

Development and Validation of an Instrument Measuring Determinants of Bystander Intervention to Prevent Sexual Assault: An Application of the reasoned action approach

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Abstract

Bystander Intervention (BI) is an evidence-based approach that is considered the gold standard by governmental organizations to reduce sexual assault in college. Few survey instruments are available to measure the predispositions students have towards engaging in BI. Valid and reliable instruments are greatly needed, especially those tailored to BI. The purpose of this study was to develop and validate an instrument based on the reasoned action approach with college students at two U.S. universities. An elicitation of beliefs was accomplished to inform survey items (i.e., behavioral, normative, and control beliefs). Then, an initial draft was developed and sent to an expert panel to establish validity. The final instrument was administered to undergraduate students ($n = 291$), and further psychometric properties (construct validity and internal consistency reliability) were evaluated. Data were fit into two separate models to evaluate fit. In the first model, a four-factor solution was evaluated (intentions, attitudes, perceived norms, and perceived behavioral control), and while results were modest, the second seven-factor solution model contained a better fit (intentions, instrumental and experiential attitudes, injunctive and descriptive norms, capacity, and autonomy). Researchers and practitioners examining BI in college can use this instrument to measure theory-based determinants of BI to reduce sexual assault.

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Although sexual assault affects all populations, it remains a persistent issue at higher education institutions, as traditional college students (18-25 years old) are at greatest risk. In particular, college females experience higher rates of sexual violence (20%), compared to college males (6%) (Krebs et al., 2007, 2009). Victimization is associated with unhealthy substance use (Turchik, 2012; Ullman et al., 2013), health risk behaviors (Turchik, 2012), and long-term mental and physical health outcomes (Carey et al., 2018; Potter et al., 2018).

Bystander Intervention

Since the early 2000s, bystander intervention (BI) has been promoted as an altruistic behavior to prevent sexual assault (Banyard et al., 2004), and is currently the prevailing paradigm to prevent sexual assault in colleges. BI trainings are designed to teach witnesses to intervene in situations that involve sexual violence (Banyard et al., 2007; McMahan et al., 2011). Likewise, participants identify themselves as allies that recognize that everyone has a role in

preventing sexual assault (Banyard et al., 2004; Foubert et al., 2010; Kleinsasser et al., 2015) to foster a long-term culture of prevention. Bystander intent is a commonly measured outcome for BI training (Labhardt et al., 2017). Factors that positively influence BI intent include female gender (Hust et al., 2013; Katz et al., 2015; Nicksa, 2014), peers being supportive of BI (Banyard et al., 2014), sharing a group affiliation with the victim (Bennett et al., 2014; McMahan, 2010), and rating the situation as a non-ambiguous sexual assault (Carlson, 2008; Koelsch et al., 2012; McMahan et al., 2015).

Reasoned Action Approach

One integrative model that has started to be highly utilized in research and practice is the reasoned action approach (RAA). The RAA is an update of the theory of reasoned action (Fishbein & Ajzen, 1975) and the theory of planned behavior (Ajzen, 1991), and posits that attitudes, perceived norms, and perceived behavioral control (PBC) shape one's intentions to perform a behavior, which in turn (along with PBC), determine the engagement in a behavior (Ajzen et al., 2012). Behavioral intentions refer to an individual's willingness to engage in a behavior (Fishbein & Ajzen, 2009). Attitudes, perceived norms, and PBC can be operationalized by either evaluating the constructs from a generalized perspective (i.e., one's overall attitudes towards a behavior), or by evaluating each construct's sub-components (i.e., one's experiential (or affective) and instrumental (or cognitive) attitudes as separate constructs). Furthermore, the determinants of attitudes, perceived norms, and PBC can also be evaluated as a set of indirect behavior-related beliefs.

For example, the attitudes construct represents one's overall feelings toward a behavior and can be further broken down into experiential attitudes (i.e., *unpleasant-*

pleasant) and instrumental attitudes (i.e., *useless-useful*) (Ajzen et al., 2012). Belief-based determinants of attitudes include behavioral beliefs (beliefs about the likelihood of specific consequences of performing a target behavior) and outcome evaluations (the value placed on a specific consequence of a target behavior). For example, one might believe that exercising likely leads to weight loss (behavioral belief), and that weight loss is a highly valued outcome (outcome evaluation), and thus may have a positive attitude toward exercise.

