

Understanding Stress and Aggression Behaviors among Urban Youth

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Abstract

Background/Objective: Youth violence, including school bullying and fighting, has become a global public health problem. Stress has been identified as a factor related to aggression (i.e., bullying behaviors, fighting, and anger), of which inner-city youth are particularly vulnerable given their often disproportionately high stress living environments. Stress and aggression are of particular concern in urban physical education (PE) given the proliferation of competitive, sport-based curricula, “culture of basketball”, and the often-limited supervision that takes place. Using the Social Ecological Model, the purpose of this study was to examine the relationships between stress and aggression in inner-city elementary PE students.

Methods: After parental consent, participants completed a questionnaire with validated scales measuring stress, aggression, and demographics. Participants included 138, 3rd-5th grade students (*M*_{age} = 9.77) from six inner-city schools in the Midwestern United States.

Analysis/Results: After correlations were conducted to determine relationships, a series of multiple regression analyses were used to determine the predictors of aggression; controlling for gender, race, and age. Regression results revealed that fighting was significantly predicted by the independent variables with stress, anger, and bullying uniquely contributing ($F(6,115) = 21.54, p < 0.01, adj. R^2 = 0.51$). Additionally, bullying was uniquely predicted by fighting and anger ($F(6,115) = 35.01, p < 0.01, adj. R^2 = 0.63$).

Conclusions: This study established a significant relationship between stress, anger, fighting and bullying behaviors in urban PE, possibly indicating a need for renewed focus on anti-aggressive approaches and positive stress response techniques. Specifically, mindfulness-based physical activities, such as Yoga, could enable educators to create more peaceful and less stressful climates, which might then lead to less bullying, fighting, and aggression, hence a more productive learning environment.

Keywords: Stress; Aggression; Mindfulness; Yoga; Physical education; Urban; Youth; Elementary school; Bullying

Introduction

Last year, nearly six in ten children in Detroit lived below the poverty line [1]. The impact of poverty on the lives of children has been well documented, specifically on their social and emotional development [2]. Children who grow up in low socio-economic status (SES) neighborhoods and attend inner-city public schools are more likely to be affected by stress that negatively impacts behaviors and social skills [3], more likely to be exposed to violence [4], and have an increased risk of being a victim of bullying [5]. For teachers in urban school districts, this can be especially challenging as they navigate the issues surrounding poverty while also attempting to create pedagogies that are productive and culturally relevant.

The research on bullying in schools is complicated given the myriad of factors that have been used to define bullying behavior; however, most studies support the concept that bullying behavior can be either physical or psychological. Hoover and colleagues [6] defined bullying as the physical or psychological abuse of an individual. The majority of the studies done in the United States have examined bullying as a subset of aggressive behavior that has potential to cause physical or psychological harm [7].

Stress and aggression are of particular concern in urban physical education (PE) given the proliferation of competitive, multi-activity sport-based curricula and the often-limited supervision that takes place in the gymnasium [8-11]. Significant research suggests that when multi-activity and team-sport curricula dominate PE curriculum, students are more likely to report increases in bullying, teasing, and other aggressive behaviors among classmates [9,11]. Additionally, recent studies indicate

that bullying in PE leads to future avoidance of school-based PA for children who have fallen victim to it [12]. Conversely, students who participate in PE curriculum focused on lifetime activities instead of competitive sports report more camaraderie and less marginalization during classes [11]. Mindfulness training – specifically meditation and yoga – is one example of a lifetime activity that, if integrated into the PE curriculum, could not only reduce the competitive, team-sport focused environment, but also equip students with skills to deal with stress outside of the PE classroom. This type of curriculum has been suggested as a possible effective coping strategy for adolescents as it could have an impact on stress responses that are caused by the school and everyday life [13,14].

Yoga interventions have proven beneficial in helping urban youth cope with behavior issues and other social factors [15], increase self-control [16], and manage stress and aggression [17]. In addition, several studies have indicated that the use of yoga in schools helps to enhance social skills, emotional intelligence, and conflict resolution among students [18]. Significant impacts of a yoga intervention were also noted by Benson et.al [19] which included: higher grade point average,

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increased self-esteem, decreased psychological distress, less aggressive behavior, better work habits, better attendance, and decreased unexcused tardiness. Nevertheless, we still know little about the impact of mindfulness training on aggression and bullying behaviors in a PE setting because the research on the effects of yoga are primarily on adults or conducted outside of the United States.

