design are outlined in the conclusion section of this article.

2.2 Participants and Procedure

The Historically Black College selected for this study has a population of 6,217 college students enrolled. A breakdown of the population by race/ethnicity shows that approximately 70% is African American, 17% is Caucasian, 4% is Hispanic, 1% is Native American and 4% is other racial/ethnic groups. The age distribution of the student population consists of 55% in the age range of 17-25 years old, 31% aged 26-40 years, and 14% is over 40 years. Most of the students (68%) are females, while 32% is males. The distribution of the population by academic class shows that 19% is freshmen, 15% is sophomore, 18% is junior, 32% is senior, and 11% is graduate. Most of the students (66%) attending the university are enrolled as full-time students, while 34% are part-time.

Participants in the study included a purposive sample of students aged 18 years or older attending this particular HBCU. After receiving Institutional Review Board's (IRB) approval, various professors were contacted and asked for permission to conduct the survey during a portion of their class time. Once the permission was granted, we met with the students during the class period and explained the purpose of the study to them. They were also informed that their participation was strictly voluntary and they may either opt not to participate in the study and leave or not provide a response to any of statements. In addition, the students were informed that no incentive will be provided for their participation in the study. The students who agreed to participate in the survey were provided with a consent form for them to read, sign and date. The consent form explained to the students that their participation was voluntary and would not affect their grade and their identity will be kept strictly confidential, and their names would not appear in any report. We adhered to all American Psychological Association (APA) research guidelines. This method varied from the traditional study in which researchers surveyed students in class during a 1-week period in 2003 [15]. The survey was anonymous in that no identifying information was connected to individuals, or included in, the data set. Participants completed the survey during class time and returned them before leaving the class. Non-participants were asked to remain quiet or

were dismissed from the class early. The survey took less than 10 minutes to complete. Of the 512 students enrolled in the classes, a total of 369 students agreed to participate in the survey for a rate nominal participation rate of 72%. The analysis presented here includes 360 participants (70% participation rate) whose response to each of the items showed no pattern of missing values. A breakdown of the sample by race/ethnicity was as follows: blacks (75.3%), whites (11.5%), Hispanics (3.4%), Native Americans (0.9%), Asians (1.7%) and other racial groups (7.2%). Most of the respondents (71.3%) were within the age range of 18 - 25 years old, followed by 26-34 years old (14.5%), then 35 - 44 years old (9.1%), 45-54 years old (3.7%) and above 54 years old (1.4%). The sample distribution by enrollment status showed that majority of the participants (94.9%) were full-time students and only 5.1% were attending college as part-time students. A breakdown of the sample by academic class status indicated that most of the participants were Juniors (29.2%), followed by Sophomores (25.8%), next Freshman (23.5%) and the least were Seniors (21.5%). In general, the demographic breakdown of the study participants was approximate to that of the student population of the HBCU under investigation, thus indicating a fairly representative sample. Once the survey was completed, the participants' responses were score on a 5-point scale ranging from 1 = strongly disagree to 5 = strongly agree. The scores were reversed for negatively stated items. The responses were entered into a constructed SPSS Version 21.0 dataset for analysis.

2.3 Measures

The study consisted of three exogenous latent constructs (past exposure to violent living conditions, HIV prevention knowledge, and HIV prevention personal motivation), and one endogenous latent construct (HIV prevention behavior). The items measuring each of these latent constructs were contained in a survey instrument. Items measuring HIV prevention knowledge, HIV prevention personal motivation, and HIV prevention behavior were developed and validated by researcher at Fayetteville State University in North Carolina [26]. In particular, the three latent constructs consisted of 21 items exhibiting acceptable psychometric properties (χ (48) = 58.905, *p* = 0.135; CFI = 0.99, TLI = 0.98; Cronbach's alpha scores ranging from 0.52 to 0.90; and significant factor loadings ranging from 0.30 to 0.90). Meanwhile, items measuring past exposure to violent living conditions were derived from previous studies [31,32,33,34,35,36,37] and tested for reliability and validity using exploratory and confirmatory factor analyses.