The perceived norms construct represents the social pressure one feels to engage in a behavior, and consists of both injunctive (the perceived social approval of others) and descriptive norms (the perception of how others behave) (Ajzen et al., 2012; McEachan et al., 2016). Injunctive norms are beliefs about what others want an individual to do, which motivate behavior through social rewards or punishments (Manning, 2010; McEachan, et al., 2016). For example, one may believe that a peer (whose opinion they value) wants them to recycle, so they will engage in recycling to meet the perceived expectation. Belief-based determinants of descriptive norms are made up of descriptive normative beliefs (beliefs regarding how normative a behavior is for individuals we look up to (referents) in social groups), and identification with the referents (how much value each referent has). For example, one might believe that only young adults exercise (descriptive normative belief), and if the individual is an older adult, the individual may not believe exercising is a normal behavior (identification with the referent), and may therefore have a negative normative outlook toward exercise.

Finally, PBC refers to one's perceived capacity (i.e., self-efficacy) and autonomy (belief of control) over performing a behavior (McEachan et al., 2016). Belief-based determinants of PBC include control beliefs

(judgements about the presence of factors that can impede or facilitate a behavior) and perceived power (beliefs about the magnitude of influence of factors that inhibit or facilitate a behavior). For example, an individual might have the flu (control belief) and feel that if they have the flu they cannot exercise (perceived power), thus having a low sense of PBC.

The RAA has been utilized for a variety of protective, risk, and detection behaviors including physical activity, quitting smoking, donating blood, using condoms, and using illegal drugs (McEachan et al., 2016). Only one other study has used the RAA in the context of BI to prevent sexual assault, and the study's aim was to examine effective messaging strategies to identify predictors of intentions to engage in BI (Lukacena et al., 2019). In this previous study, a five-component model (experiential attitudes, instrumental attitudes, descriptive norms, autonomy, and capacity) used constructs of the RAA to predict participant intentions to engage in BI ($R^2 = 0.63$). While that was an important study, there were a few limitations: the study did not detail the development and validation of their RAA scale; researchers did not evaluate the indirect measures described in this article; and survey items did not appear to define the behavior in terms of its TACT (*target*, the *action* involved, the *context* in which it occurs, and the *time* frame). In order to standardize measurement of intention and behavior, Azjen (1988) proposed the principle of compatibility which states it is necessary to define the behavior of interest in regard to its TACT and all constructs must likewise be consistent with these four elements of the behavior. When measures of behavior and intention do not observe the principle of compatibility, intentions are likely to be unreliable predictors of behavior (Azjen, 2020). Therefore, since behavior in the study by Lukacena et al. (2019) was not

clearly defined in terms of TACT, results should be interpreted with caution.

The objective of the present study was to create and validate a novel RAA-based scale to predict the engagement of BI among college students. In this study, we developed and tested a four-component (intentions, attitudes, perceived norms, perceived behavioral control) and a seven-component (intentions, instrumental and experiential attitudes, injunctive and descriptive norms, capacity and autonomy) model to determine how the RAA can best be utilized for BI. Further, we detail the development of indirect belief-based measures for attitudes, perceived norms, and PBC, which is a novel addition to the literature.

Methods

This study employed a mixed methods design. Institutional review board approval was obtained at both participating universities. Participants were undergraduate college students between the ages of 18 and 24 years. Convenience sampling was utilized for both stages of data collection. Methods used in this study were largely guided by procedures outlined by Fishbein and Ajzen (2009) for developing surveys based on the RAA.

The first step in developing the RAA-based scale was to operationalize the target behavior using the TACT method; target, action, context, and time (Fishbein, & Ajzen, 2010). The behavior in this study was decided upon as to “engage in BI whenever necessary over the next three months.” Elicitation interviews were next deployed to understand specific attitudinal, normative, and control beliefs regarding the target behavior. Data were then used to develop indirect belief-based semantic differential scale items specific to the priority population. Next, direct measure semantic differential

scale items were developed for attitudes, perceived norms, PBC, and intentions. As noted by Di Iorio (2006) semantic differential scales measure three dimensions: evaluation (good/bad, pleasant/unpleasant); potency (weak/strong); and activity (slow/fast). Finally, face and content validity were established by an expert panel review, and psychometric testing included construct validity using confirmatory factor analysis (CFA), and internal consistency reliability with Cronbach's alpha.

Belief Elicitation & Indirect Belief-based Measure Development

Qualitative data portraying student perceptions of engaging in BI to prevent sexual assault were collected through elicitation surveys from one midsized (student population of approximately 20,000) suburban public university in the western United States. The following example items were used to elicit each type of belief: behavioral beliefs (i.e., What are the benefits that might result from engaging in bystander intervention?); injunctive normative beliefs (i.e., Who would approve of you engaging in bystander intervention?); descriptive normative beliefs (i.e., Who can you think of that would engage in bystander intervention?); and control beliefs, (i.e., What makes it easy for you to engage in bystander intervention?) The survey directions defined sexual assault and provided common examples of sexual assault situations among college students. Of the 49 respondents, the mean age was 20.4 years ($SD = .996$), 85.9% were juniors or seniors, 45.6% were male, and 54.5% identified as white. Data from the surveys were cleaned, coded, and deductively analyzed (within the RAA framework) using NVivo Version 11. Forty-five indirect belief-based items were then developed based on the results.

