ORIGINAL ARTICLE

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Breakfast Skipping, Psychological Distress, and Involvement in Bullying: Is There a Connection?

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Abstract
The occurrence of bullying and cyber-bullying is widespread throughout the world, and serious consequences of this complex phenomenon continue to plague individuals and society. Many studies have revealed a link between victimization and multiple adversities including health and quality of life issues. Since very little research attention has been given to evaluate victimization and breakfast-eating behavior in adults, the current study sought to examine the association between breakfast skipping, psychological distress, and victimization (both traditional and cyber). Three hundred eighty-two undergraduate students (235 females, 147 males) enrolled in Introductory Psychology completed surveys assessing bullying involvement, psychological distress, and breakfast-eating tendencies. Results revealed that being bullied (face-to-face and online) was correlated negatively with breakfast consumption and positively with psychological distress. A hierarchical linear regression model indicated that psychological distress, breakfast skipping, and gender were significant predictors of cyber-victimization, while psychological distress and breakfast skipping were significant predictors of traditional victimization. Utilizing the biopsychosocial theoretical model, the findings suggest that psychological distress may help explain the link between bullying victimization and breakfast skipping. Results of the study support the relevance of breakfast-eating behavior in the phenomenon of bullying victimization and the need to include nutritional education in intervention programs.

Keywords Breakfast skipping · Bullying · Victimization · Psychological distress

Bullying is a multifaceted form of interpersonal aggression that plagues individuals, families, and communities worldwide. Prevalence rates continue to rise (Arseneault 2018), with a recent meta-analysis across 80 studies indicating an incidence rate of 36% for traditional bullying involvement and 15% for cyberbullying involvement (Modecki et al. 2014). In 2014, the US Center for Disease Control and Department of Education published the first federal uniform definition of bullying:

> Bullying is any unwanted aggressive behavior(s) by another youth or group of youths who are not siblings or current dating partners that involves an observed or perceived power imbalance and is repeated multiple times or is highly likely to be repeated. Bullying may inflict

harm or distress on the targeted youth including physical, psychological, social, or educational harm. (Gladden et al. 2014, p. 7).

Cyberbullying, the electronic counterpart to traditional bullying, has been defined as "willful and repeated harm inflicted through computers, cell phones, and other electronic devices" (Hinduja and Patchin 2015, p. 11). Although both definitions encompass Olweus' (1993, 2013) conceptualization of bullying that includes characteristics of "persistence over time" and "harmful consequences," the federal definition of bullying lacks the notion of the behavior being intentional (Hinduja and Patchin 2015).

Research indicates that being a victim of traditional and cyber-bullying is linked to many social, emotional, and physical problems. Victims exhibit higher levels of depression, loneliness, psychological distress, and anxiety (Bonanno and Hymel 2010; Craig 1998; Jochman et al. 2017; Kim and Leventhal 2008; Nasheeda et al. 2017; Schneider et al. 2012; Yin et al. 2017) and lower levels of self-esteem (Callaghan and Joseph 1995; Tsaousis 2016) compared to their non-

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bullied counterparts. Being victimized is also associated with poor physical health (Boynton-Jarrett et al. 2008; Gini and Pozzoli 2013; Knack et al. 2011) including fatigue, difficulty sleeping, headaches, abdominal pain, breathing problems, and poor appetite (Menrath et al. 2015; Monks et al. 2009; Sigurdson et al. 2014). In addition, studies have indicated that victimization of bullying may lead to chronic health problems, self-injury, suicide ideation (Hinduja and Patchin 2010; Edwards et al. 2016; Fahy et al. 2016; Kelly et al. 2015; Kowalski and Limber 2013), and the development of other severe mental health problems (Arseneault 2018; Troop-Gordon et al. 2015; Zarate-Garza et al. 2017). Moreover, research suggests that victimization is impactful into adulthood (Arseneault 2018); for instance, Evans-Lacko et al. (2017) reported that victims of bullying are more likely to use mental health services in childhood, adolescence, and midlife than are individuals who have not experienced bullying victimization. As a result of these findings and others, bullying victimization has been identified as a significant international public health issue (Bogart et al. 2014; Gini and Pozzoli 2013; Jochman et al. 2017; Modecki et al. 2014).