Past Exposure to Violent Living Conditions. Past exposure to violent living conditions was measured by a battery of 17 items scored on a 4-point Likert scale ranging from 1=never at all to 4=very often.

1. I have seen someone pull a knife or gun on someone
2. I have cut or stabbed someone with a knife
3. I have shot at someone with a gun
4. I have seen someone shot with a gun
5. I have seen someone killed with a gun or knife
6. I have seen someone hit someone with a stick or baseball bat
7. I have hit someone with a stick or baseball bat
8. I have seen someone hit with an iron rod
9. I have seen someone throw stones or utensils at someone
10. I have seen someone sexually assault someone
11. I have been sexually assaulted by someone
12. I have been involved in fist fights

13. I have seen people involved in fist fights
14. I have seen people involved in fight with weapons
15. I have been involved in fights with weapons
16. I have seen someone shot with a gun
17. I have seen someone killed with a gun or knife

The items were subjected to exploratory factor analysis (EFA) using a separate sample (N=147) from the same student population to determine the meaningful loading structure of the 17 items in the original past exposure to violent living condition instrument. In particular, principal component factor analysis applying the varimax rotation was used to reduce or organize the item pool into a smaller number of interpretable factors. The number of factors was determined by joint consideration of Cattell's[58] scree plot and the latent root residual (eigenvalue) criteria. Thurstone's[59] principle of simple structure using pattern coefficients of absolute 0.3 as the lower bound of meaningful per factor and interpretability of the solution were used to determine the final solution [60].

The second step of the analysis involved calculating the internal consistency estimates (Cronbach's alpha) for the items representing each factor retained from the exploratory factor analysis procedure. Cronbach's alpha of 0.6 was considered as the minimum acceptable level of internal consistency for using a factor [61,62]. For factors with Cronbach's alpha below this minimum benchmark, the internal consistency of the factor was improved by identifying and removing items with low item-test correlation and item-rest correlation [63]. If no improvement of the reliability score occurred, the factor was deleted.

The EFA produced a final solution consisting of four distinct latent constructs and eight items. The first construct, called *past exposure to physical violence prevention*(PEPVP), was measured by five items, such as: (a) I have seen someone yell at someone, (b) I have seen someone hit someone, (c) I have seen people involved in fist fights, (d) I have seen someone throw an object at someone, (e) I have been yelled at by someone. The second latent construct named *past exposure to weapon violence prevention* (PEWVP)*,* was operationalized using five items, such as: (a) I have seen someone shot with a gun, (b) I have seen someone killed with a gun or knife, (c) I have seen someone pull a weapon on someone,(d) I have seen someone cut or stabbed with a knife, (e) I have seen people involved in fights with weapons. The third latent construct, named *past victim of weapon violence prevention*(PVWVP)*,* was measured also by five items, such as: (a) I have cut or stabbed someone with a knife', (b) I have been involved in fights with weapons, (c) I have been involved in fist fights, (d) I have been shot by someone with a gun, (e) I have been hit by someone. The fourth latent construct, named *past exposure sexual violence prevention* (PESVP)*,* was measured by two items such as: (a) I have been sexually assaulted by someone, (b) I have seen someone sexually assault someone. Each of the items was scored on a 4-point Likert scale ranging from 1=very often to 4=never.