Direct Measure Development & Expert Panel

Quantitative scales were developed to measure attitudes, perceived norms, and PBC based on results from the elicitation surveys. To establish face and content validity, two rounds of expert review were conducted, including six panelists with expertise in RAA, BI, and college student behavior. The final instrument contained 54 direct measure items, 45 indirect items, 7 socio-demographic items, and 5 knowledge-based questions. Direct subscales included: intentions; instrumental attitudes; experiential attitudes; descriptive norms; injunctive norms; capacity; and autonomy. The final instrument was tested in a sample of five undergraduate students for time and clarity, as well as to improve item language and understanding.

Direct Measure Survey Items

Intention. Four items measured on a unipolar 7-point semantic differential scale (1 = strongly disagree and 7 = strongly agree) were used to measure intentions. An example included "I plan to engage in bystander intervention over the next three months."

Attitudes. To assess attitudes, experiential (affective) and instrumental (cognitive) attitudes were evaluated. The instrumental attitudes subscale included four items (e.g., "My engaging in bystander intervention in the next three months is beneficial."), and the experiential attitudes subscale contained four items (e.g., "My engaging in bystander intervention in the next three months is rewarding"). All items were measured in a 7-point semantic differential scale (1 = strongly disagree and 7 = strongly agree).

Perceived norms. To assess perceived norms, descriptive and injunctive norms were evaluated. Three items evaluated reference groups for descriptive norms (my professors/faculty, other witnesses, my peers) on a 7-point (1 = strongly disagree and 7 = strongly agree) semantic differential scale (e.g., “My peers will engage in bystander intervention over the next three months.”). The injunctive norms subscale focused on the same reference groups but examined the amount of support each group would provide regarding BI behavior (e.g., “My professors/faculty whose opinions I value would (strongly disagree – strongly agree) with my engaging in bystander intervention over the next three months”).

Perceived Behavioral Control. To assess PBC, capacity and autonomy were evaluated. Three capacity items (e.g., “I see myself as not at all capable of engaging in bystander intervention during the next 3 months.”) and three autonomy items (e.g., “Factors outside my control definitely do not limit whether or not I can engage in bystander intervention during the next 3 months.”) were included. All PBC items were measured on 7-point (strongly disagree – strongly agree) semantic differential scale.

Survey Dissemination

Data collection occurred at a midsize suburban public university in the western United States and a midsize private urban university in the northeastern United States. With instructor permission, researchers entered classrooms at the beginning of the term, delivered recruitment scripts, and disseminated the survey using Qualtrics survey software. The survey took approximately ten minutes to complete. After cleaning the data and removing participants who completed less than 75% of the survey, 291 participants remained. Psychometric

analyses were only performed on the direct measures, as Fishbein and Ajzen (2010) recommend these procedures should not be done with indirect belief-based measures.

Participants

The mean age of participants was 18.98 years ($SD = 1.25$), and a majority identified as first year (45.7%), second year (34.7%), and third year (10.3%) students, with a small percent in their fourth year (5.5%) and fifth year or more (3.8%). The majority of students (88.7%) did not belong to a social fraternity or sorority and 95.9% were not NCAA athletes. Participants most closely identified as white, non-Hispanic (60.8%), followed by Asian or Pacific Islander (14.8%), Hispanic (10.7%), biracial/multiracial (9.3%), black, non-Hispanic (2.7%), and other (1.7%). The majority of participants identified as women (60.1%), followed by men (39.5%), and genderqueer/gender-nonconforming (0.3%). When asked if they knew someone who has witnessed an assault or experienced an assault themselves, 68% reported “Yes.”

Psychometric Analysis

Before statistical analyses, direct measure [intentions, attitudes, perceived norms, and PBC] scales were normalized to [-3 to +3] by adding the items on each scale and dividing the sum by the number of items [i.e., indicating strong negative intention (-3) to strong positive intention (+3)]. For each subscale, the following criteria were used to interpret the results for internal consistency reliability: $\alpha > 0.8$ was considered good; $0.80 > \alpha > 0.7$ was considered acceptable; $0.70 > \alpha > 0.6$ was considered questionable; $0.60 > \alpha > 0.5$ was considered poor; and an $\alpha < 0.5$ was considered unacceptable (Mallery & George, 2003).

