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Testing the Bystander Intervention Model in Cyberbullying Across Students of Color and White Students

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Abstract

The five-step bystander intervention model (i.e., Notice, Interpret, Accept Responsibility, Know What to Do, Act) has been utilized to study intervention in traditional bullying, but not bullying bystander behavior in online contexts. Additionally, differences in how students of color and White students are involved in bystander behavior in cyberbullying have received little attention in the literature. Thus, the primary purpose of the current study was to (a) examine the factor structure of the Bystander Intervention Model in Cyberbullying (BIM-C) measure and measurement invariance across White students and students of color, (b) examine differences in engagement in five steps of the bystander intervention model between White students and students of color, and (c) test a conceptual bystander intervention separately for White students and students of color. The current study included 872 middle school and high school students (52.9% female). Results from the measurement invariance testing, confirmatory factor analysis, and structural equation modeling provide evidence for measurement invariance across White students and students of color. In comparing White students and students of color, overall, there were no major differences in both the mean levels of engagement in the five steps of the bystander intervention model and in the paths between steps of the model.

Keywords Bystander intervention · Measurement invariance · Cyberbullying · Racial and ethnic differences · Cyberbystander · Bystander

Cyberbullying is aggressive behavior (i.e., threatening, harassing, intimidating, or making fun of others) through electronic or digital media that occurs between two or more individuals in which there is a power dynamic, is repeated or has a high likelihood of being repeated, and the victim feels distressed as a result (Patchin & Hinduja, 2006). Approximately 15 to 35% of adolescents across the world experience cyberbullying (Centers for Disease Control and Prevention, 2019; Cyberbullying Research Center, 2019; Modecki et al., 2014) and 88% of US adolescents between the ages of 13 and 17 report that they have witnessed cyberbullying on social media sites (Lenhart et al. 2015). Alarmingly, the large majority (91%) of American adolescents who witness cyberbullying (i.e., cyberbystanders) ignore it (Lenhart et al. 2015), indicating a critical need to better understand how to promote online prosocial bystander behavior. Current school-based cyberbullying intervention programs are somewhat effective in reducing cyberbullying among children and adolescents, producing a 10 to 15% reduction in cyberbullying perpetration and a 14% decrease in cybervictimization (Gaffney et al., 2019). A meta-analysis by Polanin et al. (2021) found that school-based interventions significantly reduced cyberbullying with programs having a 76% likelihood of working effectively. There is a critical need to better understand effective cyberbullying prevention methods. Bystanders are crucial in preventing and intervening in traditional bullying (Jenkins & Troop-Gordon, 2020); thus, one way to stop cyberbullying is to encourage more youth to intervene, but this has received very little attention in the cyberbullying literature.

The trend of involving bystanders in cyberbullying prevention programs is emerging, but evidence is limited (Torgal et al., 2021). A recent meta-analysis by Torgal et al. (2021) involving nine studies found no statistically significant treatment effects

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for interventions focused on increasing bystander interventions in cyberbullying. Only two published studies to date have tested the effectiveness of school-based interventions designed to increase bystander intervention in cyberbullying (i.e., DeSmet et al., 2018; Pieschl et al., 2017). DeSmet et al. (2018) and Pieschl et al. (2017) found that their training programs influenced predictors of bystander intervention (e.g., attitudes toward helping, self-efficacy, social skills, empathy), but did not significantly increase bystander intervention in cyberbullying among Belgium eighth graders and German secondary school students, respectively. Studies from Barlińska et al., (2013, 2015, 2018) and Kozubal et al. (2019) examined how activating empathy changes bystander intervention in cyberbullying via computer simulations among 11- to 18-year-olds in Poland.