The factorial validity of the 4-factor past exposure to violent living condition measurement scale was tested by performing a first-order confirmatory factor analysis (CFA) using AMOS 21.0. The CFA produce a final solution of a total of ten items (Fig. 2). Factor 1, PEPVP, was measured by two items such as "I have seen someone yell at someone". Factor 2, PEWVP, was measured by three items such as "I have someone shot at with a gun". Factor 3,PVWVP, was operationalized using two items such as, "I have been involved in a fight with weapons". Factor 4, PESVP, was measured using two items such as, "I have been assaulted sexually by someone".
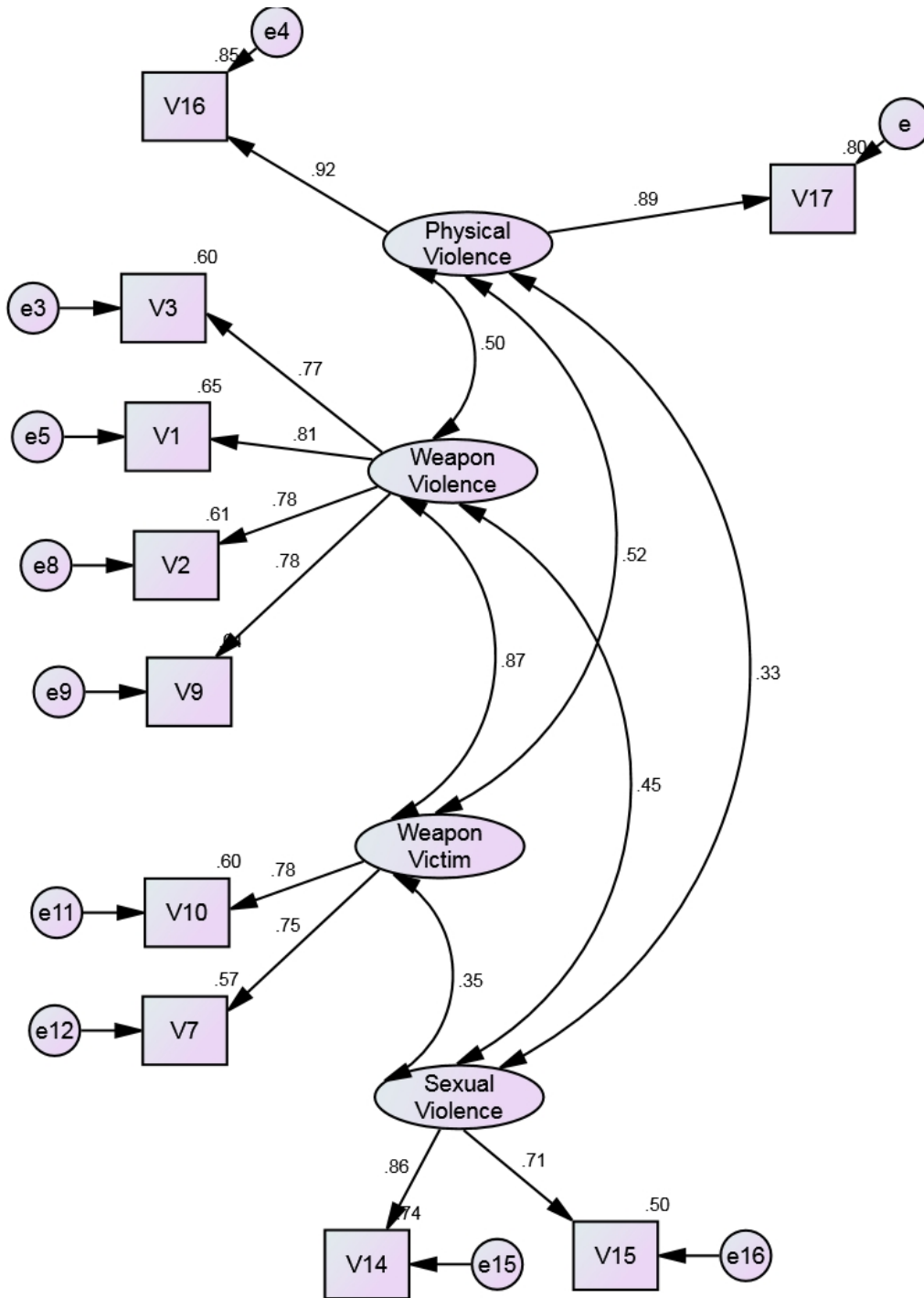
Fig. 2. Past violent exposure to violent living condition CFA measurement model for historically black college students
$X^2(32, N=359) = 84.248,, p<.01.; CFI = .97; TLI = .94, RMSEA = .07$

2.3.1 Knowledge

This construct was measured by the five items.: (a) A person can get HIV from tears or saliva; (b) A person can be infected with the AIDS virus from someone's cough or sneeze on them; (c) Sharing cooking utensil with a person who has AIDS is not safe; (c) A person can get the AIDS virus by using a public toilet; and (d) A person can be infected with the AIDS virus from mosquitoes.