Although victimization has been linked to a number of adversities, one area that has received inadequate research attention is dietary habits (Albaladejo-Blazquez et al. 2018; Jackson 2017). It is well-documented that unhealthy dietary patterns are associated with poor overall well-being (Jarman et al. 2015; Schnettler et al. 2017; Utter et al. 2018). Interestingly, only a few studies have explored quality of dietary behavior and its relationship to bullying, and they reported mixed results. Albaladejo-Blazquez et al. (2018) investigated the dietary behaviors of Spanish adolescents and showed that being bullied was negatively correlated with healthy dietary habits such as adequate consumption of fresh fruits and vegetables and the use of cooking with olive oil. On the other hand, Jackson (2017) examined dietary habits of a cross-national sample of youth and reported a significant positive correlation between low-quality diet and bully perpetration; however, no association was found between diet quality and victimization. Moreover, Jackson and Vaughn (2018) indicated that bully perpetration was significantly associated with low health food consumption, high junk food consumption, and frequent meal deprivation, while bully victimization was not linked to any of these dietary dimensions.

Recently, a small number of studies have unveiled a significant association between breakfast skipping and involvement in bullying, with some researchers distinctively identifying breakfast skipping as a significant predictor of bullying victimization (Sampasa-Kanyinga et al. 2014; Merrill and Hanson 2016; Sampasa-Kanyinga and Willmore 2015). Merrill and Hanson (2016) found that consistent breakfast consumption is a protective behavior against both face-to-face and cyberbullying victimization for adolescents. Sampasa-Kanyinga et al. (2014) and Sampasa-Kanyinga and Willmore (2015) reported significant relationships between

bullying victimization (both traditional and online), breakfast skipping, and psychological distress among middle school and high school students, indicating that psychological distress mediates the association between victimization and breakfast skipping. As mentioned previously, Albaladejo-Blazquez et al. (2018) indicated that some dietary habits were significantly correlated with victimization; nonetheless, eating breakfast regularly was not one of them. The aforementioned studies involve the investigation of children and adolescents; however, to the best of my knowledge, no research has evaluated the breakfast-skipping behaviors of adults and any potential association they may have with bullying victimization. As indicated by Arseneault (2018), research exploring various aspects and outcomes of bullying victimization of adults is lacking and warrants attention. Thus, the current study sought to investigate the potential associations between breakfast skipping, victimization, and psychological distress and if they are generalizable to the adult population.

The biopsychosocial theoretical model may be useful in understanding the link between victimization, irregular breakfast consumption, and psychological distress. The model suggests that biological, psychological, and social factors and their complex interactions should be considered in explaining physical and mental health (Engel 1977, 1980). Simply put, the model posits that the mind and the body are interdependent and connected rather than independent entities (Sarafino and Smith 2014). Thus, wellness and illness are not just physical states, but also encompass psychological and social factors (Engel 1977).

Congruently, psychological distress is multifaceted and involves biological, psychological, and social influences (Nasheeda et al. 2017; Swearer and Hymel 2015; Yau and Potenza 2013). It is well-documented that bullying victimization (a traumatizing social experience) serves as a significant source of stress for many victims (Kuykendall 2012; Swearer and Hymel 2015; Troop-Gordon et al. 2015). From a biological standpoint, stress stimulates the brain to secrete hormones that activate the sympathetic nervous system, and, in turn, the fight-or-flight response. Some stress hormones that are activated, such as corticotropin-releasing factor (CRF) and noradrenaline, suppress the appetite (Kuykendall 2012; Yau and Potenza 2013). Moreover, stress challenges an organism's natural state of homeostasis which triggers the individual to engage in behaviors that attempt to regain the lost equilibrium (Yau and Potenza 2013). Eating behavior is one type of homeostasis that can be disrupted (Kuykendall 2012). Thus, a potential reaction to victimization is loss of appetite and skipping meals.

In addition, psychological factors playing a role may include deficits in coping skills. Victims are often withdrawn and lonely (Graham and Juvonen 1998; Guerra et al. 2011); thus, they are unlikely to seek help from others. As an attempt to manage the high levels of stress experienced from

perpetration, victims are at high risk for relying on negative coping strategies such as social isolation, alcohol abuse, tobacco use, computer gaming, television viewing, and junk food consumption (Jochman et al. 2017; Woodhead et al. 2014). Restricted food intake such as breakfast skipping could be another ineffective coping strategy used by victims due to the perceived loss of control that many of them experience (Kuykendall 2012). Restricted food consumption is a tangible behavior that they can control, which might help soothe their distress (Kuykendall 2012; Zarate-Garza et al. 2017). Therefore, the present study sought to examine the association between psychological distress, bullying victimization, and breakfast-eating behaviors through the biopsychosocial theoretical lens.

