RESILIENCE, BULLYING, AND MENTAL HEALTH: FACTORS ASSOCIATED WITH IMPROVED OUTCOMES

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Resilience is associated with bouncing back from adversity, and the term currently enjoys significant popular appeal. However, understanding of resilience is often superficial. The current paper examined 105 primary and high school students' experiences of resilience and bullying, and considered resilience as a hierarchical factorial model. The study found that higher levels of resilience subfactors were a protective factor regarding depression and anxiety; that individuals with poorer resilience were more likely to engage in bullying behaviors; that individuals with poorer levels of resilience were more likely to be victims of bullying; and, that gender did not appear to be a major variable regarding resilience and bullying. These findings suggest that resilience interventions that focus on improving specific resilience elements including optimism, trust, tolerance, sensitivity, and impairment may be more efficacious than interventions focused on other resilience elements. © 2017 Wiley Periodicals, Inc.

The construct resilience has significant popular currency within psychology and education fields. However, at both practitioner and popular levels resilience often appears to be vaguely understood as a global construct associated with bouncing back from adversity (McGrath, & Noble, 2003). Although this is a broadly accurate construction of resilience, the definition does not help understand varying levels of resilience across individuals, or suggest how individuals may develop greater resilience. Improved knowledge of resilience may facilitate supplementary and/or alternative methods of addressing school-based bullying. This may facilitate improving students' mental health outcomes, which is important given the inconsistent results generated from conventional antibullying approaches (Moore & Woodcock, 2017).

Defining Resilience

Resilience is a complex construct (Kaplan, 2006) that is typically defined as the attainment of positive outcomes, adaptation, or developmental milestones in spite of significant adversity, risk, or stress (Goldstein & Brooks, 2006, Naglieri & LeBuffe, 2006). Resilience can be viewed as a multilevel construct that can be conceptualized as (a) a protective process, (b) the interaction of protection and risks, and (c) as a conceptual tool used in predictive models (Elias, Parker, & Rosenblatt, 2006). The operational definition of resilience varies widely and has included hardiness, optimism, competence, self-esteem, social skills, achievement, and absence of pathology in the face of adversity (Prince-Embury, 2007). Although these ideas usefully elaborate the definition of resilience, its variability makes it difficult to practically consider applications of resilience in school settings.

Examining resilience in terms of protective factors offers a viable means of measuring the construct (Fuller, 2006) and developing specific resilience-based programs. However, due to the large number of interacting factors this is likely to be complex. Protective factors include personal qualities and environmental factors (Prince-Embury, 2007). Although environmental factors are important, these are mediated through an individual's perception and interpretation (O'Dougherty

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FIGURE 1. Factorial model of resilience. [Color figure can be viewed at wileyonlinelibrary.com]

-Wright & Masten, 2006). It is proposed that focusing on personal protective factors can reduce this complexity.

Resilience can be operationalized by examining the construct as a hierarchical factorial model (Figure 1). Three personal protective factors underlie resilience: (1) mastery—which refers to the opportunity for individuals to interact with and enjoy cause and effect relationships in the environment, (2) relatedness—which is based on the assumption that the capacity to be in a relationship is a basic human function as a social organism, and (3) emotional reactivity—which may have a physiological basis and refers to a preexisting threshold of tolerance prior to the occurrence of adverse events (Moore & Woodcock, 2017, Prince-Embury, 2007).

Mastery, relatedness, and emotional reactivity can be considered in terms of subfactors. Mastery is composed of optimism, self-efficacy, and adaptability. Optimism refers to positive attitudes about the world and life in general, and about an individual's life both now and in the future. Self-efficacy is associated with belief in one's capability to succeed in specific situations or accomplish a task through developing problem solving attitudes and strategies. Adaptability refers to how receptive an individual is to feedback or criticism and to learn from one's mistakes (Prince-Embury, 2007).

Relatedness is composed of trust, support, comfort, and tolerance. Trust refers to the perception of others being reliable and accepting, and whether an individual feels they can be authentic in these relationships. Support is associated with the individual's perception of access to support when facing adversity. Comfort refers to whether an individual can be in the presence of others without anxiety and discomfit. Tolerance is associated with an individual's belief that they can safely express differences in a relationship (Prince-Embury, 2007).

Emotional reactivity is composed of sensitivity, recovery, and impairment. Sensitivity refers to an individual's threshold for emotional reaction and the degree of the reaction. Recovery is associated with the time taken and how well an individual returns to normal after a strong emotional reaction. Impairment refers to the degree of functional impairment a person experiences due to emotional arousal (Prince-Embury, 2007).

Whether it is conceived as a protective process, the interaction of protection and risks, or as a predictive conceptual tool; the application of a resilience-based approach to bullying may have significant potential. However, given the conceptual complexity of resilience it is important to provide education and psychology practitioners with an improved understanding of resilience generally, and specific resilience factors that may be useful in improving bullying and associated mental health outcomes.