To establish construct validity, confirmatory factor analysis (CFA) was

employed using the maximum likelihood method. CFA analyses were conducted using SPSS AMOS (Version 25.0). In rare cases, imputations (median) were made for missing data. Construct validity was confirmed if items significantly loaded on the scale that was expected, and model fit indices met pre-existing standards (comparative fit index (CFI \geq 0.95), Tucker–Lewis Index (TLI \geq 0.95), and root mean square error of approximation (RMSEA \leq 0.08)) (Schreiber et al., 2006). Both a 4-component (intentions, attitudes, perceived norms, and perceived behavioral control) and 7- component (intentions, experiential attitudes, instrumental attitudes, injunctive norms, descriptive norms, capacity, and autonomy) model were evaluated.

Results

Belief Elicitation & Indirect Belief-based Measure Outcomes

Overall, five prominent behavioral beliefs were identified (about the likely outcome if someone engaged in BI): make the victim grateful; make the perpetrator upset; be disapproved by my peers; offend the perpetrator; and help the victim. For future survey implementation, each behavioral belief was developed into a survey item, and a corresponding outcome evaluation item was developed in tandem. For example, a behavioral belief item included, “My engaging in BI in the next three months will make the victim grateful,” while an example of outcome evaluation item was, “It would be good for me to engage in BI if necessary during the next 3 months if it made the victim grateful.”

There were three prominent injunctive normative beliefs identified (my peers, other witnesses, and most professors or faculty who are important to me), and three prominent descriptive normative beliefs

identified (my peers, students in my classes, and my best friend). Similar to the previous scale, all normative belief items contained a corresponding value-based item. An example injunctive normative belief item included, “My peers think I should engage in BI if necessary over the next three months,” and a corresponding motivation to comply item included, “When it comes to engaging in BI if necessary during the next three months, I want to do what my peers think I should do.” An example descriptive normative belief item included, “My best friend would engage in BI if necessary over the next three months,” and a corresponding identification with referents item included, “When it comes to engaging in BI if necessary during the next three months, I want to be like my peers.”

There were six prominent control beliefs identified: there will be bystanders present; I will be faced with my peers’ disapproval; my friends will be present; the perpetrator will be intimidating; I will know the victim; and I will know the perpetrator. An example control belief item included, “I expect that other bystanders will be present in times when it might be necessary to engage in BI during the next three months,” and a corresponding perceived power item included, “If there were bystanders present, I [*definitely would not* – *definitely would*] be able to engage in BI when necessary during the next 3 months.”

Direct Measure Survey Outcomes

Initial Cronbach’s alpha scores were acceptable for all scales except for experiential attitudes, which was deemed questionable. After re-specification of the subscale, one item was removed (*my engaging in bystander intervention during the next 3 months is risky*), resulting in an acceptable score ($\alpha = .639$). Refer to Table 1 for a summary of reliability statistics for all scales.

To evaluate model fit, data were fit into two separate models (four-factor solution, seven-factor solution). In the first model (four-factor solution), intentions, attitudes, perceived norms, and perceived behavioral control were evaluated, and results showed that all subscales yielded significant factor loadings, but less than desirable model fit indices which indicate that overall fit was modest to poor (RMSEA = 0.121; TLI = 0.773, and CFI = 0.803). See Table 2 for unstandardized parameter estimates from the

4-component model CFA, and Figure 1 for standardized estimates.

In the second model (seven-factor solution), intentions, instrumental and experiential attitudes, injunctive and descriptive norms, capacity, and autonomy were evaluated and results showed that overall fit significantly improved (RMSEA = 0.058; TLI = 0.948, and CFI = 0.958). See Table 3 for unstandardized parameter estimates from the 7-component model CFA, and Figure 2 for standardized parameter estimates.

Table 1

Summary of the Reliability Statistics

Theoretical Construct	<i>M</i>	<i>SD</i>	Cronbach's α
Behavioral intentions	1.83	0.91	0.758
Total attitudes towards the behavior	1.56	0.77	0.791
Instrumental attitudes towards the behavior	2.11	0.91	0.901
Experiential attitudes towards the behavior	0.83	1.00	0.639
Perceived norms about the behavior	1.33	1.08	0.896
Injunctive norms about the behavior	1.67	1.28	0.953
Descriptive norms about the behavior	0.99	1.13	0.820
Perceived behavioral control over the behavior	1.49	0.80	0.783
Capacity over the behavior	1.80	0.83	0.892
Autonomy over the behavior	1.18	1.05	0.671

Note. Mean = -3 to +3, indicating strong negative intention (-3) to strong positive intention (+3)

Table 2

*Standardized (β) and unstandardized (*B*) coefficients for CFA analysis (4-factor model)*

Observed Variable	Latent Variable	β	<i>B</i>	<i>SE</i>
I am willing to engage in bystander intervention over the next 3 months. (Int1)	Intentions	0.787	1	
I intend to engage in bystander intervention over the next 3 months. (Int2)	Intentions	0.626	0.934	0.089
I will not engage in bystander intervention over the next 3 months. (Int3)	Intentions	0.585	0.765	0.078

Note. PBC = Perceived behavioral control. * $p > .05$.