2.3.2 Personal Motivation

HIV prevention personal motivation was operationalized using three items.: (a)   During sex, I would be insulted if my partner insisted we use condoms, (b) I intent to talk about HIV prevention with a mate only after sex, and (c) I dislike the idea of limiting sex to just one partner.

2.3.3 Behavioral skills

HIV prevention behavioral skills were measured by two items: (a) I would openly promote others to get tested for HIV, and (b) If I was HIV positive, I would tell my mate. The two items were used as indicators of the IMB's latent behavioral skills variable (Table 1), which loading significantly on the two measures (p = .001).

Table 1. Standardized estimate for HIV Prevention Measure items

HIV Prevention Measurement scale items Estimate	
HIV Prevention Knowledge	
A person can get HIV from tears or saliva (PK1)	.60
A person can be infected with the AIDS virus from someone's cough or sneeze (PK2)	.84
A person can get AIDS by using a public toilet (PK4)	.64
HIV Prevention Personal Motivation	
During sex, I would be insulted if my partner insisted we use condoms (PM1)	.53
I intent to talk about HIV prevention with a mate only after sex (PM2)	.44
I dislike the idea of limiting sex to just one partner (PM3)	-.44
Past Weapon Violence Exposure	
I have seen someone pull a weapon on someone (V1)	.79
I have seen someone shot with a gun (V3)	.76
I have seen people involved in fights with weapons (V9)	.81
Past Physical Violence Exposure	
I have been yelled at by someone (V16)	.91
I have seen someone yell at someone (V17)	.90
Past Weapon Violence Victim	
I have been involved in fist fights (V7)	.76
I have been involved in fist fights with weapon (V10)	.75
Past Sexual Violence Prevention	
I have seen someone sexually assaulted someone (V14)	.89
I have been sexually assaulted by someone (V15)	.69
HIV Prevention Behavioral Skills	
I would openly promote to get tested for HIV (PB1)	.58
If I was HIV positive, I would tell my mate (PB2)	.75

All the items were scored on a 5-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree.

2.4 Statistical Analysis

Latent variable structural equation analysis was performed to assess the influence of IMB prevention motivation (education and personal), past exposure to violence prevention, and prevention knowledge on prevention behavioral skills using AMOS 17.0 [64]. To make full use of the available data, full maximum information likelihood (FIML) estimation procedure was used.   A number of indices were used to evaluate the goodness of fit of the five-factor orthogonal HIV prevention behavior (HPB) structural IMB model. The model absolute fit was assessed using chi-square statistics, χ^2, with low χ^2 considered good fit [62]. Incremental fit was evaluated using the Root Mean Square Errors of Approximation (RMSEAs) with a value less than 0.06 indicating a relatively good fit, along with Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) with values of .95 or greater considered desirable [65,62,66,67,68]. The likelihood that the model's parameter estimates from the original sample will cross-validate across in future samples was assessed by examining the Akaike's [69] Information Criterion (AIC) and Bozdogen's [70] consistent version of the AIC (CAIC) with lower values of the hypothesized compared to the independent and saturated models considered to be appropriate fit. The likelihood that the model cross-validates across similar-sized samples from the same population was determined by examining the Expected Cross-Validation Index (ECVI) with an ECVI value for the hypothesized model lower compared to both the independent and saturated models considered to represent the best fit to the data. Finally, Hoelter's [71] Critical N (CN) was examined to determine if the study's sample size was sufficient to yield an adequate model fit for a χ^2 test [72] with a value in excess of 200 for both .05 and .01 CN indicative of the structural model's adequately representing the sample data [73].