Another gap in the literature is a lack of information about the experiences of cyberbullying across race and ethnicity, particularly regarding differences in bystander behavior in cyberbullying (Kowalaski et al. 2014). Prior research examining differences in the prevalence of bullying and cyberbullying among racial and ethnic groups has been inconclusive (Llorent et al. 2016). Racially minoritized youth may be disproportionately impacted by stressors—particularly within school contexts—that may be associated with bullying and cyberbullying involvement (e.g., perceptions of poor school climate and belonging, low levels of classmate or teacher social support due to perceived discrimination within schools; Llorent et al. 2016). However, racially minoritized youth may be more likely to engage in prosocial bystander behavior, due to resilience factors such as a strong racial or ethnic identity or social support from peers (Xu et al., 2020). Thus, it is important to examine how cyberbullying bystander behavior and experiences may be similar or different across racial and ethnic groups to inform racially and culturally informed bystander interventions. Furthermore, prior research on bystander behavior has primarily focused on intervention behavior in traditional bullying rather than a more comprehensive view of bystander intervention (e.g., Nickerson et al., 2014; Jenkins & Nickerson, 2017; Jenkins et al., 2018; Fredrick et al., 2020). Existing cyberbystander research lacks a theoretical framework and current training programs have not effectively increased cyberbystander behavior (Torgal et al., 2021). The current study aimed to address this gap in the literature through evaluating the structure of a cyberbystander survey for students of color and White students separately (i.e., measurement invariance testing) and comparing cyberbystander behavior across these groups.

Bystander Intervention Theory

Latané and Darley (1970) developed a five-step model describing the steps that lead to intervention in an emergency: (1) notice the event, (2) interpret the event as an emergency that requires help, (3) accept responsibility for intervening, (4) know how to intervene or provide help, and (5) implement intervention decision. This five-step model has been applied to studying intervention in traditional bullying (e.g., Nickerson et al., 2014; Jenkins & Nickerson, 2017; Jenkins et al., 2018; Fredrick et al., 2020), but has not been widely used to understand intervention in cyberbullying (Dillon & Bushman, 2015; Kazerooni et al., 2018).

The first step of the model is to notice the event. Situational ambiguity can pose a challenge to noticing cyberbullying, as the user often cannot see the victim or bystanders' responses and whether they are in distress (Holfeld, 2014; Smith, 2012). Interpreting an event as an emergency worthy of help or intervention (step 2) can be impeded by pluralistic ignorance (i.e., the assumption that if others are not worried or not intervening, then the situation must not be an emergency; Darley & Latané, 1968). Studies have found that participants who were unable to see bystanders' responses (e.g., written comments) were less likely to intervene (Anderson et al., 2014) and that situational ambiguity is more common in online spaces (Holfeld, 2014; Smith, 2012). When the target asked for help or was noticeably upset, situational ambiguity decreased and prosocial bystander behavior increased (Macaulay et al., 2022; Macháčková et al., 2013). The third step is accepting responsibility for the situation. In the presence of others, individuals may assume that someone else will intervene (i.e., diffusion of responsibility; Darley & Latané, 1968). Youth report that students who are popular, strong, or friends with the target should be the ones intervening online (DeSmet et al., 2012; Price et al., 2014), and being friends with the target is a strong predictor of intervention (DeSmet et al., 2016). Youth who blame the target for "provoking" aggressive behavior from others (e.g., through behavior or actions) are less likely to take responsibility for intervening (DeSmet et al., 2012; Holfeld, 2014; Schacter et al., 2016). Step 4 is knowing how to intervene or provide help. Research has not explored whether adolescents know a variety of intervention options for cyberbullying. Related research suggests that even when youth do know how to intervene, they sometimes believe their potential actions will be ineffective or the bully will retaliate (Lodge & Frydenberg, 2005; O'Connell et al., 1999; Rigby & Johnson, 2005). DeSmet et al., (2012, 2016) found that self-efficacy is positively associated with intervening in cyberbullying. We anticipate that knowing how to report cyberbullying or block a user may be necessary in cyberbullying situations, in addition to other intervention options such as public commenting, directly messaging the bully or victim, or telling a parent or trusted adult. The final step in the model is to intervene. Several factors play a role in the decision to intervene, including costs to the individual regarding time, danger, distress, and effort (Batson, 1995; Piliavin et al., 1975). Intervention options in cyberbullying can include direct intervention (e.g.,

commenting on a post to tell the bully to stop, helping the target block the user), emotional intervention (e.g., trying to make the victim feel better), or reporting the incident (e.g., telling parents or anonymously reporting directly to a social media platform).