Table 2 (continued)

Standardized (β) and unstandardized (B) coefficients for CFA analysis (4-factor model)

Observed Variable	Latent Variable	β	B	SE
I plan to engage in bystander intervention over the next 3 months. (Int4)	Intentions	0.509	0.935	0.112
My engaging in bystander intervention during the next 3 months is effective. (IA1)	Total Attitudes	0.779	1	
My engaging in bystander intervention during the next 3 months is valuable. (IA2)	Total Attitudes	0.953	1.096	0.057
My engaging in bystander intervention during the next 3 months is beneficial. (IA3)	Total Attitudes	0.949	1.000	0.053
My engaging in bystander intervention during the next 3 months is unimportant. (IA4)	Total Attitudes	0.703	0.874	0.067
My engaging in bystander intervention during the next 3 months is satisfying. (EA1)	Total Attitudes	0.703	0.874	0.067
My engaging in bystander intervention during the next 3 months is rewarding. (EA2)	Total Attitudes	0.453	0.594	0.076
My engaging in bystander intervention during the next 3 months is pleasant. (EA4 *)	Total Attitudes	0.001	0.002	0.103
My professors/faculty will engage in bystander intervention over the next 3 months. (DN1)	Total Norms	0.440	1	
Other witnesses will engage in bystander intervention over the next 3 months. (DN2)	Total Norms	0.576	1.116	0.167
My peers will engage in bystander intervention over the next 3 months. (DN3)	Total Norms	0.628	1.228	0.177
My professors/faculty whose opinions I value would <Strongly agree/Strongly disagree> with my engaging in bystander intervention over the next 3 months. (IN1)	Total Norms	0.888	1.889	0.229
Other witnesses whose opinions I value would <Strongly agree/Strongly disagree> with my engaging in bystander intervention over the next 3 months. (IN2)	Total Norms	0.941	1.955	0.244
My peers whose opinions I value would <Strongly agree/Strongly disagree> with my engaging in bystander intervention over the next 3 months. (IN3)	Total Norms	0.967	2.005	0.248

Note. PBC = Perceived behavioral control. * $p > .05$.

Table 2 (continued)

Standardized (β) and unstandardized (B) coefficients for CFA analysis (4-factor model)

Observed Variable	Latent Variable	β	B	SE
I see myself as <Not at all capable/Very capable of engaging in bystander intervention during the next 3 months. (Cap1)	Total PBC	0.855	1	
If it were entirely up to me, I am <Not at all confident/Very confident> that I can engage in bystander intervention during the next 3 months. (Cap2)	Total PBC	0.829	0.995	0.059
I <Definitely do not/Definitely do> have the ability to engage in bystander intervention during the next 3 months. (Cap3)	Total PBC	0.847	1.038	0.059
I have <No control/Complete control> over whether I engage in bystander intervention during the next 3 months. (Aut1)	Total PBC	0.589	0.901	0.085
It is <Not at all/Completely> up to me whether or not I engage in bystander intervention during the next 3 months. (Aut2)	Total PBC	0.514	0.792	0.088
Factors outside my control <Definitely do/Definitely do not> limit whether or not I can engage in bystander intervention during the next 3 months. (Aut3)	Total PBC	0.246	0.526	0.130

Note. PBC = Perceived behavioral control. $*p > .05$.