The purpose of this study was to examine the relationship between self-reported, perceived levels of stress, anger, and aggressive and bullying behaviors of third through fifth grade PE students in six urban elementary schools. Specifically we aimed to determine what relationship exists, if any between children’s stress responses and aggressive and bullying behavior. In answering this question, we hypothesize that students who experienced higher levels of stress would also have higher levels of anger and thus display more aggressive and bullying behavior. Findings from this study will guide future PE programming in order to impact aggressive behaviors in the school setting.

Social ecological model

This study was guided by the Social Ecological Model (SEM), which suggests, in part, a symbiotic relationship between an individual’s growth and development and their social and physical environment. The model recognizes that individuals do not develop in isolation, rather, they exist within a host of important interacting influences, categorized by the model as “relationship, community, and societal” [20]. This model helps us acknowledge that every child has a set of circumstances that impacts their development which are important to consider in seeking to understand, and subsequently impact, their values and behaviors.

Previous research has indicated that minority, inner-city children experience higher levels of stress than their White, suburban counterparts [21]; cogitating this information under the lens of the SEM will allow us to consider not only how their environment contributes to their stress responses and resulting behaviors, it will also allow us to consider these relationships, community, and societal influences as we attempt to develop productive stress response techniques and positive classroom environments for urban students. More specifically in the PE setting, stressors are more likely to be addressed and PA levels more likely to be positively impacted if educators are able to target multiple levels of the social-ecological model. If, for example, educators focus primarily on the individual factors in PE (e.g., teaching physical skills, increasing PA knowledge), or just the environmental factors (e.g., selection of activities, structured competition), they may be ignoring other social or policy factors that influence the student experience, their willingness to participate, and thus the opportunity to leverage real behavior change (e.g., positive stress responses, PA increases).

Methods

Participants in this cross-sectional study included 138 (*M*_{age} = 9.77; males = 66) third through fifth grade PE students who attended six elementary schools in an urban public school system in the Midwestern part of the United States. Demographic data can be found in (Table 1).

Measures

PE students completed a questionnaire that consisted of three validated instruments. The questionnaire was presented to the entire class and each student was asked to answer each question as it was read aloud by a member of the research team. The three instruments that were included were: (1) the Stress in Children Questionnaire

Number of schools	6	
Mean age (y) (SD)	9.77 (1.13)	
Average class size	24	
Gender	n (n = 138)	Percent
Female	72	47.80%
Male	66	52.20%
Race		
Black	111	80.40%
Asian	0	0.00%
White	6	4.30%
American Indian	1	0.70%
Other	20	14.60%
Ethnicity		
Hispanic	11	7.60%
Non-Hispanic	133	92.40%

Table 1: Demographic characteristics.

[22], (2) the Modified Aggression Scale [7,23], and (3) the Weinberger Adjustment Inventory (WAI) [24].

Stress in children

The Stress in Children Questionnaire consists of 21 items. Each item is on a four-point scale that ranges from “never” to “very often”. Sample items include: “I like going to school”, “I feel calm”, and “I fall asleep easily at night” [22]. Nine of the items were reversing coded and a total score was calculated by adding all 21 items together, with lower score suggesting higher levels of perceived stress. The Cronbach’s alpha for the stress in Children Questionnaire for this study was 0.70. This shows moderately high internal consistency and is similar to other studies who have reported a Cronbach’s alpha ranging from .79 to .86 for the complete test score with 9-12 year olds [22].

Modified aggression scale

Three subscales were used from the “modified aggression scale” fighting, bullying, and anger. Sample subscale questions include: (1) Fighting -- “I hit back when someone hit me first”, (2) bullying -- “I teased other students” and (3) anger -- “I frequently get angry”. Each question has five responses for the students to choose from: no opportunity, never, 1-2 times, 2-4 times, and 5 or more times. Reverse coding, scoring and subscale sum scores were calculated following scale guidelines [7]. The fighting subscale maximum score was 20, while the bullying and anger subscales had a maximum score of 16, with higher scores indicating higher levels of the construct across all three subscales. This scale has been tested for internal consistency with similar aged participants showing high internal consistency with Cronbach’s alpha for bullying at 0.83, 0.70 for anger, and 0.73 for fighting [7,23]. This study showed high internal consistency among its participants for bullying and anger with Cronbach alpha levels at .81 for bullying, and .79 for anger, and showed moderate internal consistency .65 for fighting.

Weinberger adjustment inventory

The WAI measures the way in which a student reacts to conflict and stressful situations through four subordinate dimensions of personality traits, with each dimension hosting a number of subscales [24]. For the purpose of this study the self-esteem subscale from the distress dimension was used as the other subscales were not pertinent to this study. This subscale consists of seven questions in which students were asked how true statements were in relation to their life. An example of a statement within the subscale is “I really don’t like myself very much”.