Normality of the distribution of the model's variables was assessed by Mardia's [74,75] normalized estimate of multivariate kurtosis with value of 5 or less reflexive of normal distribution. Multivariate outliers were detected by computation of the squared Mahalanobis distance (D^2) for each case with D^2 values standings distinctively apart from all the other D^2 values as indicative of an outlier.

The magnitude of effect of prevention personal motivation, and violence exposure, and prevention knowledge latent constructs on prevention behavioral skills latent construct was determined by estimating the standardized regression coefficients (Beta coefficients (β) or factor loadings), with β's below .05 too small to be considered meaningful influences on prevention behavioral skills, even when they are statistically significant; those between .05 and .10 were considered small influence on prevention behavior; those between .10 to .25 were considered moderate influences on prevention behavioral skills; and those above .25 considered large effects on behavioral skills [76].

3. RESULTS

Table 1 and Fig. 3 display the standardized parameter coefficients with factor loadings of latent variables onto the measured variables and the direct effects within the structural portion of the tested causal model. Table 1 shows that standardized regression weights or factor loadings were ranged from .44 to .91. Although standardized regression weights of two of the items (i.e., PM2 and PM3) measuring personal motivation were below the

acceptable lower bound of .50, they nevertheless were significant and fairly equivalent to the other items measuring this latent construct suggesting that all three items were equally good measures of this construct [76].

Hence, convergent validity of the measurement model as a whole is confirmed. Also, the fit of the overall IMB prevention model of this complexity was good (χ^2(98, *N* = 360) = 179.260, *p*< .01; CFI = .97; TLI = .95; RMSEA = .05). The model explained 13.9% of the variance in prevention behavior among the sample of HBCU students. The AIC fit statistics of 314.074 for the hypothesized model is lower compared to the saturated model (AIC=340.000) or the independent model (AIC=2121.239), indicative of appropriate fit of the model to the data. Also, the ECVI for the hypothesized model is lower (.875) compared to the independent model (.947) and the saturated model (5.909), suggesting that the model represent the best fit for the data. Hoetler's Critical N value for the model is 258 at .05 level and 282 at the .01 level, which suggests that the structural causal model adequately represent the sample data. Finally, Mardia's normalized estimate of multivariate kurtosis (C.R. value) is -1.436 which is reflexive of a normal distribution. The square Mahanalobis distance (D^2) values showed minimal evidence of multivariate outliers.

Table 2 displays the estimated standardized (β) coefficients associated with each of the exogenous latent constructs in the structural equation causal model. Past exposure to witnessing weapon violence, witnessing physical violence, sexual violence and HIV prevention knowledge had no meaningful and insignificant effect on HIV prevention behavior (β = .04, t = .119, *p*> .01; β = .04, t = .389, *p*> .01; β = -.09, t = -.937, *p*> .01; β = -.02, t = .186, *p*> .01, respectively). Past victim of weapon violence had a moderate positive, but insignificant effect on HIV prevention behavior (β = .24, t = .598, *p*> .01). Personal motivation to prevent HIV infection had a large positive and significant effect on prevention behavior (β = .66, t = 2.583, *p*< .01).

Table 2. Structural Equation Unstandardized and Standardized Regression Weights of Prevention Personal Motivation and Past Violent Exposure on Prevention Behavioral Skills among Historically Black College Students

Exogenous Construct	b	S.E.	β	t	P
Past weapon violence witness living condition prevention	.03	.213	.04	.119	.905
Past physical violence witness living condition prevention	.02	.040	.04	.387	.697
Past weapon violence victim living condition prevention	.13	.223	.24	.598	.550
Past sexual violence exposure living condition prevention	-.08	.081	-.09	-.937	.349
HIV Prevention Knowledge	-.01	.064	-.02	.186	.852
HIV Prevention Personal Motivation	.60	.231	.66	2.583	.010

