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ADAPTED PHYSICAL EDUCATION

Children's Recess Affect, Enjoyment, Physical Activity, and Opportunities by Victimization, Developmental Level, School Region, and Recess Location

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Abstract

Research on school recess has highlighted the need for more integrated and situated knowledge of students' recess experiences as a function of school and recess context. This study assessed differences in recess-specific negative affect, enjoyment and opportunities (indoors and outdoors), and physical activity and moderate-to-vigorous physical activity (MVPA) during outdoor recess as a function of victimization, developmental level (grades 4-6 or 7-8), and school urbanization (Greater Toronto Area) or in a small more isolated city or town within southwestern Ontario, Canada. Online surveys were completed during school by 445 students (209 boys; 236 girls) in grades 4-6 (n = 266) and 7-8 (n = 179) in 11 government-funded schools (four public in the GTA and seven Catholic in smaller cities and towns). MANOVA

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results revealed main affect differences by recess victimization, developmental level, and school urbanization. Students reporting victimization had a significantly higher negative affect, lower recess, physical activity, MVPA, opportunities, and enjoyment in outdoor recess, and lower opportunities for play during indoor recess. Students attending school in the Greater Toronto Area had a significantly higher negative affect on recess, enjoyment, and opportunities for play during indoor recess. Finally, students in grades 4-6 were statistically higher than those in grades 7-8 in each measured variable except for negative affect. These findings help illuminate specific insight into the potential role of victimization, recess location (indoors or outdoors), developmental level, and school urbanization on students' school recess experiences.

Introduction

School recess is a vital component of a Healthy School (CDC, 2022) and a Coordinated School Physical Activity Program (CDC-SHAPE America, 2017). Although elementary school recess is generally understood as a time for children to break from instruction, there is compelling evidence that students also tend to learn and develop mentally, physically, and socially during recess through positive physically and socially interactive play (Centers for Disease Control and Prevention, 2010; Durlak et al., 2011; Hodges et al., 2022; Pellegrini & Bohn, 2005; Ramstetter et al., 2010). For example, a recent systematic review of the benefits of school recess reported that recess "improves cognitive functioning, attention, classroom behavior, and classroom production; socially improves communication and negotiation skills; emotionally improves perseverance, self-control, and stress management skills; and physically improves motor skills and generally physical health" while decreasing sedentary behavior and elevating moderate-to-vigorous physical activity (MVPA) levels (Hodges et al., 2022, p. 960). Although school recess could account for up to 40% of recommended daily physical activity levels, students tend to be physically active for only about 40% of recess (Jarrett & Duckett-Hedgebeth, 2003), with only an average of 12 minutes of MVPA each day during recess (Hodges et al., 2022). Unfortunately, many of the potential positive outcomes can be stifled in negative school recess environments. Research has re-

vealed (e.g., London et al., 2015; McNamara, 2013; McNamara et al., 2018; Robert Wood Johnson Foundation, 2010; Vaillancourt et al., 2010) aspects of such compromised recess environments include, for example, a physically and socio-emotionally risky climate (i.e., cliques, power struggles, injuries, bullying, exclusion, teasing, and frequent conflict), inadequate staff supervision, and a lack of space (e.g., restricted to an indoor classroom or hallway; lacking adequate outdoor field and/or playground area) and options (i.e., suitable and diverse equipment) for wholistically engaging, physically active play.

Recess scholars (e.g., Hodges et al., 2022; McNamara et al., 2014; Parrish et al., 2020; Ramstetter et al., 2010) have welcomed research that illuminates environmental (e.g., indoors versus outdoors; school location), developmental (e.g., grade or age), organizational (e.g., access to equipment and a variety of optional activities), psychosocial (e.g., victimization, enjoyment, affect) aspects of recess that either facilitate or stifle positive outcomes during elementary school recess. Heeding such calls, the aim of this study was to discover more about levels of grade 4-8 students' recess affect, physical activity, and opportunities by their experiences of victimization, recess location (indoors or outdoors), school city size (metropolis or smaller more isolated cities), and developmental level (grades 4-6 and 7-8). The study was framed in social cognitive theory (Bandura, 1986) espousing that behavior emanates primarily and reciprocally from personal aspects such as thoughts, feelings, and beliefs; social dynamics like peer relationships, interactions, and conflict resolution; and environmental factors in the form of, for example, sociocultural climate and opportunities.

Enjoyment, Affect, and Victimization

Feelings of enjoyment ("generalized feelings such as pleasure, liking, and fun") (Scanlan & Simons, 1992, p. 203) and positive affect (collectively feeling enthusiastic, alert, happy, attentive, safe, accepted, confident, and proud) (Watson et al., 1988) tend to coexist (Pringle, 2010) and impact health and well-being (Gagne et al., 2003) through, for example, elevated and more consistent physical activity (Smith & St. Pierre, 2009) and self-determined motivation (McDonough & Crocker, 2007). Research (e.g., Hyndman et al., 2017; Ridgers et al., 2012) has revealed numerous positive recess outcomes that students tend to experience when they enjoy and have a

positive affect. These include being physically active, having choices, belongingness, support from peers, and positive social interactions from which students tend to feel more accepted, content, and calm (Baumeister & Leary, 1995; Gere & MacDonald, 2010).