Ethnic and Racial Differences in Bystander Intervention

A major limitation of the existing bullying and cyberbullying literature is that it primarily focuses on White youth and few studies have examined racial and ethnic differences in bystander intervention using bystander intervention theory (Latané & Darley, 1970). Generally, prior studies suggest that White students gave fewer endorsements for bullying-assisting behaviors compared to Black, Asian, and other ethnically and racially minoritized students while Black and Asian students were less likely to defend victims (Bistrong et al., 2019). Latinx and Black adolescents were less likely to report outsider bystander behaviors (Bistrong et al., 2019). Furthermore, when examining general bystander intervention (i.e., not specific to bullying), bystanders often intervened less when the victim was Black compared to when the victim was White (Nelson et al., 2011). This suggests that race and ethnicity are factors when adolescents consider whether or not they will intervene, who will intervene, and to what extent. Troop-Gordon et al. (2019) found that racially and ethnically minoritized students had higher rates of victimization, moral disengagement, bullying, and pro-bullying bystander behaviors compared to White students. Racially and ethnically minoritized students also had lower rates of empathy and fewer perceived norms for defending victims (Troop-Gordon et al., 2019), potentially due to having more negative school experiences from discrimination that may make them more fearful of retaliation for reporting bullies (Mulvey et al., 2018, 2019) or more desensitized to bullying behaviors (Herry et al., 2021). Exclusion and discrimination may make minoritized students less likely to act or help in bullying situations as bystanders.

Research on racial and ethnic differences in attitudes or acceptability of bullying offers insight into the extent to which adolescents accept responsibility for intervening in bullying situations. Immigrant-origin adolescents rated social aggression toward other immigrant peers as less acceptable compared to non-immigrant adolescents, were more accepting of retaliation against non-immigrant adolescents, and believed they would be less likely to intervene (Gönültaş & Mulvey, 2021). This higher acceptance of retaliation and lower likelihood of intervening extends to racially minoritized youth (Mulvey et al., 2019). When racially minoritized adolescents reported experiencing discrimination from peers and teachers, they were more likely to rate cyberbullying and retribution as acceptable and perceive themselves as inactive bystanders against cyberbullying compared to White adolescents (Herry et al., 2021; Mulvey et al., 2019). Thus, it appears that perceptions and attitudes toward bystander intervention—as well as bystander behavior—in both offline and online contexts may differ across students' race and/or ethnicity, which should be taken into consideration when measuring bystander behavior in bullying.

Current Study

Cyberbullying has detrimental social, emotional, and academic outcomes for the target and promoting online prosocial bystander behavior is a promising strategy for effective intervention. Although the five-step bystander intervention model (Latané & Darley, 1970) has been utilized to study intervention in traditional bullying (Nickerson et al., 2014; Jenkins & Nickerson, 2017; Jenkins et al., 2018; Fredrick et al., 2020), this theoretical framework has not yet been applied to studying bullying bystander behavior in online contexts (Dillon & Bushman, 2015; Kazerooni et al., 2018). Furthermore, prior research has found differences in attitudes and perceptions of bystander behavior across students' race and ethnicity (Bistrong et al., 2019; Mulvey et al., 2019; Troop-Gordon et al., 2019); however, this research has focused primarily on bystander behavior in traditional bullying, as well as defending behavior, as opposed to steps leading up to defending behavior as outlined in the bystander intervention model (Latané & Darley, 1970). Thus, there is a clear need to examine the measurement of the five-step bystander intervention model as it applies to cyberbullying. Furthermore, it is critical that measurement tools are assessing the same construct across subgroups in order to make meaningful comparisons. Thus, the primary purpose of the current study was to examine the factor structure of the Bystander Intervention Model in Cyberbullying (BIM-C) measure and measurement invariance across White students and students of color (study aim one). We also examined differences across the five steps of the bystander intervention model (study aim two) and the conceptual model between White students and students of color (study aim three).

Method

Participants

There were 872 middle school and high school participants in grades 6 ($N=135$), 7 ($N=149$), 8 ($N=146$), 9 ($N=144$), 10 ($N=122$), 11 ($N=120$), and 12 ($N=56$). This corresponds to an age range of 11 to 18 years old. There were 409 males

(47.1%) and 460 females (52.9%). Three participants did not provide information about their sex. Based on school records, there were 439 White students (51% of sample). The students of color group included 34 Asian (4%), 202 Black (23.5%), 119 Hispanic (13.8%), and 66 multiracial (7.7%) youth, for a total of 421 participants. The authors recognize that having a single "Student of Color" group does not recognize the unique racial, ethnic, and cultural differences inherent in these different groups; however, to have a sufficient sample size for the analyses, these groups were combined.