The current study investigated the relationships between breakfast-eating tendencies, psychological distress, and involvement in bullying among adults attending college. It was hypothesized that individuals who have experienced high levels of victimization (both face-to-face and online) would exhibit higher levels of psychological distress and lower frequency of breakfast consumption compared to individuals who have experienced low levels of victimization. It was also predicted that breakfast skipping, psychological distress, involvement in traditional bullying (perpetration and victimization) and involvement in cyber-bullying (perpetration and victimization) would all be associated. In addition, it was hypothesized that breakfast consumption and psychological distress would be significant predictors of traditional bullying victimization and cyber-bullying victimization.

Method

Participants

Participants were 382 undergraduate students who took part in the study as partial fulfillment of a requirement in Introduction to Psychology classes. Participants for this study were a subset of all students enrolled in introductory Psychology during the Fall 2017 semester at one urban university. All students enrolled were given the opportunity to participate in any research study being offered to introductory students. Approximately 4000 students were enrolled in "Introduction to Psychology" during the time of data collection. There were 33 sections of the class, with class sizes ranging from 19 to 115 students.

The mean age of the sample was 21.84 years (SD = 4.30), with 147 male and 235 female participants. Ethnicity of the sample included 58.5% Caucasian, 25.3% Hispanic, 5% "other", 3.4% Black, 4.2% Asian, 1.6% American Indian/Alaska Native, and 1% Pacific Islander. The characteristics of the sample (including age and ethnicity) were representative of the university's population.

Materials

Traditional Bullying and Victimization (BVQ) A 21-item survey was used to assess face-to-face bullying and victimization. In this modified version of Olweus' Bully/Victim Questionnaire (Olweus 1993), participants were asked a series of questions which measured the extent of their victimization from verbal or physical bullying and the extent to which they bullied others either verbally or physically in face-to-face situations. Solberg and Olweus (2003) provide evidence of the validity and reliability of this scale for measuring bullying and victimization experiences.

Verbal bullying included behaviors such as name-calling; spreading lies or rumors; making hurtful comments regarding race/ethnicity; or making hurtful comments of a sexual nature. Physical bullying included behaviors such as hitting, kicking, or pushing; stealing or destroying property; or being threatened or forced to do things. Within each section, participants were asked to indicate the frequency with which they were either victims or perpetrators of the particular type of bullying. For each question, response options included 0 "never", 1 "once", 2 "2 or 3 times", 3 "regularly (e.g., 1–2 times per week)", and 4 "frequently (e.g., several times per week)".

Responses were summed across bullying (perpetration) items and victimization items, resulting in a global index of the extent to which the participant was either a victim or a perpetrator of face-to-face verbal and physical bullying. A higher score on this index indicates a higher frequency of traditional bullying perpetration and traditional victimization.

Descriptive statistics and internal consistency for the victim and bullying indices are reported in Table 1. Men scored significantly higher on the bullying perpetration index than did women ($t(378) = 3.30$, $p = .001$, $d = 0.44$). There was no gender difference for the victim index ($t(376) = -1.60$, $p = .110$).

Cyberbullying and Victimization (CBVQ) This measure was developed by Hinduja and Patchin (2015) and was utilized to assess involvement in cyberbullying. The participants rated 18 statements which assessed their frequency and prevalence of cyberbullying and cyber-victimization during their lifetime. The victimization items include, for example, "Someone posted mean or hurtful comments about me online" and "Someone spread rumors about me online." The perpetration items include, for example, "I spread rumors about someone online" and "I threatened to hurt someone online." Responses are scored on a five-point scale ranging from 0 (never) to 4 (many times). Higher scores represent greater involvement in online aggression as either a perpetrator or victim. Hinduja and Patchin (2015) reported internal reliability coefficients (Cronbach alphas) ranging from 0.892–0.935 for the cyberbully victimization scale and 0.935–0.969 for the cyberbully offending scale.