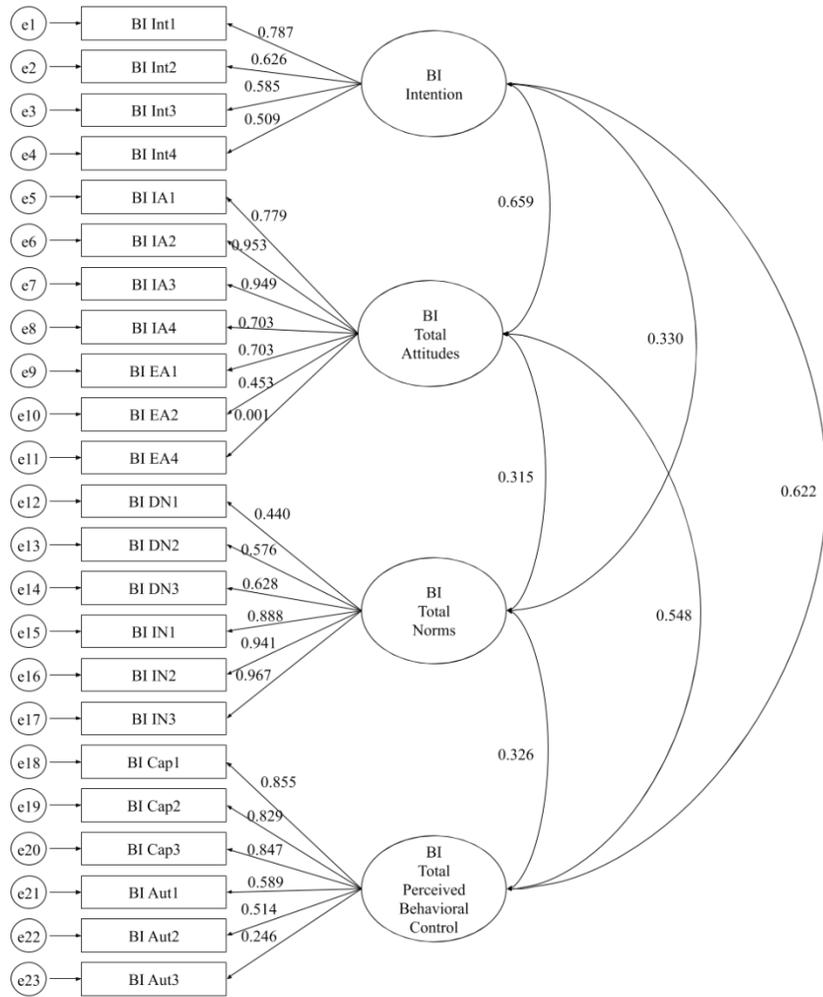


Figure 1. Results from the 4-component model CFA analysis for bystander intervention (BI) intentions (RMSEA = 0.058; TLI = 0.948, and CFI = 0.958)