Measures

Bystander Intervention Model in Cyberbullying (BIM-C) Engagement in the five steps of the bystander intervention model as it relates to cyberbullying was measured via an adapted version of the Bystander Intervention in Bullying (BIB; Nickerson et al., 2014). Modifications were made to the items to reflect cyberbullying (e.g., "Bullying is a problem at my school" was changed to "Cyberbullying is a problem that I see"). The measure contains 23 items measuring the five steps of the bystander intervention model: Notice the Event (3 items, "I have noticed kids being cyberbullied this year"), Interpret as an Emergency (3 items, "When a kids is being cyberbullied they need help"), Accept Responsibility (3 items, "Even if I don't cyberbully others, it is still up to me to try to stop it"), Know How to Help (3 items, "I know what to do to help someone who is being cyberbullied"), and Act (11 items, "If I saw cyberbullying, I would tell the bully to stop"). All items are on a 4-point Likert scale (1—*strongly disagree*, 4—*strongly agree*). In the original scale, the final step (Act) consisted of only four items. For this new measure focused on cyberbullying, the "Act" step was modified to reflect several different intervention options for cyberbullying, which were adapted from the Forms of Bullying Bystander Actions (FBBA; Jenkins et al., 2022) to reflect the cyber context. Jenkins et al. (2022) found that there were three intervention options: direct intervention (e.g., "I would do something to stop the bully"), emotional intervention (e.g., "I would try to make the victim feel better"), and report (e.g., "I would report the incident to an adult" or "I would report the incident through the social media platform, if applicable").

For the original bystander intervention in bullying measure, there is evidence to support the five-factor structure (Jenkins et al., 2018), strong internal consistency estimates, convergent and divergent validity, and measurement invariance across gender for elementary and middle school students (Jenkins et al., 2018). Since the original measure was adapted for the current study, a confirmatory factor analysis was conducted. Internal consistency for each subscale for the current sample is provided in Table 1. Comparisons across students of color and White students are a part of the current study and measurement invariance findings are reported in the "Results" section.

Procedures

Invitations to participate were extended to all middle and high school students at a school in the southeastern USA in a suburban area. The school used passive parental consent procedures, which were approved by the institutional review board. Parents were able to opt out by notifying an administrative assistant at the school, but the researchers were not told how many parents had chosen this option. The 872 participants represent approximately 90% of the student body. On the day of the data collection, participants completed the surveys during their advisory/homeroom period with their classroom teacher present. The link to the survey was made available to all students via the school's online learning platform. Assent was collected from students electronically before they completed the surveys.

Data Analysis Plan

IBM SPSS 24 was used for data cleaning; calculating intercorrelations, means, standard deviations, and internal consistency; and conducting ANOVA analyses. There was a

Table 1 Means, standard deviations, and ANOVA results for total, students of color, and White sample

	Total ($N=839$)		Students of color ($N=400$)		White ($N=429$)		F	p	d
	Mean	SD	Mean	SD	Mean	SD			
Notice ($\alpha=.746$)	6.66	2.15	6.62	2.14	6.71	2.16	.362	.548	.04
Interpret ($\alpha=.807$)	9.70	1.85	9.76	1.70	9.65	1.98	.806	.370	.06
Accept ($\alpha=.856$)	7.45	2.09	7.56	1.92	7.38	2.23	1.50	.221	.09
Knowledge ($\alpha=.796$)	7.70	1.96	7.77	1.81	7.63	2.08	.985	.321	.07
Help ($\alpha=.867$)	37.10	5.48	37.58	5.01	36.66	5.83	6.08	.014	.17
Direct intervention	10.67	2.42	10.83	2.23	10.51	2.60	3.68	.055	.05
Emotional intervention	11.59	2.31	11.74	2.10	11.48	2.49	2.73	.099	.11
Report	8.21	2.03	8.36	1.87	8.06	2.17	4.38	.037	.15

very small amount of missing data (< .5%) since only one survey was used, so cases were deleted listwise for analyses. Data were screened for outliers and non-normality. Skewness and kurtosis values for the individual items were within recommended ranges.

Mplus 8.0 (Muthén & Muthén, 2017) was used for the remaining analyses: (a) confirmatory factor analysis, (b) measurement invariance testing, and (c) structural equation model. Measurement invariance testing is used to determine if the underlying structure of a measurement tool is the same, or invariant, across groups. For this paper, we are examining whether the structure for the Bystander Intervention Measure for Cyberbullying is the same for White students and students of color. Since the research questions are focused on comparing these groups, it is essential to ensure measurement invariance first (Pendergast et al., 2017).