Table 1 Descriptive statistics for BVQ, CBVQ, PD, and BRFAST scales by gender

Scale	Males (n = 147) Mean (SD)	Females (n = 235) Mean (SD)	Range	Alpha	Skewness	Kurtosis
BVQ perpetration	**3.15 (3.49)**	**2.13 (2.50)**	0–17	0.88	2.10	6.16
BVQ victimization	7.22 (5.36)	8.13 (5.44)	0–24	0.87	0.85	0.32
CBVQ Perpetration	1.53 (2.92)	1.29 (2.58)	0–26	0.88	2.86	10.20
CBVQ victimization	**3.10 (4.81)**	**4.82 (5.59)**	0–29	0.91	1.78	3.55
PD	**11.95 (7.51)**	**15.46 (7.93)**	0–36	0.92	0.62	− .27
BRFAST	2.05 (1.29)	2.03 (1.32)	0–5	NA	0.16	− 1.12

Significant differences in bold; all significant differences were $p < .01$

Descriptive statistics and internal consistency for the current study are reported in Table 1. Women scored significantly higher on the cyberbullying victimization index than did men ($t(379) = − 3.07$, $p = .002$, $d = 0.33$). There was no gender difference for the cyberbullying perpetration ($t(380) = 0.859$, $p = .391$).

Psychological Distress (PD) Kessler's Psychological Distress Scale (Kessler et al. 2002) was utilized to assess depressive and anxiety symptoms occurring over the most recent 4-week time frame. The survey consists of 10 questions measuring an individual's global level of distress. Example items include: "How often do you feel so nervous that nothing can calm you down?" "How often do you feel hopeless?" and "How often do you feel worthless?" Responses are scored on a five-point scale ranging from "none of the time" to "all of the time." Higher scores are indicative of higher levels of psychological distress. Internal reliability coefficients (Cronbach alphas) of 0.93 (Kessler et al. 2002) and 0.92 (Sampasa-Kanyinga and Willmore 2015) have been reported for this ten-item scale. Arnaud et al. (2010) indicated that this assessment tool possesses strong psychometric characteristics.

Descriptive statistics and internal consistency for the current study are reported in Table 1. Women reported significantly higher levels of psychological distress than did men ($t(375) = − 4.27$, $p < .001$, $d = 0.45$).

Breakfast-Eating Behaviors of Self (BRFAST) One additional question was developed by the researcher to assess breakfast-eating tendencies. The participants were asked to report the average frequency of breakfast consumption of themselves. Responses were scored on a five-point scale ranging from "never eating breakfast" to "eating breakfast 7 days per week." Higher scores represent eating breakfast regularly. This method of assessing breakfast consumption has been widely used by other researchers (Lien 2007; Merrill and Hanson 2016; Sampasa-Kanyinga et al. 2014; Sampasa-Kanyinga and Willmore 2015). Results from the current study indicated that there was no significant gender difference in breakfast-eating behavior ($t(380) = 0.13$, $p = .897$).

Procedure

Participants were asked through an online format to complete all the questionnaires. The students logged into the system via an on-campus computer lab or home computer. Once they consented to participate in the study, they were immediately prompted to complete the assessments. There was no time limit given. The order of the questionnaires was counterbalanced in an attempt to control for order effects.

Results

Data Screening

Prior to data analysis, data were screened for normality. Skewness and kurtosis values for each scale can be found in Table 1. Kolmgorov-Smirnov values for each scale implied that the population distributions differed significantly from normality (all p values < .001). The Kolmgorov-Smirnov test tends to be quite sensitive (Field 2013) so these results were not surprising given the sample size. The BVQ perpetration, BVQ victimization, CBVQ perpetration, and CBVQ victimization scales were all positively skewed and leptokurtotic; the PD scale was positively skewed. Frequency distribution histograms revealed that some scores were quite high (see Table 1); however, only one to four participants reported the highest possible score on any scale. Moreover, there were no scores that were substantially separated (i.e., more than 1.5 SD from the main body of the distribution). Thus, following Cohen and Cohen (1983, p. 128), no cases were excluded from the analyses.

The use of independent samples t tests was deemed appropriate with these data as the distribution of differences between sample means approaches normality when a sample size of this nature is used. In order to examine the correlation between scales, the Spearman correlation was utilized since it is less sensitive to skew than is the Pearson correlation (Pallant 2013). A multiple linear regression analysis was used to examine the combined relationships between both types of victimization (traditional and cyber), breakfast consumption, and

psychological distress. This analysis makes no assumptions regarding normality of predictor variables; thus, it would not be affected by skewed distributions.