Students were then asked to circle their answer on a five point Likert type scale: (1) false, (2) somewhat false, (3) not sure, (4) somewhat true, and (5) true. Items 4-7 were reverse coded and then a sum score was calculated. Higher scores (min 7 - max 35) indicate lower levels of self-esteem. The WAI in this study showed a moderately high level of internal consistency with a Cronbach's alpha of 0.70. This is slightly lower than other studies who have used the WAI in similar populations, reporting a Cronbach's alpha ranging from 0.73 -0.90.

Analysis

All variables were screened for outliers, missing data, and normality, ; descriptive statistics and correlational analyses were used to examine variables and relationships. In order to answer the research questions, two multiple regression analyses were used to predict fighting and bullying in elementary inner-city students; controlling for sex, race/ethnicity, and age. R² was presented as an index of effect size (i.e., small effect size, R²=0.01; moderate effect size, R²=0.06, and large effect size, R²=14 [24,25]. All statistical analyses were conducted using SPSS (v.21), and p values of 0.05 or less were considered statistically significant.

Results

There were significant associations between age, fighting, and

anger; stress and fighting; and bullying, fighting, and anger (Table 2). Specifically, older students reported more fighting than younger students ($r = 0.25, p < 0.01$). There was a significant correlation with those students who reported higher levels of fighting and those with high levels of self-reported stress ($r = -0.34, p < 0.01$). Fighting was also highly correlated with bullying ($r = 0.60, p < 0.01$) and anger ($r = 0.67, p < 0.01$), both in the positive direction. Finally, there was a significant positive relationship between those students who reported high levels of anger and those who reported bullying behaviors ($r = 0.77, p < 0.01$).

Once correlational results were analyzed, two separate multiple regression analyses were run, one to understand the variables associated with fighting, and the other to understand those variables associated with bullying. These were chosen as the outcome variables, based on their high correlations with other variables. Regression results revealed that fighting was significantly predicted by the independent variables with stress, anger, and bullying uniquely contributing to the model ($F(6,115) = 21.54, p < 0.01, \text{adj. } R^2 = 0.51$). Additionally, bullying was uniquely predicted by fighting and anger ($F(6,115) = 35.01, p < 0.01, \text{adj. } R^2 = 0.63$). Tables 3 and 4 provide a detailed overview of the regression analyses.

	Gender	Age	Race	Stress	Fighting	Bullying	Anger	M	SD
Gender	1.00							1.52	0.50
Age	-0.17*	1.00						9.77	1.13
Race	0.03	-0.02	1.00					1.79	1.79
Stress	0.15	-0.07	0.07	1.00				54.23	7.31
Fighting	-0.13	0.24**	-0.12	-0.34**	1.00			8.66	2.71
Bullying	-0.06	0.14	-0.14	-0.04	0.60**	1.00		6.81	2.21
Anger	-0.05	0.21*	-0.05	-0.16	0.67**	0.77**	1.00	5.99	2.51

Note. * = $p < 0.05$; ** = $p < 0.01$; The scales for fighting and stress are coded in the opposite direction with a high number equaling more fighting and a low number equaling higher stress levels.

Table 2: Correlations, standard deviations, and means.

	Fighting	Bullying
R	0.73	0.80
R ²	0.53	0.65
Adj. R ²	0.51	0.63
Std. Error	1.83	1.26
F Change	21.54	35.01
P value	< 0.01	< 0.01

Table 3: Regression analyses model summary.

Fighting						
	Gender	Age	Race	Stress	Anger	Bullying
B	-0.20	0.20	-0.07	-0.08	0.40	0.39
SE	0.35	0.16	0.10	0.02	0.12	0.13
β	-0.04	0.08	-0.05	-0.23	0.36	0.31
p	0.56	0.21	0.47	<0.01	<0.01	<0.01
Bullying						
	Gender	Age	Race	Stress	Anger	Fighting
B	-0.38	-0.01	-0.11	0.03	0.56	0.18
SE	0.24	0.11	0.07	0.02	0.07	0.06
β	-0.09	-0.05	-0.10	0.09	0.64	0.23
p	0.11	0.36	0.09	0.13	<0.01	<0.01

Table 4: Predictors of fighting and bullying.