Defining Bullying

Bullying is a controversial issue, however there is no standard definition of bullying (Rigby, 2002, 2006, 2008), and it is difficult to establish a definition inclusive of all bullying behaviors (Lines, 2008). Research suggests bullying can be characterized as (1) a type of aggression (Pellegrini, 2004), (2) systematic and repeated (Olweus, 1993), and (3) based upon an imbalance

of power (Bouman et al., 2012, Smith & Sharp, 1994). These behaviors occur both directly and indirectly. Examples of commonplace power differences in school include being able to physically hurt others, numerical (group) superiority, being more confident or assertive than others, having greater verbal dexterity, having superior social or manipulative skills, and having greater status and corresponding capacity to impose will on others (Rigby, 2008). With the development and proliferation of social media, "cyber bullying" has become a recent focus of bullying research. Cyber bullying is generally defined as the use of digital technologies to engage in bullying, including using e-mails, text messaging, and social media to make derogatory and ostracizing comments about others (Brown, Jackson, & Cassidy, 2006, Wang, Iannottii, & Luk, 2012). Some studies have broadened the conceptualization of bullying to include ideas from evolutionary psychology (Moore & Woodcock, 2017).

Evolutionary psychology suggests behaviors exist if they are adaptive (McLeod, 2010). Given that bullying appears to be a universal human behavior (Lines, 2008, Rigby, 2008), it is important to consider the adaptive advantage bullying behaviors facilitate. Bullying occurs in social hierarchies that exist in all forms of human groupings (Lines, 2008). Within this context bullying can be viewed as a specific form of proactive aggression that is used deliberately to secure resources (Pellegrini, 2004). Social dominance theory suggested that bullying is a strategy to establish and maintain social dominance. The theory proposed social dominance facilitates greater access to resources and can be understood in terms of the costs and benefits associated with using aggression (Pellegrini, 2004). Although seemingly anomalous, this suggests aggressive behavior may be directed toward establishing group stability (Lines, 2008), and that a function of dominance hierarchies may be to minimize aggression (Pellegrini, 2004). Research that reports (a) increased bullying behaviors when students transition from primary to high school, which can be interpreted as students establishing new dominance hierarchies (Moore & Woodcock, 2017, Pellegrini & Bartini, 2001, Rigby, 1996, 1997), and (b) increases in bullying for students of the same age who do not change schools (Pellegrini, 2004), support the theory and rationalize bullying as a behavior with adaptive value.

School-Based Bullying Interventions

Antibullying strategies are the main approach addressing bullying in schools (Farrington & Ttofi, 2009) and claim substantial support to address bullying. However, antibullying approaches are often found to achieve no reduction or observe increases in bullying behavior (Moore & Woodcock, 2017, Rigby, 2002). For example, of the 13 reviewed studies in a meta-analysis published by the Australian Government's Attorney General's Department, three studies found no change in bullying behavior and six cited increases in bullying postintervention (Rigby, 2002).

Broadly, antibullying strategies fall into several categories: behavioral rule based approaches, nonpunitive approaches, student committees, and a student intervention approach (Moore & Woodcock, 2017). However, due to the variety of interventions antibullying research has had difficulty identifying which elements of antibullying programs reduce bullying (Rigby, 2002). Analysis is further complicated as different and contradictory interventions produce similar outcomes (e.g., Olweus, 1991, Pikas, 2002). Nonetheless, Farrington and Ttofi's (2009) meta-analysis suggested several common elements of antibullying interventions that appear to be associated with a decrease in bullying. These include disciplinary methods such as using explicit consequences regarding bullying behavior, parent training and meetings, and the duration and intensity of the program. However, an underlying problem with antibullying approaches is that they arguably involve altering the balance of power in relationships, merely changing structural factors associated with the position of the bully and victim (Moore & Woodcock, 2017).

Resilience and Bullying

The research base examining the relationship between resilience and bullying is not extensive (Sapouna & Wolke, 2013). A recent study examining this relationship found that (1) higher levels of mastery and relatedness were a protective factor regarding depression, but not anxiety; (2) lower levels of emotional reactivity were a stronger protective factor regarding anxiety and depression; (3) individuals with high levels of emotional reactivity were more likely to engage in bullying behaviors that may have useful implications regarding how schools manage situations in which bullying occurs; (4) individuals with high levels of emotional reactivity were more likely to be victims of bullying behaviors; and (5) that primary and secondary students exhibited similar levels of distress regarding bullying and that it was importance to initiate resilience-based interventions while students are younger (Moore & Woodcock, 2017). The study suggested that differentiation between resilience subscales should inform the format of resilience-based bullying interventions (Moore & Woodcock, 2017).