Conversely, when students dislike and experience negative affect during recess, it often coincides with reduced physically active play (London et al., 2015; McNamara et al., 2014) and feelings of social exclusion and victimization during recess (Doll et al., 2003; McNamara, 2013). Victimization can take several forms (physical, social, or verbal) and is defined as "repeated exposure to purposeful attempts to injure or inflict discomfort and pain on another individual through words, physical contact, gestures, or exclusion from a group" (Olweus, 1993, p.1). Approximately 20-25% of school students report bullying, being a victim of bullying, or both (Juvonen & Graham, 2014) and it occurs mostly during recess (especially outside) perhaps because of the increased autonomy and reduced supervision relative to instructional settings in school (Vaillancourt et al., 2010). Being a victim of bullying can have short and long-term consequences such as feelings of fear and loneliness during recess, a compromised self-esteem, academic performance, and social relationships; and elevated risk for depression, suicidal thoughts, and abuse of substances (Hansen et al. 2012).

Opportunities During Outdoor and Indoor Recess

School recess in North America is generally held outdoors except in cases of inclement weather when the principal (in consultation with relevant policies and representatives from the school and School Board) decides to restrict students to indoor spaces only (McNamara et al., 2014). Compared to indoor recess, students tend to prefer it outdoors and have significantly higher levels of PA and MVPA outdoors (Tran et al., 2013). A Polish study by Lelonek and Przychodni (2020), revealed that 79% of girls and 68% of boys were sedentary during indoor recess (restricted to their classroom) which might be a concern because higher recess PA levels has been linked to more attention, on-task behavior, and self-regulation after recess (Hodges et al., 2022). These benefits can be compromised when rainy weather prevents students from going outdoors for recess for long periods of time (e.g., rainy springs or cold winters), often leading students to become more agitated and difficult to manage (Pellegrini

& Bohn, 2005). According to Vaillancourt et al. (2010), students feel the least safe in areas of the school that lack adult supervision; report the highest incidences of victimization in the playground/ school yard (71.6%) and outside recess areas (62.7%); and reported feeling unsafe during outdoor (39% of students) than indoor (17.9% of students) recess.

Providing adequate student opportunities for diverse, safe, and physically and socially interactive play during recess is also important. For example, the dominant environmental recess barriers reported by students are weather, bullying, social conflicts, safety concerns, boredom, and a lack of space, equipment, and play facilities (Knowles et al., 2013; Pawlowki et al., 2014). More specifically, students aged 8-12 tend to have elevated physical activity levels during recess when they enjoy and can participate in higher MVPA activities like tag games and sports, especially if they have the appropriate equipment (Hyndman & Lester, 2015). It appears that superior recess environments offer a range of well-organized equipment, ample and creative activity choices, adult support, peer role models, multiple suitable facilities (e.g., gyms, outdoor fields, and playing areas), diverse loose equipment (e.g., balls, frisbees, and skipping ropes), and possibly some optional structured/organized activities (Hyndman et al., 2014; Kuh et al., 2013; Parrish et al., 2020; Ridgers et al., 2012).

Developmental Level

Elementary schools in Canada typically include children from as young as kindergarten (or junior kindergarten) through grade 8, who tend to use the same facilities, space, and equipment (McNamara et al., 2014). According to Malina et al. (2004; Juvonen & Graham, 2014), on average at approximately 12 years of age, students transition from childhood to adolescence with corresponding cognitive, physical, and socio-emotional changes that include a more fragile physical self-concept and body image, an increased importance placed on peer acceptance and interactions, and an elevation in bullying (Juvonen & Graham, 2014). Further, research on recess PA and MVPA levels by age or grade has been mixed, although it appears that students in the upper grades tend to have lower PA and MVPA while being more sedentary (i.e., sitting or standing time) (Hyndman et al., 2017; Ridgers et al., 2010).

Students' interests in what to do during recess also change. For example, Knowles et al. (2013) reported that as elementary school children aged, they increasingly enjoyed games and outdoor recess more than indoor recess. Results from Lodewyk and McNamara's (2020) recess study noted that compared to those in grades 7-8, students in grades 4 through 6 preferred MVPA "and organizing and playing different games and activities with friends and others" during recess; whereas students in grades 7-8 "reported significantly higher enjoyment for having free time to hang out with and talk to others" (p. 368). For such reasons, along with evidence (e.g., Ridgers et al., 2012) that most recess studies have used children rather than adolescent samples, this study investigated differences in the previously reviewed constructs between students in grades 4-6 and 7-8.