For each step of measurement invariance testing and for the structural equation model, model fit was evaluated by examining the χ^2, root mean square error of approximation (RMSEA), comparative fit index (CFI), and Tucker-Lewis Index (TLI). The χ^2 is sensitive to large sample sizes, so it is recommended that additional fit indices be considered (Hooper et al., 2008; Little, 2013). RMSEA of .05 to .08 and CFI and TLI above .90 indicate acceptable fit (Little, 2013).

Measurement invariance testing was conducted following guidelines from Little (2013) and Pendergast et al. (2017). Measurement invariance testing begins with confirmatory factor analysis for the full sample. Then, additional constraints are added to the model to determine if there are changes in the model fit. If there is little change in the model fit as constraints are added, then there is evidence of measurement invariance. Little (2013) states that in order for measurement invariance to hold, the change in CFI (ΔCFI) and RMSEA (ΔRMSEA) should be less than .01 and .015, respectively. The constraints occur in three stages following the overall confirmatory factor analysis with the whole sample. First, for configural invariance, the sample is split by the grouping variable (students of color v. White), and then, factor loadings and intercepts are allowed to differ across groups. Model fit for both groups is noted. If the model fit is acceptable at the configural stage, then the factor loadings and intercepts are constrained to be equal across the group at the metric stage. If ΔCFI and ΔRMSEA are within limits, then the next step is scalar invariance. In this final step, the item thresholds are also constrained and change in the model fit is examined. There is evidence of measurement invariance if the model fits between the metric and scale stages are within limits.

Results

Confirmatory Factor Analysis

As a first step in the measurement invariance testing process, a confirmatory factor analysis was conducted with the whole sample. A variance–covariance matrix with ML estimation was utilized. The χ^2 was significant (χ^2 (70) = 356.24, $p < .001$), but the CFI (.95), TLI (.94), and RMSEA .064 (CI .057 to .071) were acceptable. All path coefficients between observed variables and the respective latent variable were significant and positive with all standardized path coefficients above .541. These results suggest good overall fit of the data for the full sample and that we could proceed with measurement invariance testing.

Measurement Invariance

Using procedures described in the "Data Analysis Plan" section, we proceeded with measurement invariance testing (see Table 2 for results). The configural model indicated acceptable fit (χ^2 [160] = 471.34, $p < .001$, RMSEA = .069 [CI .061–.076], CFI = .946, TLI = .930). For the students of color and White groups, standardized factor loadings ranged from .530 to .893 and .559 to .843, respectively. The metric model also indicated acceptable fit (χ^2 [174] = 496.14, $p < .001$, RMSEA = .067 [CI .060–.074], CFI = .944, TLI = .933). For the students of color and White groups, standardized factor loadings ranged from 0.533 to .823 and .556 to .847, respectively. Change in CFI and RMSEA was within limits. In the final scalar model, there was acceptable fit (χ^2 [189] = 511.01, $p < .001$, RMSEA = .064 [CI .057–.071], CFI = .945, TLI = 0.938). Model fit improved in this final step. Standardized factor loadings ranged from .530 to .893 and .559 to .843 for the students of color and White groups, respectively.

Table 2 Tests of measurement invariance between students of color and White students for the bystander intervention model in cyberbullying

	χ^2	df	$\Delta\chi^2$	Δdf	RMSEA	CFI	ΔRMSEA	ΔCFI
Overall sample	356.24	70			.064	.953		
Measurement invariance								
Configural	471.34	160			.069	.946		
Metric	496.14	174	24.797	14	.067	.944	.002	.002
Scalar	511.01	189	39.669	15	.064	.945	.003	− .001