Research has suggested that students with higher levels of resilience were less likely to engage in aggressive behaviors or be victims of bullying (Donnon, 2010); improving victims' social skills appeared to decrease bullying behaviors, and nonchalance strategies and emotional regulation were also useful (Lisboa & Killer, 2008); and resilience to bullying was improved when victims were able to disclose their experiences to a peer or family member (Rivers & Cowie, 2006). One study reported that family factors, especially warm family relationships and positive home environments were associated with greater resilience to bullying (Bowes, Maughan, Caspi, Moffitt, & Arseneault, 2010). However, the study demonstrated several problems including: not using a specific measure of resilience, definitional issues likely to exclude instances of bullying; and methodological problems such as not following standardized procedures when administering cognitive assessments. Another study reported greater resilience and self-efficacy correlating with students completing an adventure-based antibullying initiative (Beightol, Jevertson, Gray, Carter, & Gass, 2009). However, the study focused on weak correlations ($r = .25$ ranging to $r = .26$) based on their significance level and attempted to bolster this with qualitative data.

The role of gender in resilience and bullying research is unclear. For example, the antibullying study of Beightol et al. (2009) found that females exhibited significantly higher mean resilience compared to males, whereas Narayanan and Betts (2014) found that resilience mediated the relationship between bullying behaviors and self-efficacy in males but not for females. Other research (Warner & Boulton, 2016) found that while there appear to be gender differences regarding how bullying behaviors are exhibited, gender does not appear to be a significant factor in developing resilience with regards to bullying.

Examining bullying from a strength-based resilience perspective accords with current trends in psychology. Positive psychology proposes that symptom relief is not consistently associated with changing long-term outcomes, and that the best predictor of a child's functional outcome results from an understanding, appreciation, and nurturance of the child's strengths and assets (Brooks & Goldstein, 2006). Conventional bullying approaches reflect a deficit-based model of bullying that focuses on the bully's explicit deficits, and making implicit inferences about the victim's deficits. Importantly, as resilience may evolve from coping with stressful experiences (Kaplan, 2006), the antibullying approach may limit a student's opportunity to develop resilience to bullying. Resilience-based approaches to bullying offer a strengths-based alternative to addressing bullying. However, this has only had limited research up to now. Improved knowledge of the relationship between resilience and bullying may facilitate supplementary and/or alternative methods of addressing school-based bullying. Given the inconsistent results generated from conventional antibullying approaches, this relationship requires further research.

The current study intended to examine the relationship between resilience and bullying, which is important given the lack of research in this field. The primary intent of this study was to investigate the relationship between resilience subfactors (optimism, self-efficacy, adaptability, trust, support, comfort, tolerance, sensitivity, recovery, and impairment), bullying factors, and distress factors; and consider which resilience subfactors may have utility in developing a resilience-based approach to bullying. This is an important development in the field given the limited research examining the relationship between resilience and bullying, and the inconsistent results generated from conventional antibullying approaches. A secondary intent of the study was to examine the impact of gender regarding resilience subfactors, bullying factors, and distress factors.

The study hypothesized (1) that greater levels of resilience subfactors associated with mastery (optimism, self-efficacy, and adaptability) and relatedness (tolerance, trust, support, and comfort) would be a protective factor regarding depression; (2) that greater levels of resilience subfactors associated with mastery and relatedness would not be a protective factor regarding anxiety; (3) that lower levels of resilience subfactors associated with emotional reactivity (sensitivity, recovery, and impairment) may be a stronger protective factor regarding anxiety and depression; (4) that individuals exhibiting poorer levels of resilience were more likely to engage in bullying behaviors; and, (5) that individuals exhibiting poorer levels of resilience were more likely to be victims of bullying behaviors.

MATERIALS AND METHOD

Research Design

The study utilized a cross-sectional research design using anonymous survey data to examine participant experiences of resilience and bullying. This approach was used to provide a picture of the characteristics associated with resilience and bullying at specific points in time. Cross-sectional designs typically use survey techniques to gather data, which results in a relatively inexpensive and time-efficient way to generate data (Bethlehem, 1999). Using surveys reduces possible experimenter bias and expectancy effects, which may be more apparent when information is generated using an interview method (Bordens & Abbott, 2008). The design facilitated the use of standardized tests, increasing the validity and reliability of derived data as the instruments were developed and normalized using large samples, and piloted to ensure test items measure what is intended (Cohen & Swerdlik, 2005).

Participants

One hundred and five participants were recruited from a primary school ($n = 53$) and a high school ($n = 52$) located in New South Wales, Australia. The sample consisted of 49 males and 56 females with an age range from 10 to 14 years and a mean age of 12.10 ($SD = 1.22$). Recruitment was made from grades 5 and 6 students in the primary school and grades 7 and 8 in the high school.