School City Size

Finally, little is known about the relations between the school city size and recess outcomes, which might be due to the challenge of differentiating city size from other potential sociocultural factors like socio-economic status (SES), ethnicity, and cultural beliefs. For example, Massey et al. (2018) reported that:

> Disparities in school-based physical activity and recess opportunities exist for students in low-income schools. Children in urban schools, children in schools with more than 50% minority students, and children in schools with 75% of students eligible for free or reduced lunch have the lowest number of recess minutes per week and are the *least* likely to engage in school-based physical activity. These disparities become magnified given that youth in under-resourced communities typically have less access to physically active environments outside of school. (p. 48)

In somewhat of a contrast, a study in Spain by Ariz et al. (2022) reported significantly more MVPA during elementary school recess in those from ethnic minorities and with lower SES. Further, a study of school day physical activity in 3416 Iowa (USA) children in grades 4-6 by Joens-Matre et al. (2008) highlighted that the largest difference in total school day physical activity by children in urban cities (>250,000), semi-urban cities (<250,000), and rural areas (<50,000)

was at lunch time; with urban children significantly lower than those from both small cities and rural areas. Exploring differences in recess enjoyment and opportunities (indoor and outdoor) and negative affects between highly urban areas and smaller and more isolated cities will contribute new insight into this topic.

Study Objectives

This study addressed five research questions about recess with students in grades 4-8. First, what are grade 4-8 school students' levels of recess-based negative affect, outdoor PA, outdoor MVPA, indoor and outdoor enjoyment and opportunities, and victimization? Second, how do these constructs relate in the sample? Third, do enjoyment and opportunities differ significantly between indoor and outdoor recess? Fourth, is negative affect for recess predicted by the other variables (outdoor recess PA and MVPA; indoor and outdoor recess enjoyment and opportunities) after controlling for victimization (step 1), urban-rural (step 2), and developmental level (step 3)? Finally, do the constructs differ statistically as a function of being a victim of bullying during recess (Yes or No), developmental level (grades 4-6 and 7-8), and school location, being in a large urban area (i.e., GTA) or in smaller cities and towns?

Methods

Procedure and Participants

After securing ethical approval from all necessary personnel (i.e., university ethics board, school board, principal, teacher, student, and parent), consenting students accessed and completed a 40-item online survey through surveymonkey.com, with 27 items used to fulfill the aims of this study. The survey was administered by a research assistant in the school's computer lab/library during regular class time. Following the removal of five outlier cases evident through excessive Mahalanobis distance values ($p = .001$) using protocol from Tabachnick and Fidell (2006), the final sample was 445 ($n = 209$ boys and 236 girls) in grades 4 ($n = 90$), 5 ($n = 115$), 6 ($n = 61$), 7 ($n = 88$), and 8 ($n = 91$).

School and Recess Setting

Data was collected from consenting students in 11 government-funded schools (four public and seven Catholic) representing seven cities in a central Canadian province. In line with previous protocols for classifying city size (e.g., Barros et al., 2009; Joens-Matre et al., 2008), the schools located within the GTA were in a large concentrated urban area, as 6,255,000 persons resided there (Statistics Canada, 2021). In contrast, schools located in more isolated cities and towns had populations of 19,000 - 137,000. As the city with the smallest population (19,169) had more than 10,000 persons, none of the schools in the study were classified as highly rural (Statistics Canada, 2021). The annual average income per household (SES) for full-time workers in each city with schools in this study was $66,200 – $92,400 and correlated positively with city size (r = .53). Each school in this study had recess for their grades 4-8 students at the same time using the same facilities, space, and equipment; complied with the Ontario Ministry of Education (2014) policies requiring no fewer than two adult supervisors during outdoor recess; and followed a 'balanced day' schedule that included two 40-minute breaks per day, each consisting of a 20-minute "nutrition break" followed by a 20-minute "fitness break" that enabled (weather permitting) students to be outside for recess.

Measures

Demographic information (e.g., grade, sex, school name, and city) was requested of students first in the survey. Insight into specific ways students were experiencing victimization through bullying during recess was gathered through a seven-item checklist (Yes/No) wherein students responded to the stem: "Do others ever make you feel unwelcome or uncomfortable during recess because of any of the following?" Responses pertained to: (1) "My race, culture, or skin color"; (2) "My first language"; (3) "The way I look"; (4) "My religion or faith"; (5) "How much money my family makes"; (6) "A disability that I have"; and (7) "My activities or hobbies that I like." This survey item was adapted from the Ministry of Ontario sample school climate survey (2009) and has also been used previously in an elementary school recess setting (McNamara et al., 2018).