Discussion

The findings from this research show the significant associations between stress, anger, fighting and bullying behavior, indicating a need for a renewed focus on positive stress response techniques for elementary school children. Existing research demonstrates that children and their parents today lead much busier lives than ever before, and elementary school children point to a myriad of factors that cause them stress in their daily lives, including homework, peer pressure, being teased, receiving poor grades, pressure of school, parents with busy schedules, and competitions [26-29]. Prolonged exposure to stress can have significant negative health implications for children, including problems such as headaches, abdominal pain, school absenteeism, overeating, and tobacco use [30]. Children from minority, inner-city households are particularly at risk for suffering from stress-induced problems as they are exposed to higher levels of daily stress than other children, are more likely to have stress negatively impact their behaviors and social skills [3], are more likely to be exposed to violence [10], and have an increased risk of being a victim of bullying [5].

The sociological impact of aggression and bullying in schools is also significant – we need not look further than the increasing news reports of school children suffering from depression and suicide to understand that. Bullying impacts are particularly pronounced among Black and Latino students who are more likely to suffer academically when bullied [31]; Given the inner city, minority population within this study, this is especially important. The analysis of initial data not only supports the existing research suggesting that urban children face high levels of stress, but it also points to the relationships between stress and anger, fighting, and bullying. This further supports the notion that student stress contributes to self-reported aggression and bullying behaviors [32,33].

Stress and aggression are of particular concern in urban PE given the proliferation of competitive, multi-activity and sport-based curricula and the often-limited supervision that takes place in the gymnasium, which can lead to marginalization, bullying, and other stressful behaviors of youth in the PE setting. Specifically, we know that avoidance of future physical activity results from bullying experiences in the gym [12] and the sport-based environment often fosters aggressive interaction among students. Despite these factors, little adaption has been made in most PE curricula, especially in urban areas where resources and equipment are often sparse and the sport-based programs tend to dominate, to better address the physical and emotional needs of students. Given the results of this correlational study, designing PE programs that integrate lifetime physical activities instead of the traditional sport-based curricula may be an effective means for urban students to deal with stress, thus reducing aggression and bullying behaviors. Mindfulness-based approaches to PE have proven to be effective methods to promote a range of positive cognitive, behavioral, and physical outcomes for children. The integration of yoga-based curriculum in schools could enable physical educators to better reach historically inactive students, promote physical activity, and provide students with breathing and relaxation exercises to allow for effective stress responses and a readiness to learn.

In a 2005 study, Feldman [34] found that children described yoga as a safe retreat from an otherwise stressful performance ethic in school. Elementary-aged children expressed that doing yoga not only helped them to relax their bodies and minds, but also positively impacted their ability to focus. Additional research suggested that mindfulness training could improve academic performance by reducing stress [35] and increasing “time on task” [36]. The idea that a single mindful

experience during the PE class can continue to positively influence students throughout the school day is significant in making a case for mindfulness training in urban PE. In a genre that, in many instances, has promoted the “play, good, fun” model, making a decisive connection between PE and improved academic and behavioral performance is crucial in establishing the value of PE beyond an outlet for children to be physically active.

Although this study does not show direct causality, we suggest a comprehensive approach to reducing children’s stress that connects with the relationship, community, and societal influencers, as suggested by the SEM. Analyzing this data under the lens of the SEM allows us to consider not just the individual actions (or inactions) of students, but also helps to identify the multiple factors related to physical activity and participation in PE within the social and environmental contexts. With an understanding how to structure PE programs to include mindfulness training instead of multi-sport models, educators can aim to reduce classroom stressors and increase physical activity enjoyment which will, in turn, impact aggressive behaviors. Although this study was not an intervention, its importance lies in the inferences that can be made from the data to understand how the relationship between stress and aggression may be applied toward future intervention studies. The application of this data will ultimately be valuable in designing PE programming to help young people deal with stress and aggression, essentially making school settings safer and more productive places to learn.

Limitations

There may be a certain level of social desirability in the young students’ answers to questions about aggression and bullying towards other students that may have influenced their responses. Furthermore, because of its cross-sectional nature, readers should be cautioned on interpretation in relation to generalizability and the lack of causality.

Implications

Despite the limitations, the implications of this study could have wide-ranging impacts on the use of yoga and mindfulness behaviors as a means to address stress, aggression, and bullying in the school setting and the broader field of PE. Future studies in this area should first consider a closer examination of the stress experienced by students specifically in the PE classroom and then evaluations of a yoga-based PE class session versus a traditional sport-based session on students’ stress levels and responses. There is much discussion among the PE community with regards to the implications of non-traditional PE curricula – with additional study; the topic of integrating mindfulness training could significantly contribute to the research that informs PE curricula across the country.

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