The area both schools were located in had the following sociodemographics characteristics: (a) middle- to high-income demographic, (b) higher female population, and (c) a small proportion of residents were from culturally and linguistically diverse (CALD) backgrounds, highlighting the Caucasian origins of the population. The sample for this study reflects these characteristics.

Instruments

A 101-item survey was compiled to measure each participant's experience of bullying, resilience to bullying, and distress levels regarding bullying. The first section of the instrument consisted of demographic questions asking participants their age, grade, and gender. The subsequent four items were designed to measure whether participants had experienced or worried about bullying, both

Table 1
Reported Internal Consistency and Test–Retest Reliability for Resilience Subfactors and Study Instruments

Subfactor	Internal consistency	Test–retest reliability
Mastery		
Optimism[c]	.69[a] (.78[b])	.68
Self-efficacy[c]	.77[a] (.83[b])	.78
Adaptability[c]	.56[a] (.61[b])	.62
Relatedness		
Trust[c]	.78[a] (.83[b])	.74
Support[c]	.71[a] (.73[b])	.69
Comfort[c]	.76[a] (.81[b])	.75
Tolerance[c]	.68[a] (.75[b])	.72
Emotional reactivity		
Sensitivity[c]	.75[a] (.80[b])	.73
Recovery[c]	.83[a] (.81[b])	.75
Impairment[c]	.88[a] (.88[b])	.63
PRQ[d]	.86	.80
K10[e]	.84	–

Note. [a]Internal consistency for ages 9–11.
[b]Internal consistency ages 12–14.
[c]Prince-Embury (2007).
[d]Slee (1995).
[e]Hides et al. (2007).

generally and during the previous 4 weeks. Examples of these items include: (1) have you been bullied during the last four weeks? and (2) have you ever worried about being bullied? Participants were asked to rate the strength of their agreement to a statement on a scale from 0 (*never*) to 3 (*lots*).

Three standardized instruments comprised the following parts of the survey: the Resilience Scale for Children and Adolescents (RSCA, Prince-Embury, 2007), the Peer Relations Questionnaire (PRQ, Rigby & Slee, 1993), and the Kessler Psychological Distress Scale (K10, Kessler et al., 2003). Each survey asked participants to rate the strength of their agreement to statements on a scale from 0 (*never*) to 5 (*always*).

The RSCA (Prince-Embury, 2007) is a 64-item survey measuring different aspects of resilience. The current study examined the subfactors derived from the RSCAs mastery, relatedness, and emotional reactivity scales. As these subfactors are defined above they will only be referred to in brief with reference to reliability and validity information, which are described in Table 1. The scale has good convergent and discriminant validity (Prince-Embury, 2007). Examples of RSCA items include: (1) I can make good things happen, (2) I can make friends easily, and (3) I get upset when things don't go my way.

The PRQ (Rigby & Slee, 1993) is a 20-item survey that examines student experience of bullying. It is composed of three subscales: (1) victim scale—referring to participants who self-identify as victims of bullying, (2) bully scale—referring to participants who self-identify as perpetrators of bullying, and (3) prosocial scale—referring to participants who self-identify as exhibiting prosocial behaviors. See Table 1 for internal consistency and test–retest reliability. The instrument has good content and concurrent validity (Slee, 1995). An example of PRQ items include: (1) I get picked on by others, and (2) others make fun of me.

The K10 (Kessler et al., 2003) is a 10-item survey that measures psychological distress. See Table 1 for internal consistency. The K10 does not examine separate scales, however factor analysis conducted for this study suggested the K10 measured two distinct aspects of psychological distress. When examining K10 items, it was apparent that five items accorded with the diagnostic criteria for anxiety (American Psychiatric Association [APA], 2013) and that the other five items accorded with the diagnostic criteria for depression (APA, 2013). Consequently two scales (a) anxiety and (b) depression were derived from the K10 items. An example of K10 items include: (1) in the last 4 weeks about how often did you feel restless or fidgety? and (2) in the last 4 weeks about how often did you feel depressed?

Data Collection

The sampling plan employed a convenience sample approach, as recruitment occurred from schools within an area of close proximity to where one of the researchers was working. School staff (teachers and year advisors) distributed participant and caregiver information/consent forms to all students in the grades being recruited from. School staff provided three verbal reminders to students at 2-week intervals from the date of the initial information letter distribution. The consent form response rate was 76%.

Participants were withdrawn from regular school classes in small groups (maximum of eight participants), which facilitated the researcher explaining the process and providing assistance while participants completed the survey. Participants were verbally reminded that participation was voluntary, that they could discontinue the survey at any point, and that their responses were confidential and anonymous. Participants were instructed regarding (a) not writing their names on the survey, (b) how to respond to rating scales, and (c) how to correct responses. Participants were not provided with definitions of bullying or resilience so as to not bias their responses. Surveys were then provided to participants.