Relations Between Victimization (Traditional and Cyber), Psychological Distress, Breakfast Consumption, and Bullying Perpetration (Traditional and Cyber)

Independent samples t tests for both males and females were used to examine the difference between individuals who experience high versus low levels of cyber-victimization on the BVQ, CBVQ, PD, and BRFAST scales. Participants were divided into two groups (high cyber-victimized versus low cyber-victimized) based on their total scores on the CBVQ victimization items; high-victimized reported a score greater than the median value across all male or female respondents and low-victimized reported a score less than or equal to the median value across all male or female respondents (male median = 1; female median = 3). The process used for high vs. low victimized group formation is in line with other studies investigating bullying victimization (Albaladejo-Blazquez et al. 2018; Jochman et al. 2017).

Means and standard deviations for each variable are presented in Table 2. Results indicated that, among males and females, individuals who have experienced high levels of cyber-victimization report significantly more involvement in traditional bullying perpetration [(males, $t(145) = -5.29$, $p < .001$, $d = 0.86$), (females, $t(231) = 2.28$, $p = .023$, $d = 0.30$)], cyberbullying perpetration [(males, $t(145) = -8.03$, $p < .001$, $d = 1.18$), (females, $t(232) = -4.94$, $p = .000$, $d = 0.65$)], and traditional victimization [(males, $t(144) = -4.58$, $p < .001$, $d = 0.78$), (females, $t(230) = -8.51$, $p < .001$, $d = 1.12$)]. In addition, victims of cyber bullying exhibit significantly higher levels of psychological distress [(males, $t(143) = -3.96$, $p < .001$, $d = 0.69$), (females, $t(229) = -5.19$, $p < .001$, $d = 0.68$)] and are more likely to skip breakfast [(males, $t(145) = 2.38$, $p = .018$, $d = 0.42$), (females, $t(232) = 3.03$, $p = .003$, $d = 0.40$)] compared to their counterparts who experience low levels of cyber victimization.

Independent samples t tests for males and females were also conducted to examine the difference between individuals who experience high versus low levels of traditional victimization on the BVQ, CBVQ, PD, and BRFAST scales. Participants were divided into two groups (high-victimized versus low-victimized) based on their total scores on the BVQ victimization items; high-victimized reported a score greater than the median value across all male/female respondents and low-victimized reported a score less than or equal to the median value across all male/female respondents (male median = 6; female median = 7).

Means and standard deviations for each variable are presented in Table 3. Results indicated that, among males and females, individuals who have experienced high levels of traditional victimization report significantly more involvement in traditional bullying perpetration [(males, $t(144) = -4.75$, $p < .001$, $d = 0.78$), (females, $t(230) = -3.73$, $p < .001$, $d = 0.49$)], cyberbullying perpetration (males, $t(144) = 3.21$, $p = .002$, $d = 0.53$), (females, $t(230) = -3.49$, $p = .001$, $d = 0.46$)], and cyber-victimization (males, $t(144) = -4.67$, $p < .001$, $d = 0.76$), (females, $t(230) = -8.42$, $p < .001$, $d = 1.11$)]. In addition, victims of traditional bullying exhibit significantly higher levels of psychological distress [(males, $t(142) = -4.87$, $p < .001$, $d = 0.81$), (females, $t(228) = 6.37$, $p < .001$, $d = 0.84$)] and are more likely to skip breakfast [(males, $t(144) = 2.87$, $p = .005$, $d = 0.48$), (females, $t(230) = 2.07$, $p = .039$, $d = 0.28$)] compared to their counterparts who experience low levels of traditional victimization.

Spearman correlations were used to examine the relationships between the BVQ, CBVQ, PD, and BRFAST scales. As seen in Table 4, among males, scores on all the variables were positively correlated with each other with the exception of bullying perpetration (both traditional and cyber) not being significantly correlated with breakfast-eating behavior. The same results were found for females in addition to bullying perpetration not being significantly correlated with psychological distress.

Predictability of Psychological Distress and Breakfast-Eating Behavior on Victimization (Traditional and Cyber)

In order to evaluate how breakfast skipping and psychological distress relate to cyber-victimization, a linear regression model was constructed in which gender, breakfast-eating behavior, and psychological distress were used to predict cyber-victimization. A hierarchical regression model was utilized, with gender entered on the first step, breakfast-eating behavior entered on the second step, and psychological distress entered on the third step. This stepwise approach allowed for examination of changes in the strength of relationships between the predictors and cyber-victimization as other predictors entered the model. Specifically, the current study sought to evaluate the relationship between breakfast skipping and cyber-victimization both before and after considering psychological distress.