The remaining items were Likert-style to measure PA, MVPA, enjoyment, opportunities, and negative affects. These items were counterbalanced and used a 5-point Likert response scale (1 = *never* and 5 = *all the time*) with higher values reflecting more of each. The two items assessing PA during recess were: "I tend to move my body (walk, run, play actively) during outside recess"; and "I tend to stand still or sit down during outside recess" (reverse scored). The two items for MVPA in outdoor recess were: "I spend most of outside recess time being so physically active that I am breathing hard and sweating," and "During outside recess, I am really physically active." The PA and MVPA items have been used previously in research to reflect physical activity and MVPA (e.g., Lodewyk & Mandigo, 2017). Another four items assessed participants' overall enjoyment of recess (two for outdoor and the same two adapted for indoor recess). These were: "I enjoy outside recess" and "I like outside recess," and are from the longer enjoyment measure by Motl et al. (2001). The recess opportunities scale also consisted of four items (two for outdoor and the same two adapted for indoor recess). The first was: "I feel that there are many activity choices and options during outside recess." It has been used previously to assess autonomous choice as part of the *Learning Climate Questionnaire* (Standage et al., 2006). The second opportunity item ("Does your school have the equipment that you want to play with during outside recess?") has been used previously in an elementary recess setting (McNamara et al., 2018). Finally, negative affect consisted of the mean of five corresponding items (nervous, embarrassed, bored, anxious, and lonely) from the shortened Positive and Negative Affect Schedule (PANAS) developed by Watson et al. (1988) and validated for several settings (e.g., Crawford & Henry, 2004) including recess (McNamara et al., 2018). The stem for each negative affect item (nervous, embarrassed, bored, anxious/uptight, and lonely) was "During recess I usually feel…". Each scale's alpha reliability was satisfactory (.67 - .85), especially for scales with fewer than 10 items (Loewenthal, 1996; see Table 1).

Data Analysis

Following survey completion, the data was extracted from surveymonkey.com to the Statistical Package for Social Sciences (SPSS; version 28) for analysis. Descriptive statistics and Pearson bivariate correlations were computed to analyze relationships among the vari-

Table 1

Scale Descriptive Statistics and Alpha Reliability by Victimization, City Size, and Developmental Level

		All	Victimization		GTA		Developmental Level	
	α	*M (SD)*	No	Yes	No	Yes	Grade 4-6	Grades 7-8
N *or n*		445	314	131	350	95	266	179
Negative Effect in Recess	.72	2.05 (.67)	1.86 (.59)	2.49 (.68)	2.01 (.68)	2.20 (.62)	2.04 (.62)	2.06 (.75)
Scales								
Outdoor Recess								
Physically Active Level (1.01)	.75	3.91	(.90) 4.04 (.87)	3.80	(.91) 3.93 (.95)	3.89	(.87) 4.07 (.78)	3.67
Outdoors								
MVPA Level Outdoors (1.12)	.80	3.41	(1.03) 3.49 (.99)	3.22	(1.12) 3.42 (1.06)	3.39	(.95) 3.60 (.92)	3.14
Opportunities Outdoors (1.03)	.67	3.33	(1.02) 3.42(.98)	3.11	(.83) 3.33 (1.03)	3.33	(.97) 3.47 (1.00)	3.13
Enjoyment Outdoors	.79	4.03 (.78) 4.13 (.71)		3.79 (.87) 4.06 (.78)		3.93 (.77) 4.16 (.74)		3.85 (.80)
Indoor Recess								
Enjoyment Indoors	.85	3.45 (1.04)	3.47 (1.01)	3.41 (1.12)	3.40 (1.05)	3.64 (.96)	3.57 (1.02)	3.28 (1.05)
Opportunities Indoors	.70	3.28 (1.04	3.35 (1.03)	3.10 (1.03)	3.19 (1.05)	3.59 (.92)	3.48 (1.00)	2.98 (1.02)

Note. M(SD) = Mean (Standard Deviation); *α* = alpha reliability; GTA = Greater Toronto Area; MVPA = Moderate-to-Vigorous Physical Activity.

ables in the study. Paired samples *t*-tests were utilized to determine significant differences in enjoyment and opportunities between indoor and outdoor recess. Determining whether negative affects were predicted by the remaining study variables after controlling for location and developmental level was assessed using hierarchical multiple regression analyses with victimization entered as step one, location at step two, developmental level at step three, and the recess variables (victimization, physical activity, enjoyment, and opportunities) at step four. Finally, multivariate analysis of variance (MANOVA) was used to assess differences in each of the dependent variables (negative affect; outdoor recess PA, MVPA, enjoyment, and opportunities; and enjoyment of and opportunities during indoor recess) as a function of three independent variables; namely, expe-

riencing bullying (victimization; Yes or No), school location (in the GTA metropolis or not), and developmental level (grades 4-6 or 7-8).

Results

Results revealed normal distributions (e.g., skew, kurtosis) and satisfactory (Loewenthal, 1996) alpha reliability coefficients (>.67) for each of the dependent variables in this study. These, and the descriptive statistics overall and by victimization, school location, and developmental level, are reported in Table 1. The mean sum of the seven victimization to bullying items was .52 (*SD* = 1.02). The frequency of each form of victimization were my "activities or hobbies" (*n* = 80; 18%); "the way I look" (*n* = 68; 15.3%); "how much money my family makes" (*n* = 28; 6.3%); "my race, culture, or skin color" (*n* = 16; 3.6%); "a disability that I have" (*n* = 15; 3.4%), "my religion or faith" (*n* = 14; 3.1%); and, "my first language" (*n* = 10; 2.2%). A total of 314 (70.6%) reported no victimization, 72 (16.2%) reported one form, 35 (7.9%) two forms, 18 (4%) three forms, and 6 (1.2%) four or more forms.