Participants placed the survey in a locked box upon completion. Debriefing immediately followed to determine if any participants were distressed after completing the survey. Participants were informed that more extensive counseling was available and the Kids Helpline phone number was also distributed. No participants requested post survey counseling. The ethical requirements of the hosting Institution and the State Education Department were approved.

Data Analysis

Initially, factor analysis using principal component and varimax rotation was used to consolidate the survey data into subscale variables. For the RSCA, five items did not converge in factor analysis for the mastery subscale (items 1, 10, 11, 16, and 17) and were discarded from the scale. A relatedness subscale item (item 22) loaded onto mastery and was included in the mastery scale. Subsequent internal consistency for mastery was reliable (.88). The internal consistency of mastery subfactors varied: (a) optimism (.86) and (b) adaptability (.75) were reliable, whereas (c) self-efficacy (.68) was less reliable. Loewenthal (2004) indicated that .70 is the normal acceptable range for Cronbach's coefficient alpha, however, .60 is also sometimes acceptable. Consequently self-efficacy was retained in the study. Five items did not converge in factor analysis for the relatedness subscale (items 3, 16, 17, 19, and 22) and were discarded from the scale. Two mastery subscale items (items 16 and 17) loaded onto relatedness and were included in the relatedness scale. Subsequent internal consistency for relatedness was reliable (.94). All relatedness subfactors were reliable: (a) trust (.85), (b) support (.87), (c) comfort (.79), and (d) tolerance (.83). Seven items did not converge in factor analysis for the emotional reactivity subscale (items 1, 2, 4, 11, 12, 13, and 19) and were discarded from the scale. Subsequent internal consistency for emotional reactivity was reliable (.91). All emotional reactivity

Table 2

Significant Mean Differences and Standard Deviations for ANOVAs Comparing Resilience Subscales with Depression and Anxiety

Resilience subscale	Depression—low M (SD)	Depression—high M (SD)	Anxiety—low M (SD)	Anxiety—high M (SD)
Optimism	3.19 (.50)	2.78 (.81)	3.28 (.34)	2.82 (.78)
Self-efficacy	2.90 (.56)	2.47 (.77)	*n.s.*	*n.s.*
Adaptability	*n.s.*	*n.s.*	3.17 (.57)	2.81 (.68)
Trust	3.16 (.61)	2.69 (.79)	3.17 (.43)	2.78 (.82)
Support	3.30 (.59)	2.80 (.86)	*n.s.*	*n.s.*
Comfort	3.20 (.68)	2.73 (.91)	3.21 (.67)	2.83 (.88)
Tolerance	3.38 (.54)	3.00 (.76)	*n.s.*	*n.s.*
Sensitivity	.94 (.53)	1.68 (.90)	.94 (.67)	1.53 (.85)
Recovery	.20 (.43)	.47 (.73)	.11 (.41)	.45 (.68)
Impairment	.97 (.73)	1.62 (.88)	.62 (.45)	1.62 (.83)

Note. n.s. = nonsignificant results.

subfactors were reliable: (a) sensitivity (.76), (b) recovery (.87), and (c) impairment (.92). For the PRQ all items for the victim subscale converged in factor analysis and internal consistency was reliable (.86). One item from the bullying subscale did not converge during factor analysis and was discarded from the scale (item 13). Subsequent internal consistency for the scale was reliable (.85). Although the prosocial subscale converged in factor analysis, the internal consistency of the scale was unreliable (.59) and consequently discarded from the study. The K10 is intended as a measure of distress, however factor analysis for the current study suggested the K10 has two discrete subscales, with items loading upon anxiety and depression. The anxiety subscale (.79) and depression subscale (.85) exhibited reliable internal consistency.

Second, each subscale (optimism, self-efficacy, adaptability, tolerance, trust, support, comfort, sensitivity, recovery, impairment, victim, bully, anxiety, and depression) was recoded. The items that were to be included in the subscale variables were added, and computed to create composite scores. Each scale was subsequently recoded to create categorical variables (high and low). This process was informed by the response patterns for the subscales from the frequency distribution, which was determined by natural breaks in the responses and kept as close as possible to an even division.

Last, the hypotheses outlined earlier for this study were examined using a univariate analysis of variance (ANOVA). Interpretation of effect sizes in this paper are based on Cohen's suggested small, medium, and large effect sizes, where η_p^2 sizes are equal to .10, .25, and .40, respectively (Cohen, 1969, cited in Richardson, 2011).

RESULTS

Depression

The hypothesis that greater levels of resilience subfactors associated with mastery (optimism, self-efficacy, and adaptability) and relatedness (trust, support, comfort, and tolerance) would be a protective factor regarding depression was mostly supported. Significant means and standard deviations are summarized in Table 2.