Results are presented in Table 5. Gender was entered in Step 1 of the model and was found to be significant ($\beta = 0.15$, $p = .003$). In the second step, including breakfast-eating behavior in the model, this factor was found to be significant ($\beta = -0.16$, $p = .001$) and gender remained a significant predictor ($\beta = 0.09$, $p = .003$). In the third step, psychological distress was entered and found to be significant ($\beta = 0.29$, $p < .001$). Note that when psychological distress was entered into the model, gender and breakfast skipping no longer predicted cyber-victimization.

Table 2 Means (SD) of BVQ perpetration, CBVQ perpetration, PD, and BRFAST scores by cyber-victimization status

Males	Low cyber-victimization ($n = 97$)	High cyber-victimization ($n = 50$)
BVQ		
Perpetration	**2.14 (2.65)**	**5.10 (4.09)***
Victimization	**5.87 (4.67)**	**9.90 (5.66)***
CBVQ		
Perpetration	**0.371 (.971)**	**3.78 (3.97)***
PD	**10.27 (6.93)**	**15.25 (7.59)***
BRFAST	**2.23 (1.30)**	**1.70 (1.23)***
Females	Low cyber-victimization ($n = 114$)	High cyber-victimization ($n = 120$)
BVQ		
Perpetration	**1.75 (2.39)**	**2.50 (2.56)***
Victimization	**5.43 (4.11)**	**10.75 (5.31)***
CBVQ		
Perpetration	**0.474 (1.33)**	**2.07 (3.19)***
PD	**12.80 (6.96)**	**17.93 (8.01)***
BRFAST	**2.30 (1.31)**	**1.78 (1.29)****

Significant differences in bold

*$p < .05$

**$p < .01$

***$p < .001$

A second linear regression model was constructed in order to examine how breakfast skipping and psychological distress relate to traditional victimization. Gender, breakfast-eating behavior, and psychological distress were used to predict traditional victimization. A hierarchical regression model was utilized, with gender entered on the first step, breakfast-eating behavior entered on the second step, and psychological distress entered on the third step. Again, the stepwise approach allowed for examination of changes in the strength of relationships between the predictors and traditional victimization as other predictors entered the model.

Table 3 Means (SD) of BVQ perpetration, CBVQ perpetration, PD, and BRFAST scores by traditional victimization status

Males	Low traditional victimization ($n = 76$)	High traditional victimization ($n = 70$)
BVQ		
Perpetration	**1.89 (2.58)**	**4.46 (3.85)***
CBVQ		
Perpetration	**0.811 (2.34)**	**2.31 (3.29)***
Victimization	**1.42 (2.70)**	**4.91 (5.88)***
PD	**9.24 (5.97)**	**14.93 (7.97)***
BRFAST	**2.34 (1.36)**	**1.74 (1.14)***
Females	Low traditional victimization ($n = 113$)	High traditional victimization ($n = 119$)
BVQ		
Perpetration	**1.53 (2.28)**	**2.73 (2.62)***
CBVQ		
Perpetration	**0.731 (1.64)**	**1.63 (2.25)***
Victimization	**2.00 (3.18)**	**7.18 (5.77)***
PD	**12.21 (6.58)**	**18.29 (7.79)***
BRFAST	**2.23 (1.28)**	**1.87 (1.33)***

Significant differences in bold

*$p < .05$

**$p < .01$

***$p < .001$

Table 4 Spearman correlations between BVQ, CBVQ, PD, and BRFAST scales

Males

	BVQ Perpetration	Victimization	CBVQ Perpetration	Victimization	PD	BRFAST
BVQ						
Perpetration	---	.				
Victimization	.50**	---				
CBVQ						
Perpetration	.46**	.37**	---			
Victimization	.38**	.43**	.56**	---	--	
PD	.30*	.41**	.18*	.27**		
BRFAST	-.03	-.23**	-.10	-.22**	-.32**	--

Females

	BVQ Perpetration	Victimization	CBVQ Perpetration	Victimization	PD	BRFAST
BVQ						
Perpetration	---	.				
Victimization	.34**	---				
CBVQ						
Perpetration	.38**	.27**	---			
Victimization	.23**	.60**	.50**	---		
PD	.09	.43**	.13*	.36**	--	
BRFAST	-.05	-.17*	-.03	-.22**	-.24**	--

*$p < .05$

**$p < .01$

Results are presented in Table 6. When gender was introduced in the first step, it was not a significant predictor. In the second step, breakfast-eating behavior was entered into the model; this factor was found to be significant ($\beta = -0.199$, $p < .001$). In the third step, psychological distress was entered and found to be significant ($\beta = 0.38$, $p < .001$). It is notable that when psychological distress was entered into the model, breakfast skipping no longer predicted cyber-victimization.