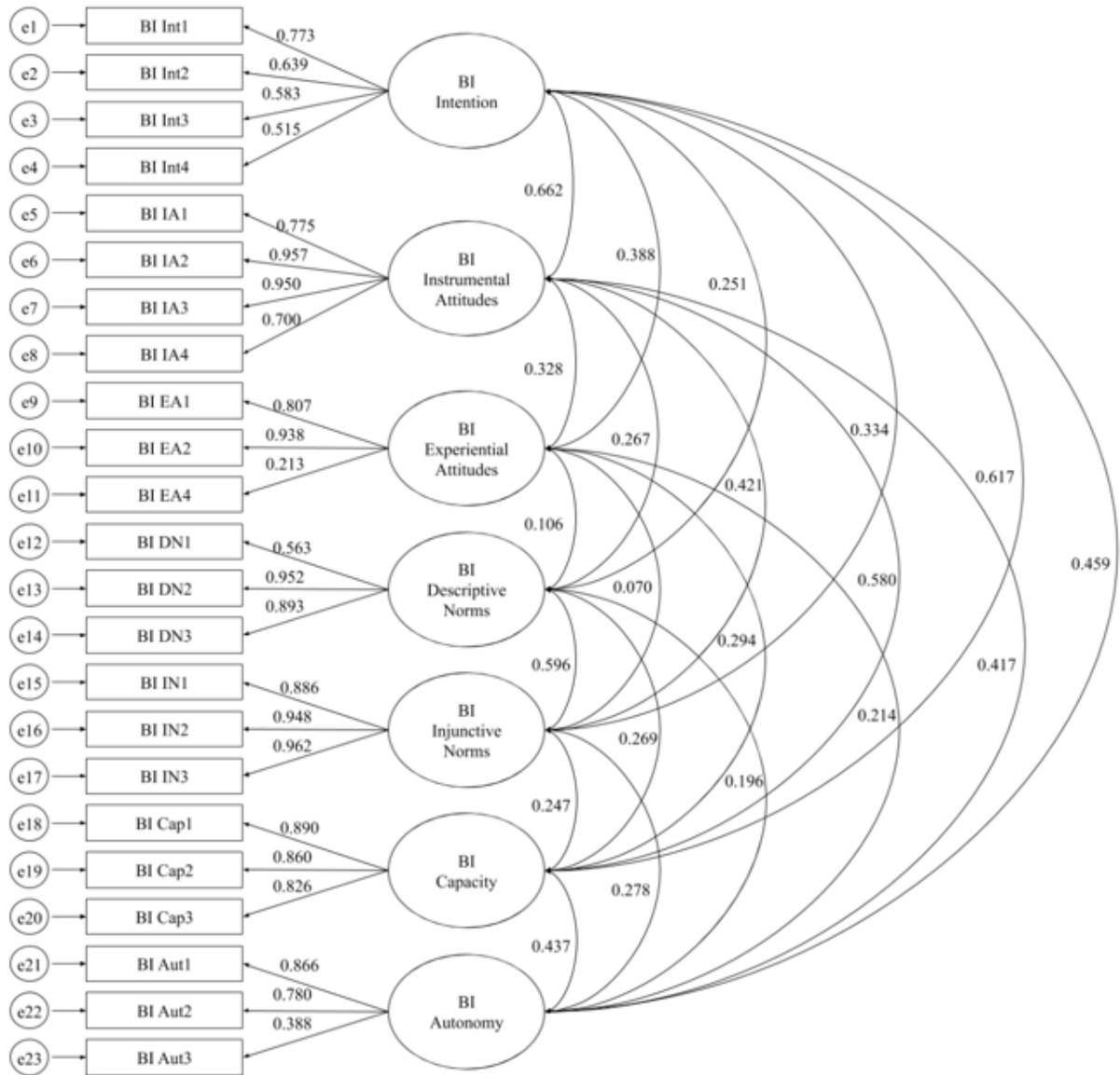


Figure 2. Results from the CFA analysis for the 7-factor model for bystander intervention (BI) intentions (RMSEA = 0.121; TLI = 0.773, and CFI = 0.803)

Table 3

Standardized (β) and unstandardized (B) coefficients for CFA analysis (7-factor model)

Observed Variable	Latent Variable	β	B	SE
I am willing to engage in bystander intervention over the next 3 months. (Int1)	Intentions	0.773	1	
I intend to engage in bystander intervention over the next 3 months. (Int2)	Intentions	0.639	0.970	0.091
I will not engage in bystander intervention over the next 3 months. (Int3)	Intentions	0.583	0.775	0.079
I plan to engage in bystander intervention over the next 3 months. (Int4)	Intentions	0.515	0.962	0.114
My engaging in bystander intervention during the next 3 months is effective. (IA1)	Instrumental Attitudes	0.775	1	
My engaging in bystander intervention during the next 3 months is valuable. (IA2)	Instrumental Attitudes	0.957	1.106	0.058
My engaging in bystander intervention during the next 3 months is beneficial. (IA3)	Instrumental Attitudes	0.950	1.006	0.053
My engaging in bystander intervention during the next 3 months is unimportant. (IA4)	Instrumental Attitudes	0.700	0.871	0.067
My engaging in bystander intervention during the next 3 months is satisfying. (EA1)	Experiential Attitudes	0.807	1	
My engaging in bystander intervention during the next 3 months is rewarding. (EA2)	Experiential Attitudes	0.938	1.044	0.093
My engaging in bystander intervention during the next 3 months is pleasant. (EA4)	Experiential Attitudes	0.213	0.312	0.089
My professors/faculty will engage in bystander intervention over the next 3 months. (DN1)	Descriptive Norms	0.563	1	
Other witnesses will engage in bystander intervention over the next 3 months. (DN2)	Descriptive Norms	0.952	1.435	0.133
My peers will engage in bystander intervention over the next 3 months. (DN3)	Descriptive Norms	0.893	1.354	0.125
My professors/faculty whose opinions I value would <Strongly agree/Strongly disagree> with my engaging in bystander intervention over the next 3 months. (IN1)	Injunctive Norms	0.886	1	

Note. * $p > .05$.

Table 3 (continued)

Standardized (β) and unstandardized (B) coefficients for CFA analysis (7-factor model)

Observed Variable	Latent Variable	β	B	SE
Other witnesses whose opinions I value would. <Strongly agree/Strongly disagree> with my engaging in bystander intervention over the next 3 months. (IN2)	Injunctive Norms	0.948	1.056	0.039
My peers whose opinions I value would <Strongly agree/Strongly disagree> with my engaging in bystander intervention over the next 3 months. (IN3)	Injunctive Norms	0.962	1.058	0.038
I see myself as <Not at all capable/Very capable of engaging in bystander intervention during the next 3 months. (Cap1)	Capacity	0.890	1	
If it were entirely up to me, I am <Not at all confident/Very confident> that I can engage in bystander intervention during the next 3 months. (Cap2)	Capacity	0.860	0.991	0.052
I <Definitely do not/Definitely do> have the ability to engage in bystander intervention during the next 3 months. (Cap3)	Capacity	0.826	0.972	0.054
I have <No control/Complete control> over whether I engage in bystander intervention during the next 3 months. (Aut1)	Autonomy	0.866	1	

Note. * $p > .05$.

Discussion

The first aim of this study was to develop an RAA-based instrument to predict BI in college students. The second aim was to evaluate the validity and reliability of the instrument using a four- and a seven-factor model. Overall, the instrument was found to have sufficient validity and reliability. Recent research on BI has often examined the influence of attitudes on BI behavior, but research on this topic should also account for the dual-dimensional aspect of this construct, such as the influence that beliefs regarding possible consequences of a behavior may have on BI, and the emotional feelings that are brought about by engaging or not