Endogenous Construct: Prevention Behavior
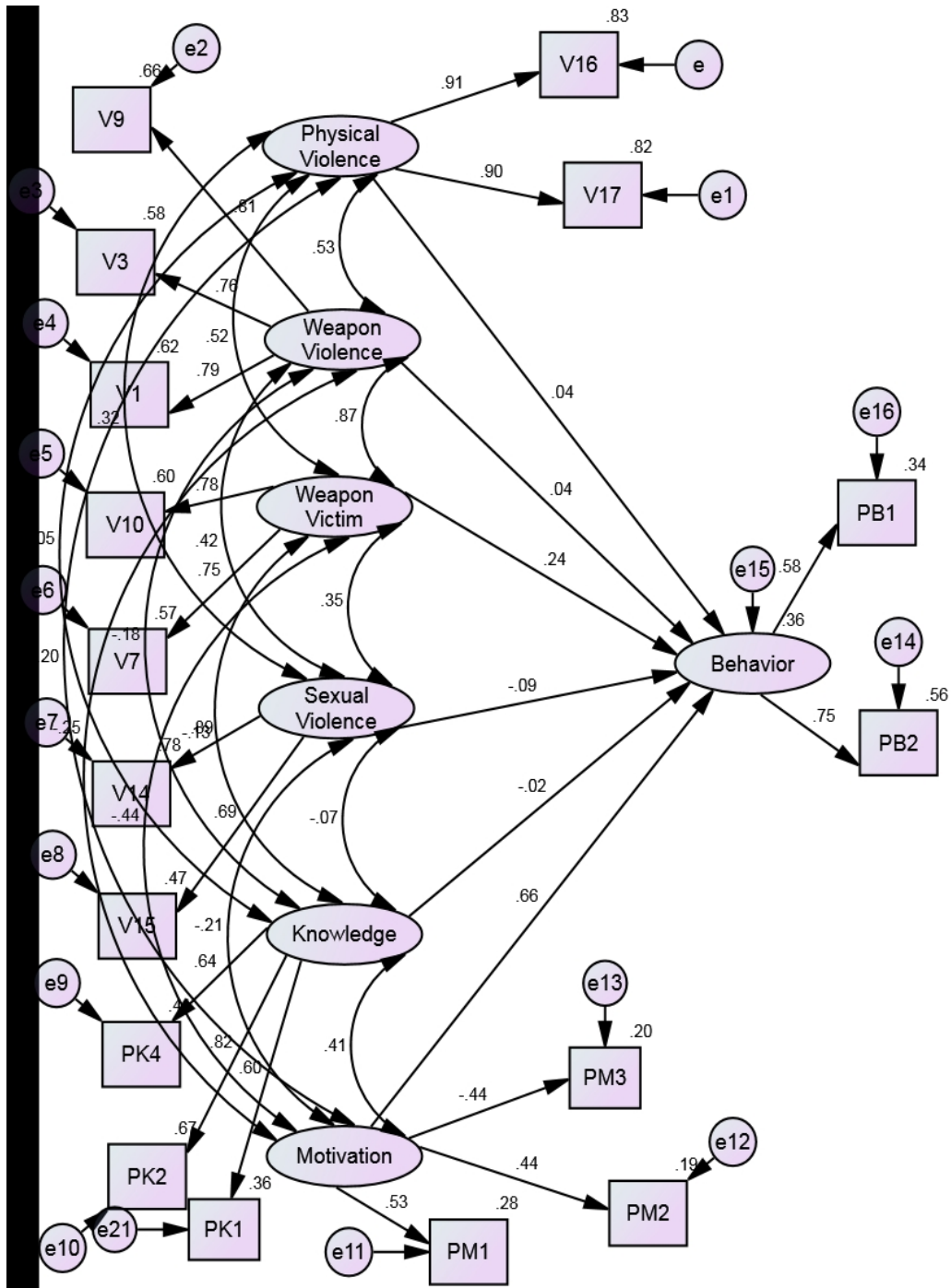*N=360; Square multivariate correlation = 35.9%.*