Table 5 Regression model: gender, breakfast skipping, and psychological distress predicting cyber-victimization

	β	R^2	ΔR^2
Step 1			
Gender	0.154*		
$F(1,374) = 9.06$, $p = .003$		0.024	0.024*
Step 2			
Gender	0.153*		
Breakfast	−0.163**		
$F(2,373) = 9.84$, $p < .001$		0.05	0.026**
Step 3			
Gender	0.093		
Breakfast	−0.088		
PD	0.285**		
$F(3,372) = 17.28$, $p < .001$		0.122	0.072**

*$p < .05$

**$p < .001$

Table 6 Regression model: gender, breakfast skipping, and psychological distress predicting traditional victimization

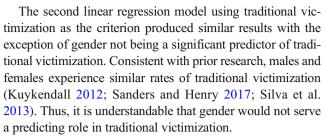|	β	R^2	ΔR^2
Step 1			
Gender	0.087		
$F(1,372) = 2.81$, $p = .095$		0.007	0.007
Step 2			
Gender	0.086		
Breakfast	−0.189**		
$F(2,371) = 8.36$, $p < .001$		0.043	0.036**
Step 3			
Gender	0.007		
Breakfast	−0.091		
PD	0.383**		
$F(3,370) = 25.95$, $p < .001$		0.174	0.131**

*$p < .05$

**$p < .001$

Discussion

The current study was designed to explore the relationship between bullying victimization (traditional and cyber), psychological distress, and breakfast-eating behavior. As hypothesized, results revealed that individuals who experience high levels of traditional bullying victimization and/or high levels of cyber-victimization report significantly higher levels of psychological distress and infrequent breakfast-eating behaviors compared to their non-bullied counterparts. This is akin to past research validating links between bullying victimization and psychological distress (Bonanno and Hymel 2010; Jochman et al. 2017; Nasheeda et al. 2017; Swearer and Hymel 2015; Yin et al. 2017). Furthermore, this finding is consistent with former research indicating that victimization is positively correlated with psychological distress and negatively correlated with breakfast consumption (Sampasa-Kanyinga et al. 2014; Sampasa-Kanyinga and Willmore 2015). These results strengthen the external validity of past work by lending support of generalizability of the findings to the adult population. To the best of my knowledge, this study provides the first investigation to demonstrate a link between both traditional victimization and cyber-victimization with breakfast skipping among adults.

The second key finding of the present investigation showed that bullying involvement, psychological distress, and breakfast-eating behaviors were all significantly correlated, regardless of gender. The only exceptions were the associations between bullying perpetration (both traditional and cyber) and breakfast consumption. That is, there was no link between bullying tendencies and breakfast-eating behaviors. This result contradicts research reported by Jackson and Vaughn (2018) showing a significant association between dietary habits (including breakfast skipping) and bullying perpetration. The inconsistency may be due to the sample age differences with Jackson and Vaughn (2018) assessing youth, while the current study investigated adults. Future research exploring potential developmental differences is warranted.

Further examination of the current data using a linear regression model unveiled significant predictors of cyber-victimization. Results from the regression analysis showed that gender, breakfast skipping, and psychological distress were significant predictors of cyber-victimization. With regard to gender, results indicate that females are more likely to be victimized online than are males. These findings replicate the well-documented gender difference found in the prevalence of cyber-victimization (Baldry et al. 2015; Holt et al. 2016; Kowalski and Limber 2007). Furthermore, the findings revealed that the likelihood of cyber-victimization is significantly greater among individuals who engage in breakfast skipping. It is unlikely that breakfast skipping itself causes bullying victimization; nonetheless, the current results indicate that breakfast consumption plays some type of role in the relationship between psychological distress and victimization.

The second linear regression model using traditional victimization as the criterion produced similar results with the exception of gender not being a significant predictor of traditional victimization. Consistent with prior research, males and females experience similar rates of traditional victimization (Kuykendall 2012; Sanders and Henry 2017; Silva et al. 2013). Thus, it is understandable that gender would not serve a predicting role in traditional victimization.