Pearson bivariate correlations and among dependent variables for the overall sample are presented in Table 2. There were moderate ($r > .25$) and statistically significant ($p < .01$) correlations between each of the outdoor recess variables (PA, MVPA, opportunities, and

Table 2
Scale Correlations

Scales	1	2	3	4	5	6	7
1. Negative Effect	-						
2. Physical Activity Outdoors	-.38**	-					
3. MVPA Outdoors	-.29**	.65**	-				
4. Opportunities Outdoors	-.25**	.30**	.35**	-			
5. Enjoyment Outdoors	-.40**	.50**	.50**	.46**	-		
6. Enjoyment Indoors	.08	-.13**	-.19**	.05	-.03	-	
7. Opportunities Indoors	-.09	.12**	-.06	.35**	.13**	.53**	-

Note. * $p < .05$; ** $p < .01$. MVPA = Moderate to Vigorous Physical Activity.

Table 3
MANOVA Differences by Victimization, City Size, and Developmental Level

	Victimization			GTA or Smaller City			Developmental Level		
Dependent Variables	F	*P*	η^2	F	*p*	η^2	F	*p*	η^2
Negative Affect	96.00	<.001	.178	6.53	.011	.015	.19	.67	<.001
Physical Activity Outdoors	13.60	<.001	.030	1.55	.214	.003	21.18	<.001	.046
MVPA Outdoors	6.42	.012	.014	.074	.786	<.001	21.80	<.001	.047
Opportunities Outdoors	8.28	.004	.018	0.00	.97	<.001	12.56	<.001	.028
Enjoyment Outdoors	18.20	<.001	.039	2.15	.14	.005	17.18	<.001	.037
Enjoyment Indoors	0.28	.60	.001	4.21	.041	.009	8.37	.004	.019
Opportunities Indoors	5.47	.02	.012	11.64	<.001	.026	26.70	<.001	.057

Note. η^2 = eta squared. GTA = Greater Toronto Area; MVPA = Moderate to Vigorous Physical Activity.

enjoyment) along with negative affect (inversely). More specifically, outdoor recess enjoyment and lower negative affects were associated with elevated PA, MVPA, and opportunities during outdoor recess. Pertaining to the indoor recess experience, students were significantly more likely to enjoy indoor recess if they had lower levels of PA and MVPA outdoors and if they had ample activity and equipment opportunities during indoor recess. Students were also more prone to report such play opportunities during indoor recess if they enjoyed and were more physically active in outdoor recess.

The paired sample t-test results assessing differences in indoor and outdoor recess enjoyment revealed significantly higher enjoyment for outdoor than indoor recess $t(444) = 9.31$, $p < .001$). There was no significant difference between indoor and outdoor opportunities [$t(444) = -.995$, $p = .320$).

Results of the hierarchical regression analyses with negative affect as the outcome variable, victimization entered at step one, school city size added at step two, developmental level included at step three, and the remaining six recess variables entered at step four as predictors are displayed in Table 4. Results revealed that victimization predicted negative affect in step one [$R^2 = .176$, F (1, 443) = 96.00, $p < .001$], school city size added significantly to the prediction

Table 4

Results of Hierarchical Multiple Regression on Recess Variables

			Negative Affect		
Step	Predictors	β	R^2	R^2 Change	*t*
1			.176	.178***	
	Victimization	.422			9.80***
2			.203	.024***	
	Victimization	.435			10.21***
	Location	.157			3.68***
3			.205	.003	
	Victimization	.434			10.19***
	Location	.174			3.88***
	Developmental Level	.055			1.23
4			.336	.132***	
	Victimization	.349			8.65***
	Location	.109			2.59**
	Developmental Level	-.051			-1.18
	Recess Variables				
	Physical Activity Out	-.186			-3.43***
	MVPA Out	.004			.072
	Opportunity Out	-.045			-.938
	Opportunity In	-.045			-.875
	Enjoyment Out	-.217			-4.30***
	Enjoyment In	.065			1.35

Note. * $p < .05$. ** $p < .01$. *** $p < .001$. β values are standardized regression coefficients; R^2 values are cumulative with each incremental step adding to the variance explained. PA = Physical Activity; MVPA = Moderate-to-Vigorous Physical Activity; Out = Outdoors recess; In = Indoors recess.

of negative affect in step three [$R^{2\ Change} = .024$, $p < .001$], developmental level did not account for a significant portion of the remaining variance for negative affect in step three [$R^{2\ change} = .003$, $p = .221$], and the remaining variables added significantly to the prediction of negative affect in step four [$R^{2\ change} = .132$, $p <= .001$]. Statistical individual predictors of negative affect for recess in the final step were outside recess enjoyment ($\beta = -.217$, $t = -4.30$, $p = .001$) and outside physical activity ($\beta = -.186$, $t = -3.43$, $p < .001$).