Participants with lower levels of depression exhibited more (a) optimism than participants with higher levels of depression, $F(df) = 8.57(1,103)$, $p < .01$, $\eta_p^2 = .08$; (b) self-efficacy than

participants with higher levels of depression, $F(df) = 10.11(1,103)$, $p < .01$, $\eta_p^2 = .09$; (c) trust than participants with higher levels of depression, $F(df) = 11.07(1,103)$, $p < .001$, $\eta_p^2 = .10$; (d) support than participants with higher levels of depression, $F(df) = 10.83(1,103)$, $p < .001$, $\eta_p^2 = .10$; (e) comfort than participants with higher levels of depression, $F(df) = 8.31(1,103)$, $p < .01$, $\eta_p^2 = .08$; and (f) tolerance than participants with higher levels of depression, $F(df) = 7.91(1,103)$, $p < .01$, $\eta_p^2 = .07$.

The hypothesis that lower levels of resilience subfactors associated with emotional reactivity (sensitivity, recovery, and impairment) may be a stronger protective factor regarding depression related to bullying was also supported. Significant means and standard deviations are summarized in Table 2.

Participants with lower levels of depression exhibited less (a) sensitivity than participants with higher levels of depression, $F(df) = 23.86(1,103)$, $p < .001$, $\eta_p^2 = .19$; (b) recovery than participants with higher levels of depression, $F(df) = 4.65(1,103)$, $p < .05$, $\eta_p^2 = .04$; and (c) impairment than participants with higher levels of depression, $F(df) = 15.83(1,103)$, $p < .001$, $\eta_p^2 = .13$.

Anxiety

The hypothesis that greater levels of resilience subfactors associated with mastery (optimism, self-efficacy, and adaptability) and relatedness (tolerance, trust, support, and comfort) would not be a protective factor regarding anxiety was not supported. Significant means and standard deviations are summarized in Table 2.

Participants with lower levels of anxiety exhibited more (a) optimism than participants with higher levels of anxiety, $F(df) = 9.00(1,104)$, $p < .01$, $\eta_p^2 = .08$; (b) adaptability than participants with higher levels of anxiety, $F(df) = 6.35(1,104)$, $p < .05$, $\eta_p^2 = .06$; (c) trust than participants with higher levels of anxiety, $F(df) = 5.96 (1,104)$, $p < .05$, $\eta_p^2 = .05$; and (d) comfort than participants with higher levels of depression, $F(df) = 4.49(1,104)$, $p < .05$, $\eta_p^2 = .04$.

The hypothesis that lower levels of resilience subfactors associated with emotional reactivity (sensitivity, recovery, and impairment) may be a stronger protective factor regarding anxiety related to bullying was supported. Significant means and standard deviations are summarized in Table 2.

Participants with lower levels of anxiety exhibited less (a) sensitivity than participants with higher levels of anxiety, $F(df) = 11.34(1,104)$, $p < .001$, $\eta_p^2 = .10$; (b) recovery than participants with higher levels of anxiety, $F(df) = 6.24(1,104)$, $p < .05$, $\eta_p^2 = .06$; and (c) impairment than participants with higher levels of anxiety, $F(df) = 38.11(1,104)$, $p < .001$, $\eta_p^2 = .27$.

Bullying

The hypothesis that individuals with greater levels of resilience were less likely to engage in bullying behaviors was partially supported. Significant means and standard deviations are summarized in Table 3.

Participants that engaged in bullying behaviors exhibited less (a) optimism than participants who did not exhibit bullying behaviors, $F(df) = 13.50(1,104)$, $p < .001$, $\eta_p^2 = .12$; (b) trust than participants who did not exhibit bullying behaviors, $F(df) = 4.52(1,104)$, $p < .05$, $\eta_p^2 = .04$; (c) support than participants who did not exhibit bullying behaviors, $F(df) = 6.98(1,104)$, $p < .01$, $\eta_p^2 = .06$; and (d) tolerance than participants who did not exhibit bullying behaviors, $F(df) = 5.37(1,104)$, $p < .05$, $\eta_p^2 = .05$. Participants that engaged in bullying behaviors exhibited more impairment than participants who did not exhibit bullying behaviors, $F(df) = 13.05(1,104)$, $p < .001$, $\eta_p^2 = .11$.

Table 3

Significant Mean Differences and Standard Deviations for ANOVAs Comparing Resilience Subscales with Bullies and Victims

Resilience subscale	Bully *M (SD)*	Nonbully *M (SD)*	Victim *M (SD)*	Nonvictim *M (SD)*
Optimism	2.76 (.77)	3.25 (.49)	2.82 (.68)	3.17 (.72)
Self-efficacy	*n.s.*	*n.s.*	2.46 (.66)	2.98 (.69)
Adaptability	*n.s.*	*n.s.*	2.77 (.65)	3.14 (.65)
Trust	2.77 (.80)	3.08 (.62)	2.76 (.72)	3.12 (.75)
Support	2.86 (.81)	3.26 (.70)	*n.s.*	*n.s.*
Comfort	*n.s.*	*n.s.*	*n.s.*	*n.s.*
Tolerance	3.04 (.72)	3.36 (.61)	3.02 (.74)	3.42 (.54)
Sensitivity	*n.s.*	*n.s.*	1.65 (.82)	.88 (.63)
Recovery	*n.s.*	*n.s.*	*n.s.*	*n.s.*
Impairment	1.57 (.98)	.98 (1.00)	*n.s.*	*n.s.*

Note. n.s. = nonsignificant results.