Fig. 3. HIVprevention behavior CFA structural model for historically black college students

4. DISCUSSION

This study was aimed at using the Information Motivation Behavioral Skill (IMB) model to assess the influence of, HIV prevention personal motivation, HIV prevention knowledge and past exposure to violent living condition prevention on HIV prevention behavior among students attending Historically Black Colleges and Universities (HBCUs). Through exploratory principal component factor analysis we identified four distinct types of exposure to violent living conditions: exposure to weapon violence living condition, witness to physical violence living condition, victim of weapon violence living condition and exposure to sexual violence living condition. The four types of exposure to violent living condition, prevention knowledge and prevention personal motivation collectively formed the exogenous variables of the IMB model, while HIV prevention behavior was the endogenous variable.

The study found that three of the four exogenous past exposure to violence latent constructs, (that is, past witness to weapon violence, past witness to physical violence, and past exposure to sexual violence) did not behave as expected in that they exhibited no meaningful effect on HIV prevention behavior among HBCU students. Interestingly, past victim of weapon violence exhibited a somewhat weak effect on HIV prevention behavior. These findings deviate from previous research findings on the effect of past exposure violent living conditions on HIV infection risk behavior [22,23,31,32,33,34,35,36,37], but may be unique to HBCU students. HIV prevention personal motivation behaved as expected in that it exhibited a large significant positive influence on prevention behavior among the students. This finding is consistent with the finding of previous research using the IMB model [41,42,55,56,26]. The finding of no meaningful effect of prevention knowledge on HIV prevention behavior is consistent with previous research [52,16], but inconsistent with research using the IMB model [42,54].

This study has some limitations that should be acknowledged. While the findings of this study provide unique insights into the influence of personal motivation, knowledge, exposure to violent living conditions on HIV preventive behavior among HBCU students, the external validity of the findings remains questionable. However, the study relied on a one-shot case design. This type of research design has three major limitations. First, there is complete absence of control and only college students attending one university, which in this case is the selected HBCU, participated in the study, limiting the external validity of the study's findings. To be sure, the "quick and easy" nature of this approach, which is often used as a basis for change or innovation, is misleading [57]. Second, there is no provision for comparison, which is the basis of science, except implicitly, intuitively and impressionistically. Third, this approach to inquiry usually involves the "error of misplaced precision" in that a great deal of time is devoted to the collection of data about which the conclusion derived can only be impressionistic and imprecise. Moreover, self-report instruments often have the problem of respondent dishonesty. Furthermore, the student sample used in this study was not randomly selected. Hence, the findings may not be representative of the perception and behavior of college students attending the particular HBCU under investigation as a whole. These limitations suggest that interpretation or generalization of the findings of this study should be limited to college students attending the particular HBCU under investigation or colleges with similar population mix or composition. Furthermore, although the predictive fit indices (AIC and ECVI) indicate the adequacy of the model to be applicable across future samples and samples of the same population, future studies should expand the validation process to multi-group tests of equivalence of the causal HIV prevention behavior causal structure. These limitations notwithstanding, as a contribution to theory-building, this study provides important insights into the influence of key

socio-cognitive factors on HIV/AIDS prevention behavior among HBCUs worth further exploration.

5. CONCLUSION

Collectively, the findings of this study suggest that of the six exogenous latent construct of the IMB model, only personal motivation, and to a lesser degree, past victim to weapon violence prevention programs may be effective in enhancing HIV prevention behavior among students attending HBCUs. Hence, the focus of HIV prevention programs in HBCUs may be on promoting personal motivation and identifying and treating students who have been past victims of weapon violent living conditions for post-traumatic stress disorder (PTSD), rather than the existing emphasis on providing the students with HIV prevention education and information, which seem to be effective in reducing HIV infection on non-HBCU campuses, and not on HBCU campuses.

CONSENT

All authors declare that 'written informed consent was obtained from the students for publication of this research report.

ETHICAL APPROVAL

All authors hereby declare that all experiments have been examined and approved by the appropriate ethics committee and have therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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