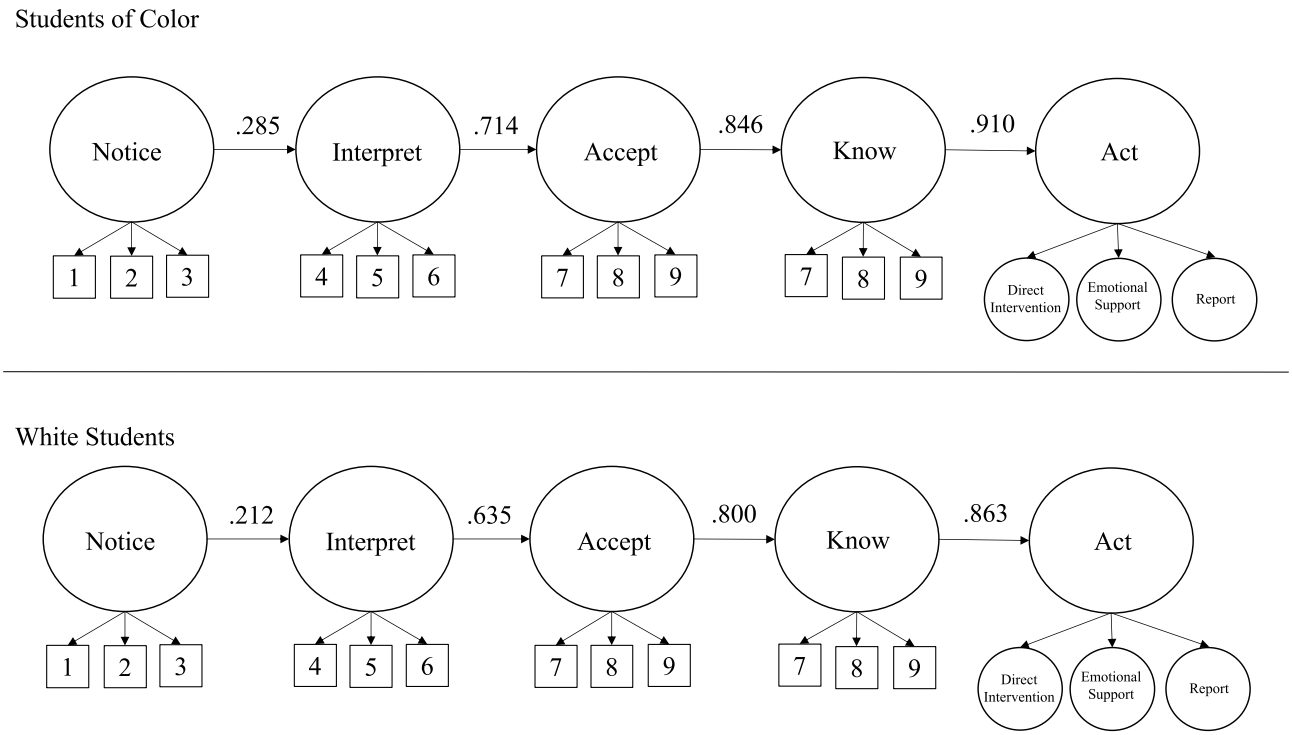

Fig. 1 Standardized path coefficients for bystander intervention model for students of color and White students

Group Comparisons

To determine if students of color and White students differed in their engagement in each of the five steps of the bystander intervention model, an ANOVA was conducted. See Table 1 for means and standard deviations of all variables, as well as the ANOVA results and Cohen's *d* values. Results showed a significant main effect for only the final step, Act $F(1, 827) = 6.079$, $p < .014$, Cohen's $d = .17$, with students of color having lower mean scores for Act. There were no significant differences between the two groups for Notice $F(1, 827) = .362$, $p = .548$; Interpret $F(1, 827) = .806$, $p = .370$; Accept $F(1, 827) = 1.50$, $p = .221$; or Know $F(1, 827) = .985$, $p = .321$. Since the Act step consists of three types of bystander actions (i.e., direct intervention, emotional intervention, and report), an additional ANOVA was conducted to explore differences between groups based on the type of intervention. There was not a significant difference for Emotional Intervention, $F(1, 827) = 2.73$, $p = .099$. There was a significant difference for reporting, $F(1, 827) = 4.38$, $p = .037$, Cohen's $d = .17$, with White students having higher mean scores compared to student of color. For direct intervention, the difference was nearly significant, $F(1, 827) = 3.684$, $p = .055$, Cohen's $d = .05$, with White students having higher means scores than students of color.