engaging in the behavior (Labhardt et al., 2017). In this study, the seven-factor model examined the structure of the dual-dimensional constructs of attitudes (i.e., instrumental and experiential attitudes), perceived norms, and PBC, and results showed that the data better fit this model compared to the standard four-factor model. Despite the traditional way the constructs within the theory of planned behavior have been reported in the past, as ‘whole’ attitudes, perceived norms, and PBC, this approach of reporting sub-constructs has gained popularity in the recent decade (Branscum & Fairchild, 2019; Lukacena et al., 2019). This method of reporting sub-constructs was also done in the most recent meta-analysis on the

reasoned action approach (McEachan et al., 2016). By evaluating the RAA in this way, researchers are given greater specificity for which psychosocial constructs are significantly related to behaviors and behavior change. In another study, researchers predicted the intentions of aerobic and muscle strengthening physical activity using both a four- and a seven-factor model. Results showed that, while overall attitudes were significant predictors in both models, only experiential attitudes were significant predictors in the seven-factor model for both behaviors (Branscum & Fairchild, 2019).

One novel addition to the literature is the development and initial examination of the indirect belief-based measures of attitudes, injunctive norms, descriptive norms, and PBC. Upon evaluation, researchers and program planners can have insight into what beliefs are strongly held within the population, and which can inform specific language in programmatic messaging. It is important to note, however, that the belief-based measures should always be developed using elicitation interviews or surveys with the priority population an intervention is intended for, and that beliefs elicited in this study may or may not be relevant to all college students. For example, the population in this study was primarily white and female, and specific BI beliefs may differ in other settings. Unfortunately, belief-based measures are rarely evaluated in studies that use the RAA; therefore, it was our intent to demonstrate the procedures and promote this method for further researchers and practitioners.

Implications for Practice and Research

A crucial step in public health education and promotion program development is the identification of personal and environmental factors to address through novel interventions (Grunbaum et al., 1995) at different levels of

the social ecological model (SEM; Bronfenbrenner, 1974). The SEM posits that there are several interconnected levels of influence on health behavior (intrapersonal, interpersonal, institutional, community and societal), broadening the scope of behavioral influence beyond the individual (Bronfenbrenner, 1994).

Such information is important for planning BI interventions, to tailor them to the needs of the students they are intended for. Surveys such as this can also be used in evaluating BI interventions. It may be difficult to evaluate BI behaviors on campuses, given the sensitivity of this information, but knowing students' intentions, attitudes, and beliefs, in addition to whether or not they change as a result of public health programming, is critical. The instrument developed and tested in this study has a strong theoretical basis in the RAA. Along with determining factors that either promote or inhibit BI at other levels of the social ecological model (SEM), future studies can use this instrument to provide insight into intrapersonal factors that influence this important health behavior. This instrument can also be paired with additional surveys to faculty, university administrators, and the greater community to better understand the factors at each level of SEM that influence BI.

Limitations

This study has limitations that should be considered. First, convenience samples of undergraduate college students were used; therefore, the results from this study may not be generalizable to other college populations. This is especially true for the indirect survey items, which should be tailored to populations as needed. Second, participant responses were based on self-reporting. As with other self-report data, participant responses may have been inconsistently

biased (i.e., social desirability or fear), and the beliefs reported might not truly represent actual participant beliefs. The final limitation was how the behavior was defined. While the directions of the survey noted ‘...bystander intervention is one method in which you can help stop a sexual assault from occurring,’ it was implied that the behavior was conditional, in that students would only engage in the behavior when the situation presented itself. Students may have been confused by this, and future work on the survey should make this clearer by possibly making the context of the behavior clearer (i.e., adding ‘if necessary’ or ‘if needed’).

Future Directions

Future research should focus on the continued psychometric testing of this instrument, as well as disseminating and validating this instrument in other college or adolescent populations. Although we find that a detailed account of scale development and validation is very useful for both practitioners and researchers, an appropriate and important next step would be to examine the predictive utility of the instrument on BI intentions and BI behaviors. Given the complex nature of the RAA constructs, a study establishing the model that includes the indirect measures of each construct (i.e., breaking down capacity into perceived power and control beliefs) should be conducted. By modeling indirect measures, researchers can develop a more specific understanding of the various factors influencing BI in this specific population. Because indirect items are specific to a priority population, we encourage other researchers using the RAA approach to develop indirect measures tailored to their priority populations. Future research with this scale should include an investigation into cultural and regional differences in RAA-based beliefs. Lastly, the

model should be broadened to include actual BI behavior, the ultimate outcome of interest.

Conclusion

More research developing and validating theory-based, psychometrically tested, instruments should be conducted. The use of valid and reliable instruments by researchers and practitioners is an important factor in the quality of both research and practice. Researchers and practitioners in the field should further include theory-based approaches in their interventions, such as the RAA and SEM. Along with implementing intrapersonal and interpersonal-level interventions with students, universities should consider changes at the organizational level (updating prevention and response policies and funding) and the community level (partnering with local organizations to promote violence-free communities).

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