Finally, results of the MANOVA analyses separately exploring differences in the seven dependent variables (PA, MVPA, negative affect, and indoor and outdoor enjoyment and opportunities) as a function of victimization (Yes or No), school city size (in the GTA metropolis or not), and developmental level (grades 4-6 or 7-8) revealed a main affect for each. These were [$F(7, 437) = 14.17$, $p < .001$, $\eta^2 = .185$] for victimization; [$F(7, 437) = 3.25$, $p = .002$, $\eta^2 = .050$] school city in a metropolis or not; and [$F(7, 437) = 8.51$, $p < .001$, $\eta^2 = .120$] for developmental level. The results of follow-up ANOVA tests are reported in Table 3. They revealed, first, that those reporting being a victim of bullying during recess were significantly more likely to have a negative affect for recess ($p < .001$); lower physical activity ($p < .001$), MVPA ($p = .012$), opportunities ($p = .004$), and enjoyment ($p < .001$) in outdoor recess; and fewer opportunities for play during indoor recess ($p = .02$). The second MANOVA procedure specifically revealed that students attending schools in the GTA were significantly higher in negative affect for recess ($p = .011$) and more likely to enjoy $p = .041$) and report opportunities for play ($p < .001$) during indoor recess than students in smaller more isolated schools. Finally, the third MANOVA specifically revealed that students in grades 4-6 were significantly more likely than those in grades 7-8 to be higher in each of the dependent variables ($p < .004$) except for negative affects ($p = .67$).

Discussion

This study aimed to discover more about the levels of grade 4-8 students' recess affect, physical activity, and opportunities by their experiences of victimization, recess location (indoors or outdoors), school city size (metropolis or smaller, more isolated cities), and developmental level (grades 4-6 and 7-8). In line with previous re-

search (e.g., Lodewyk & McNamara, 2020), students in our study reported significantly higher enjoyment for outdoor recess than indoor recess. Ridgers et al. (2010) reports that, although students can be content to stay indoors if there are enough opportunities and choices of things to do, they tend to prefer outdoor recess because of, for example, the fewer environmental constraints for active play in the form of adult expectations and rules, bullying, constrained spaces, and a lack of usable equipment. Levels and significant predictive relations between negative affect and victimization in this study also corroborate previous research linking these constructs (e.g., Hansen et al., 2012; McNamara, 2013**;** Pringle, 2010) in elementary school recess. For example, our finding that 29.4% of students reported at one form of victimization (feeling unwelcome or uncomfortable) during recess, 13.3% reported two, and 5.2% reported three or more of the seven possible forms resembled values reported by Author et al. (2018) using the same victimization measure. These results affirm the importance of recognizing students with high victimization and negative affect while targeting strategies to help them feel more welcomed, comfortable, and socially connected during recess (McNamara, 2021).

The present study also contributes new insight into how victimization and negative affect vary as a function of the enjoyment and opportunities students experience during indoor or outdoor recess, along with their level of physical activity and MVPA during outdoor recess. For example, a UK study of grades 3-5 students (Boulton et al., 2009) revealed that higher victimization predicted compromised recess liking in boys and girls. In our study, students who were higher in victimization reported significantly fewer opportunities for play during indoor recess and lower physical activity, MVPA, opportunities, and enjoyment in outdoor recess. Students were also more likely to enjoy indoor recess when they had ample activity and equipment opportunities, and if they enjoyed and had lower levels of physical activity and MVPA during outdoor recess. Students, especially those who experience victimization during recess, may need more support in the form of more diverse and available equipment and activity choices during inside recess, but especially during outside recess when they may feel more vulnerable due to the increased autonomy and reduced supervision compared to classroom settings

(Vaillancourt et al., 2010). According to the findings in this study and others, providing such support might also reciprocally improve these students' affects and levels of outside recess physical activity, MVPA, and enjoyment (Pringle, 2010; Smith & St. Pierre, 2009). For example, physical activity during recess has been linked to several positive academic outcomes after recess (Hodges et al., 2022), elevated affect and enjoyment during recess (McNamara, 2013), enhanced peer relationships at school, relatedness to school, and school climate (Haapala et al., 2014).