Conceptual Model

Structural equation modeling was used to estimate path coefficients between subsequent steps (i.e., Notice, Interpret, Accept Responsibility, etc.) separately for each group (students of color, White). See Fig. 1 for a visual representation of the model with standardized path coefficients and Table 3 for unstandardized and standardized path coefficients,

Table 3 Unstandardized and standardized coefficients, standard error, *p*-value, and chi-square difference testing for students of color and White students proof of concept model

	Students of color				*White*				χ^2dif	$p\,\chi^2$ dif
	b	*β*	*SE*	*p*	*b*	*β*	*SE*	*p*		
Notice Interpret	.297	.285	.058	< .001	.217	.212	.055	< .001	.911	.34
Interpret Accept	.978	.714	.029	< .001	.804	.635	.036	< .001	5.02	.02
Accept Know	1.110	.846	.020	< .001	1.029	.800	.026	< .001	4.32	.03
Know Act	1.168	.910	.017	< .001	1.025	.863	.026	< .001	5.78	.02
						Overall model			10.25	.04

standard errors, and *p*-values of all paths. Chi-square difference testing was used to determine if the strength of the paths was statistically different between the students of color and the White students. The model fit was mediocre to acceptable (χ^2 (197) = 725.63, $p < .001$, CFI .909, TLI .903, and RMSEA was .080 [CI .074 to .087]). The path from Notice to Interpret for students of color ($\beta = .285$, $p < .001$) and White ($\beta = .212$, $p < .001$) was positive and significant and the strength of the paths was not statistically different based on the chi-square difference test. The path from Interpret to Accept Responsibility for students of color ($\beta = .714$, $p < .001$) and White ($\beta = .635$, $p < .001$) was positive and significant and the strength of the path was statistically stronger for students of color. The path from Accept Responsibility to Know What to Do for students of color ($\beta = .846$, $p < .001$) and White ($\beta = .800$, $p < .001$) was positive and significant and the strength of the path was statistically stronger for students of color. The path from Know what to Do to Act for students of color ($\beta = .910$, $p < .001$) and White ($\beta = .863$, $p < .001$) was positive and significant and the strength of the path was statistically stronger for students of color.

Discussion

The current study added to the literature on bystander intervention by modifying the BIB (Nickerson et al., 2014) to examine the steps of the bystander intervention model in cyberbullying along with the measurement invariance and differences in steps and the conceptual model across White students and students of color. While past research has focused on bystander intervention in traditional bullying, the rise of cyberbullying necessitates examining bystander intervention in online contexts (Dillon & Bushman, 2015; Kazerooni et al., 2018). Furthermore, examining racial and ethnic differences in bystander intervention, as well as confirming that the BIB is measuring the same bystander constructs meaningfully across groups for cyberbullying, is important to ensure the validity of the results.

Confirmatory Factor Analysis and Measurement Invariance

The initial CFA with the total sample fit the data well and was significant across all path coefficients. Despite the differences in bystander experiences in traditional bullying and cyberbullying, the results indicated that BIB fits well with the adapted Bystander Intervention Model in Cyberbullying measure. Thus, the bystander intervention model can be applied to cyberbullying and online contexts. Scalar measurement invariance was also established across White students and students of color. This means that the five-step model can not only be applied to cyberbullying, but that the structure of the model and assessment tool is similar across groups. Thus, comparisons in each of the steps and types of intervention can be made.

Group Comparisons

There were no significant mean differences in the first four steps (i.e., Notice, Interpret, Accept, and Know) across students of color and White students. This means that across the two groups, students reported similar levels of engagement in each of the first four steps. While prior research has not examined differences in steps of the bystander intervention model by race or ethnicity, some research suggests that White students may have been more likely to have been taught how to intervene (i.e., the know step) by caregivers (Grassetti et al., 2017) and more likely to accept more responsibility for intervening in traditional bullying situations (i.e., the accept step; Mulvey et al., 2018, 2019). Findings from the current study contradicted this research, indicating that White students and students of color reported similar levels across each of the steps leading up to prosocial bystander intervention in online contexts. However, we found a significant difference in the mean levels of the final step, Act, with White students reporting higher mean levels of Act (i.e., intervening in the cyberbullying situation) compared to students of color. This is generally consistent with prior research which has found White students to report lower pro-bullying attitudes and higher levels of intervening (Bistrong et al., 2019; Troop-Gordon et al., 2019), likely due to their caregivers being more likely to teach them about bystander intervention and to instruct them to intervene (Grassetti et al., 2017). Students of color may also feel less safe intervening compared to White students and may feel that they would be at risk for bullying and harassment, particularly racially bias-based bullying. In examining this difference across groups by types of intervention (i.e., subscales), White students, compared to students of color, were more likely to report when they witnessed cyberbullying to an adult or to a social media platform. Racially minoritized adolescents may be less likely to intervene due to experiences of discrimination in school that may increase perceptions of fear and lack of safety (Mulvey et al., 2018) in intervening in bullying situations. There was no significant difference between White students and students of color for the direct intervention and emotional intervention types.