Victim

The hypothesis that individuals with greater levels of resilience were less likely to be victims of bullying behaviors was partially supported. Significant means and standard deviations are summarized in Table 3.

Participants who reported being victims of bullying behaviors exhibited less (a) optimism than participants who did not report being victims of bullying behaviors, $F(df) = 6.26(1,104)$, $p < .05$, $\eta_p^2 = .06$; (b) self-efficacy than participants who did not report being victims of bullying behaviors, $F(df) = 14.17(1,104)$, $p < .001$, $\eta_p^2 = .12$; (c) adaptability than participants who did not report being victims of bullying behaviors, $F(df) = 7.56(1,104)$, $p < .01$, $\eta_p^2 = .07$; (d) trust than participants who did not report being victims of bullying behaviors, $F(df) = 5.78(1,104)$, $p < .05$, $\eta_p^2 = .05$; and (e) tolerance than participants who did not report being victims of bullying behaviors, $F(df) = 8.40(1,104)$, $p < .01$, $\eta_p^2 = .08$. Participants who reported being victims of bullying behaviors exhibited more sensitivity than participants who did not report being victims of bullying behaviors, $F(df) = 24.96(1,104)$, $p < .001$, $\eta_p^2 = .20$.

Gender

Finally, an analysis of gender regarding all subscales considered in the study was conducted. Females exhibited more: (a) anxiety ($M = 1.45$, $SD = 1.00$) than males ($M = 1.01$, $SD = .52$), $F(df) = 7.55 (1,104)$, $p < .01$, $\eta_p^2 = .07$; (b) optimism ($M = 3.08$, $SD = .67$) than males ($M = 2.79$, $SD = .74$), $F(df) = 4.56 (1,104)$, $p < .05$, $\eta_p^2 = .04$; and (c) recovery ($M = .48$, $SD = .74$) than males ($M = .22$, $SD = .44$), $F(df) = 4.72 (1,104)$, $p < .05$, $\eta_p^2 = .04$.

DISCUSSION

The finding that increased levels of mastery and relatedness resilience subfactors were a protective factor regarding depression related to bullying supports and extends previous research finding similar relationships (Moore & Woodcock, 2017). With the exception of the adaptability mastery subscale, the finding suggests that programs utilizing the other mastery and relatedness subfactors (optimism, self-efficacy, tolerance, trust, support, and comfort) should have utility as a protective factor against depression.

However, the finding that greater levels of some mastery and relatedness subfactors were a protective factor regarding anxiety related to bullying was not suggested by previous research (Moore & Woodcock, 2017). The results found the mastery subscales optimism and adaptability, and the relatedness subscales trust and comfort were protective factors regarding anxiety. Programs utilizing these subfactors should have utility as a protective factor against anxiety. This result suggests the importance of examining resilience as a factorial model, given that previous research did not find a relationship between anxiety and the resilience factors mastery and relatedness. This could result in excluding possibly relevant resilience subfactors from resilience-based bullying interventions.

Similar to previous research, regulation of emotional reactivity appears to be an important mechanism addressing the effects of bullying (Lisboa & Killer, 2008). The result that all subfactors associated with emotional reactivity (sensitivity, recovery, and impairment) were protective factors regarding anxiety and depression is a useful finding supporting previous research (Moore & Woodcock, 2017). Further, the reported ANOVAs examining the relationship between (a) anxiety and impairment, and (b) depression and sensitivity, were among the strongest reported by the study (moderate effect sizes).

The finding that individuals with poorer levels of resilience were more likely to engage in bullying behaviors supports previous findings (Donnon, 2010). Specifically, participants exhibiting lower levels of resilience subfactors optimism, tolerance, trust, and support, and higher levels of impairment were more likely to engage in bullying behavior. This result may be particularly useful in examining specific resilience subfactors as a method of identifying potential bullies and developing intervention programs addressing these elements to reduce bullying behavior.

The study found that individuals with poorer levels of resilience were more likely to be victims. This supports previous research findings (Donnon, 2010). Participants exhibiting lower levels of optimism, self-efficacy, adaptability, tolerance, and trust, and higher levels of sensitivity were more likely to be victims of bullying. Interventions addressing these subfactors may be useful in identifying and assisting individuals who may be more likely to victims of bullying.