The significant developmental differences evident in this study are also worth discussing. The finding that students in grades 4-6 were significantly higher in physical activity and MVPA during outdoor recess than those in grades 7-8 corroborates other studies consistently showing the same, especially among girls (Hyndman et al., 2017; Ridgers et al., 2010). This result may be partially explained by the finding in the study that students in grades 4-6 also reported more enjoyment and opportunities during indoor and outdoor recess than those in grades 7-8. This may be partly due to the cognitive, physical, and socio-emotional changes associated with transitioning from childhood to adolescence, such as a more fragile physical self-concept and body image and an elevated value on peer acceptance and interactions (Juvonen & Graham, 2014). Corresponding changes in upper elementary school students' recess preferences from physically active and vigorous games to more sedentary activities that better meet their desire for socializing and relaxing with their friends (Lodewyk & McNamara, 2020; Lopes et al., 2006; Ridgers et al., 2010). Svanelöv's (2023) interviews with 18 Swedish middle school students provide some support for this by revealing that "students engaged in physical activity during recess to form a social group and community that was personally affirming, facilitated personal identity, and helped to counteract feelings of loneliness" (p. 11). Adolescents may need strategic interventions to increase their recess physical activity levels, such as providing them with more choices for semi-structured activities by a trained adult or student-leader that they can participate in with their friends, including opportunities for communication and cooperation, and that have a unifying weekly theme such as "obstacle course week" or "fitness circuit week" (Ramstetter et al., 2010; Stellino et al., 2010).

Perhaps the most noteworthy finding in this study was that, compared to students in Catholic schools located in smaller, more isolated cities, those from public schools within the GTA were significantly higher in negative affect for recess and were more likely to enjoy and report opportunities for play during indoor recess. We recognize that many contextual factors (e.g., ethnicity, culture, SES, school policies and practices) beyond urbanization were not fully accounted for, rendering it impossible to make any strong conjectures about these results beyond some potential explanations based on previous research. The noted differences between the GTA-public and smaller city-Catholic school samples could be related to unique concerns in highly urban settings. To illustrate some, Kasali and Dogan (2010) reported more space and variety of activities in private than public elementary schools in Turkey, Astor et al. (2001) found that as many as 23% of the urban elementary school students rated their playground as unsafe, and Massey et al. (2018, p. 48) noted that "levels of community violence, cost of extracurricular activities, lack of organized programs, lack of green space, and safety have been reported as barriers to PA among urban youth." McNamara (2021) explains more specifically relative to recess in Canada, stating:

> Many school playgrounds, particularly those in dense, urban neighbourhoods, do not have the capacity to provide ample space for children to run freely and engage in active play... Although there is little scholarly documentation available with regards to the description of schoolyards across Canada, the traditional built environment of many schoolyards, particularly those in urban or low-income neighbourhoods, tends to be lacking in natural landscape elements such as trees, shrubs, grass, hills, logs, sand, and rocks… It is not uncommon, particularly in lowincome areas, to see 'playgrounds' created from parking lots, sharing space with school dumpsters and lacking any fixed equipment or ground markings. (p. 1820)

Another viable explanation for these differences is that indoor recess in the public-urban schools may have (for whatever reason) been more motivating for students, hence their elevated enjoyment,

sense of activity choices, and perceptions of equipment to use during indoor recess.

According to Kasali and Dogan (2010, p. 530), "students are more likely to be stationary and stay inside their classrooms when indoor and outdoor spaces are too congested, lack variety, and are inaccessible." They recommend that students have the personal choice of indoor or outdoor recess, as it enables them to make a choice that is aligned with their preferences. Depending on the results of subsequent research, it might also be helpful to tailor interventions to the specific cultural dynamics of each school and surrounding demographic because, as Anthamatten et al. (2011) found, recess yards that are "culturally tailored" within a community intervention can facilitate voluntary physical activity and healthy physical development during recess. More research into the specific features of schools, including availability of social media for use during recess, is necessary to make more robust assertions about potential causes for this elevation in indoor recess enjoyment and opportunities in urban-public elementary schools.

There are inherent limitations on potential inferences in using self-report data and focusing on construct means and relationships in this study. We also note the potential confounding of having each GTA school be a public school while each school from a smaller city was a Catholic school. A final limitation was not collecting and reporting on more individual and school-specific demographic data, such as students' SES, school policies and procedures, and the structure of the school areas (e.g., green space, line markings, supervision, and availability of stable and loose equipment) used for indoor and outdoor recess. This would have added significantly to the study because, according to Hannus et al. (2018), "assumptions cannot be made about which barriers and facilitators affect a specific population in its social, organizational, physical, and cultural context" (p. 1017).

Future research should investigate the potential role of SES, ethnic, religious, and socio-cultural factors "climate" of each school community on students' recess experiences because, for example, neighborhood dynamics are associated with children's well-being and activity patterns, especially in low-income areas (Ariz et al., 2022). For example, Ridgers et al. (2016) found that playground in-

terventions such as adding physical structures and field markings to the school playground increased recess involvement and physical activity levels in low-income areas. Barros et al. (2009) found an increased likelihood of not having recess in children who were black or Hispanic, living in a large or medium-sized city, attending public school, and having lower family income and parental education.