The most notable finding of this investigation was centered on the role that breakfast skipping plays in understanding bullying victimization. Results revealed that the likelihood of individuals being victimized (traditional and cyber) is significantly greater among those who do not eat breakfast regularly. However, the predictive value of breakfast consumption was not significant when psychological distress was considered. This suggests that the reason breakfast skipping is associated with victimization is because of its link to psychological distress. Accordingly, breakfast-eating behaviors may serve in a moderating role of the association between victimization and psychological distress. These findings corroborate Sampasa-Kanyinga et al. (2014) and Sampasa-Kanyinga and Willmore's (2015) conclusion that depression partially mediates the associations between both traditional victimization and cyber victimization and breakfast skipping. Moreover, the results lend support for Merrill and Hanson's (2016) finding that eating breakfast every day can serve as a protective behavior against bullying victimization.

The current findings may be interpreted utilizing the biopsychosocial theoretical framework which suggests that relevant biological, psychological, and social factors are interdependent and need to be taken into consideration when trying to explain the complex phenomenon of human behavior (Engel 1977). The results from the present study suggest that the three areas (biological, psychological, and social) are interlinked and may contribute collectively to help explain the relationship between victimization, breakfast skipping, and psychological distress. According to Yau and Potenza (2013), the physical body is impacted by the heightened stress involved with victimization. Stress stimulates the brain to secrete stress hormones such as CRF and noradrenaline which may suppress appetite. Thus, it is a possibility that the association between breakfast skipping and victimization can be explained by the biological impact that victimization has on the physical body. Likewise, psychological distress can hinder one's ability to cope with stress effectively (Jochman et al. 2017; Troop-Gordon et al. 2015; Woodhead et al. 2014). Therefore, victims of bullying may utilize negative coping strategies such as breakfast skipping as an attempt to manage the stress. As indicated by Zarate-Garza et al. (2017), restricted food intake such as breakfast skipping is a concrete behavior that may help soothe one's perceived loss of control from victimization.

Although the present study contributes to the bullying victimization literature, several limitations should be taken into

account. First, the cross-sectional and correlational nature of the research needs to be considered. This type of design limits the causal inferences that can be drawn from the data. Although the current findings suggest a link between victimization (both traditional and cyber), irregular breakfast consumption, and psychological distress, a causal direction cannot be confirmed. According to Swearer and Hymel (2015), "the understanding of the psychological underpinnings of bullying and victimization is much like the 'chicken or egg' conundrum" (p. 346). Teasing apart the causal nature of the various factors involved continues to be a challenge. Longitudinal studies are needed to explore causation including how breakfast consumption could protect victims from the negative consequences of bullying. Moreover, cross-sectional research utilizing probability-based sampling would provide a greater insight than the non-probability convenience sample used in the present study. These types of inquiries could reinforce the proposition of including dietary education into intervention programs.

Second, the study relied exclusively on self-report measures in order to assess potentially sensitive personal information. Juvonen et al. (2001) emphasized the value of examining the first-hand perception of victim's experiences; thus, self-report techniques were used in this investigation. However, self-report data are subject to response-set and social desirability bias. Further research with reports from other individuals who play a significant role in the victim's life is warranted.

Additional limitations include non-response bias. All students enrolled in any introductory psychology course at the participating university were given the opportunity to participate in the study. Those who chose to participate may possess certain traits that could inhibit the generalizability of the results to all college students. Moreover, the sample is somewhat unique in that it represents the participating university's population of non-traditional aged college students. Further research should seek to replicate these results with more traditional college-aged adults. Lastly, the current investigation did not control for potential confounding variables related to dietary habits such a body mass index (BMI) and socioeconomic status (SES). Since past research has reported associations between bullying victimization and BMI (Mamun et al. 2013) and SES (Jackson 2017; Sampasa-Kanyinga and Willmore 2015), these factors should be taken into consideration when examining relationships involving eating behaviors.

Despite these limitations, results of the study support the relevance of breakfast-eating behavior in the phenomenon of bullying victimization. Although the exact causal nature between victimization, psychological distress, and breakfast skipping is unclear, clinicians, educators, parents, physicians, and other health service professionals should be knowledgeable of potential warning signs of victimization and recognize that breakfast-skipping behaviors may be a possible "red flag" for identifying bullying victimization. Increasing awareness

can help practitioners to more closely monitor potential victims so that the sooner they notice poor dietary habits (such as breakfast skipping), they can intervene and begin providing appropriate support. Results from the current study imply that support needs to include intervention programs oriented to promote nutritional education and healthy eating habits. Moreover, intervention programs should consider addressing the psychological component (psychological distress) within the context of nutritional education. That is, intervention programs should contemplate inclusion of emotional regulation, stress management, and nutritional education when assisting victims of bullying.

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