Conceptual Model

We also examined differences in paths from each step of the Bystander Intervention Model in Cyberbullying across White students and students of color. All steps significantly and positively led to the next step for each group. The first path (from Notice to Interpret) did not

significantly differ between groups, suggesting that all students were just as likely to notice and then interpret bullying-related behavior. Of note, the last four paths were significantly more robust for students of color compared to White students. Due to the exploratory nature of these analyses, it is unclear why this is the case. It may be that students of color are more likely to report following each step of the model (e.g., from interpreting the behavior/scenario to accepting responsibility to knowing what to do to acting). Another possibility is that students of color have a narrower definition of bullying, but once they identify bullying or cyberbullying, they are more likely to follow through each step of the model. Further research is needed to understand why there were no group differences in the relation between noticing bullying-related behavior and interpreting the behavior.

Limitations and Future Directions

There were some limitations to this study. We only relied on self-report surveys to assess bystander intervention in cyberbullying. Self-reported intervention to hypothesized situations may not be an accurate reflection of actual frequency of intervention. Many variables could influence one's likelihood of intervening. Future studies could use experimental designs to assess the degree to which students of color and white students notice cyberbullying in fictitious social media environments, rather than asking about hypothetical intervention. The current study included only one school; thus, future studies should include a larger sample across multiple schools. It may be particularly interesting and important to examine steps of the bystander intervention model across school context, including primarily White schools and more racially diverse schools to see if there are differences in steps of the model based on demographics of school and community. Furthermore, due to the limitations of the sample, we had to collapse all students of color into one category for all comparisons. However, there are likely important and meaningful differences across individual races and ethnicities that should be considered in future research. We were also not able to take context (e.g., perceptions of school experiences and discrimination) into account. Kowalski et al. (2019) state that it can be problematic to examine prevalence across race and ethnicity without taking into consideration other factors including diversity of student/school body and experiences of discrimination/bias.

Future research should consider perceptions of school climate, including school safety and belongingness, when considering bystander intervention among students of color. Furthermore, future research should consider how school racial and ethnic composition may impact bystander intervention across student race and ethnicity. Future research should also examine how bystander intervention in both traditional bullying and cyberbullying may change based on the race and ethnicity of both the perpetrator and the victim. Prior research has found individuals are less likely to intervene when the victim is Black (Nelson et al., 2011) and adolescents may be more likely to intervene if another student of the same race and ethnicity is being targeted (Gönültaş & Mulvey, 2021). We should exert caution in over-interpreting these findings since the effect sizes were very small. Further examination of these factors in bystander intervention research is essential for promoting effective prosocial bystander behaviors to improve the socio-emotional and academic outcomes of adolescents.

Implications and Conclusion

The results of the current study suggest that the bystander intervention model may be a solid framework from which to conceptualize students' bystander behaviors in online bullying across racial and ethnic groups. Schools should teach each step of the bystander intervention model across contexts (e.g., in-person and online) as part of their bullying and cyberbullying prevention programs. This is especially important since students who participate in traditional bullying are also often involved in cyberbullying. Schools should ensure that teachers and staff are able to help all students, including students of color, feel comfortable engaging in each step of the model and reporting all types of bullying to school officials. This may involve promoting a positive, inclusive, and safe school climate that is more accepting of racially and ethnically minoritized students.

Additionally, few studies have examined the bystander intervention model across contexts and across racial and ethnic groups. Future studies should continue this effort to strengthen the validity of the bystander intervention model in these populations and online contexts and use these efforts to examine ways to improve prosocial bystander behavior using this model. Future research can also use these efforts to create school bystander intervention programs and examine the effectiveness of these programs based on this model to help schools implement this research into practice. Overall, the results of the current study suggest that the bystander intervention model is useful in examining bystander intervention in both traditional bullying and cyberbullying situations and should be utilized by schools to promote prosocial bystander intervention behaviors among youth.

Data, Materials, and/or Code Availability Available upon request.

Declarations

Ethics Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. IRB approval was provided prior to data collection.

Informed Consent Passive parental consent and student assent were obtained for all individual participants included in the study.

Conflict of Interest The authors declare no competing interests.

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