Although multiple resilience subfactors considered by the study observed statistically significant results and effect sizes that ranged from very small to moderate, examining patterns within these results may be useful in developing resilience-based programs. Half of the resilience subscales examined by the study were either significantly related to all or the majority of comparison subscales (victim, bully, anxiety, and depression). Optimism (mastery scale) and trust (relatedness scale) were significantly related to all comparison subscales, whereas tolerance (relatedness scale), sensitivity (emotional reactivity scale), and impairment (emotional reactivity scale) were significantly related to three of four scales. Resilience interventions that focus on improving optimism, trust, tolerance, sensitivity, and impairment may provide benefits to a broader group of people and variables than interventions focused on other resilience elements. Another pattern evident in the results was that emotional reactivity exhibited the strongest effect sizes found by the study. The strength of observed relationships between sensitivity and victims, sensitivity and depression, and impairment and anxiety may have useful implications regarding developing resilience interventions based on elements of emotional reactivity. This supports previous research that found identifying protective factors that promote resilience to bullying victimization could lead to improved intervention strategies (Bowes et al., 2010).

Gender did not appear to be a major variable regarding resilience and bullying, which extends previous findings (Warner & Boulton, 2016). The current study found that when compared to males females appeared to be significantly: (1) more optimistic regarding bullying, (2) experienced more anxiety regarding bullying, and (3) had more difficulty recovering from the experience of bullying, which supports previous research (Beightol et al., 2009). However, the observed effect sizes for these relationships were very small. Further, it is important to note that the majority of variables

that the study examined in terms of gender (86%) did not exhibit gender differences. Consequently, while there appear to be some minor gender differences regarding resilience and bullying, this does not appear to be a significant issue regarding developing resilience interventions.

Limitations

The current study may be limited by a variety of issues. Given that the study only examined participants from a single primary school and high school, the findings should be interpreted cautiously, as they may be the result of a localized effect. Further, the sample examined in the study was a convenience sample. The relatively small sample size also limits the interpretation and generalizability of results. Similar to much of the research on bullying, the study used retrospective surveys to obtain data. Consequently the accuracy of participants' recollection and interpretation of events may be questionable. As resilience and bullying are complex constructs that lack an agreed academic definition the question of whether the definitions used in the current study adequately operationalize the constructs should be considered. Future research should measure participant's understanding of these definitions. Finally, the differences and similarities between bullies and victims were not controlled in the current study. These issues should be addressed in future work examining resilience and bullying.

Implications for School Psychology Practice

The findings have a variety of implications for practice. Although most of the resilience subscales have a positive impact regarding aspects of mental health and bullying subfactors, the pattern of results suggests specific subfactors may be particularly useful in resilience-based interventions. Of all the considered resilience subfactors only optimism and trust were related to anxiety, depression, bullying, and victim subscales. This is an important result. Resilience-based interventions that encourage optimism by promoting positive current and future oriented attitudes about the world and life, and develop trust through facilitating authentic and reliable relationships may have the strongest impact in addressing the effects of bullying.

Additionally, the resilience subfactors tolerance, sensitivity, and impairment also exhibited a broad (although smaller) impact upon mental health and bullying subfactors. Programs that encourage tolerance through allowing the safe expression of differences in relationships, promote sensitivity by improving the threshold and the degree of emotional reaction, and limiting the degree of functional impairment a person experiences due to emotional arousal may also be useful elements of resilience-based interventions. Future research should explore the efficacy of resilience interventions that have a simplified resilience framework based on the subfactors found by the current study to have the broadest impact.

The strongest effect sizes observed in the study derived from the emotional reactivity subscales sensitivity and impairment. This is an important result that suggests improving emotional reactivity may be especially relevant to resilience programs. Improving an individual's threshold and degree of emotional reaction is likely to have a beneficial impact for victims of bullying and people experiencing depressive symptoms resulting from bullying. Programs that improve the degree of functional impairment due to emotional arousal should benefit people experiencing anxiety symptoms resulting from bullying. Future research should explore whether this finding can be replicated and establish whether benefits obtained from improving emotional reactivity are sustained longitudinally.

Finally, the finding that gender has a limited impact regarding resilience and bullying is an important finding that should be useful for the development and implementation of resilience-based interventions. The minor gender differences observed by the current study suggest resilience-based

interventions do not need to be gender specific, and that both genders should benefit from similar interventions.

Developing resilience-based approaches to issues like bullying is an exciting alternative to traditional school approaches. Although the literature base is limited, research suggests that improving student resilience may be an effective means of addressing bullying, and the current findings suggest that improving resilience may be a valuable means of promoting positive mental health characteristics and reducing psychological pathology. However, resilience is often poorly understood and simplified as global construct. The current study's findings suggest that resilience should be conceptualized from a factorial perspective and that interventions that focus on improving specific resilience elements including optimism, trust, tolerance, sensitivity, and impairment may be more efficacious than interventions focused on other resilience elements.

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