Finally, an investigation of schools' recess policies and practice by Olsen et al. (2024, p. 131) recommended that school leaders "consider establishing cohorts, developing a handbook, creating a rotation schedule (i.e., blacktop, field, playground), developing a recess committee, utilizing the physical education teacher for staff development, assigning recess, equipment and bags, offering a variety of activities, and teaching children how to play." The present study adds useful insight into some of these dynamics by investigating grade 4-8 students' recess affect, physical activity, and opportunities by their experiences of victimization, being indoors or outdoors, urbanization, and developmental level.

References

Anthamatten, P., Brink, L., Lampe, S., Greenwood, E., Kingston, B., & Nigg, C. (2011). An assessment of schoolyard renovation strategies to encourage children's physical activity. *International Journal of Behavioral Nutrition and Physical Activity, 8*(27), 1–9. https://doi.org/10.1186/1479-5868-8-27

Ariz, U., Fernandez-Atutxa, A., Rivas-Fang, O., & Ruiz-Litago, F. (2022). Physical activity at school recess: A key element in balancing social disparities. *Journal of School Health, 92*, 1005–1012. https://doi.org/10.1111/josh.13234

Astor, R. A., Meyer, H. A., & Pitner, R. O. (2001). Elementary and middle school students' perceptions of violence-prone school subcontexts. *Elementary School Journal, 101*, 511–528. https://doi.org/10.1086/499685

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Prentice Hall.

Barros, R. M., Silver, E. J., & Stein, R. E. (2009). School recess and group classroom behavior. *Pediatrics, 123*, 431–436. https://doi.org/10.1542/peds.2007-2825

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117*(3), 497–529. http://dx.doi.org/10.1037/0033-2909.117.3.497

Boulton, M. J., Chau, C., Whitehand, C., Amataya, K., & Murray, L. (2009). Concurrent and short-term longitudinal associations between peer victimization and school and recess liking during middle childhood. *British Journal of Educational Psychology, 79*, 207–221.

Centers for Disease Control and Prevention. (2010). *The association between school-based physical activity, including physical education, and academic performance*. U.S. Department of Health and Human Services.

Centers for Disease Control and Prevention (CDC). (2022). *Whole school, whole community, and whole child model*. https://www.cdc.gov/healthyschools/wscc/index.htm

Centers for Disease Control and Prevention (CDC), & Society of Health and Physical Educators of America. (2017). *Strategies for recess in schools*. U.S. Department of Health and Human Services. https://www.shapeamerica.org/uploads/pdfs/recess/SchoolRecessStrategies.pdf

Crawford, J. R., & Henry, J. D. (2004). The Positive and Negative Affect Schedule (PANAS): Construct validity, measurement properties and normative data in a large non-clinical sample. *British Journal of Clinical Psychology, 43*, 245–265.

Doll, B., Murphy, P., & Song, S. Y. (2003). The relationship between children's self-reported recess problems, and peer acceptance and friendships. *Journal of School Psychology, 41*(2), 113–130.

Durlak, J. A., Weissberg, R. P., Dymnicki, A. B., Taylor, R. D., & Schellinger, K. B. (2011). The impact of enhancing students' social and emotional learning: A meta-analysis of school-based universal interventions. *Child Development, 82*(1), 405–432.

Gagne, M., Ryan, R. M., & Bargman, K. (2003). The effects of parent and coach autonomy support on need satisfaction and well-being of gymnasts. *Journal of Applied Sport Psychology, 15*, 372–390.

Gere, J., & MacDonald, G. (2010). An update of the empirical case for the need to belong. *Journal of Individual Psychology, 66*, 93–101.

Haapala, H. L., Hirvensalo, M. H., Laine, K., Laakso, L., Hakonen, H., Kankaanpää, A., Lintunen, T., & Tammelin, T. H. (2014). Recess physical activity and school-related social factors in Finnish primary and lower secondary schools: Cross-sectional associations. *BMC Public Health, 14*, 1114–1123. https://doi.org/10.1186/2458-14-1114

Hannus, A., Lees, M., Magi, K., Riimets, A., Kalma, M., Riso, E. M., & Kull, M. (2018). Perspectives of children and adolescents on the perceived determinants of physical activity during recess. *Psychology, Health & Medicine, 23*(8), 1016–1024. https://doi.org/10.1080/13548506.2017.1417611

Hansen, T. B., Steenberg, L. M., Palic, S., & Elklit, A. (2012). A review of psychological factors related to bullying victimization in schools. *Aggression and Violent Behavior, 17*, 383–387. https://doi.org/10.1016/j.avb.2012.03.008

Hodges, V., Centeio, E., & Morgan, C. (2022). The benefits of school recess: A systematic review. *Journal of School Health, 92*(10), 959–967. https://doi.org/10.1111/josh.13230

Hyndman, B., Bensen, A., & Telford, A. (2017). Active play: Exploring the influences on children's school playground activities. *American Journal of Play, 8*(3), 325–344.

Hyndman, B., Benson, A., Ullah, S., & Telford, A. (2014). Evaluating the effects of the Lunchtime Enjoyment Activity and Play (LEAP) school playground intervention on children's quality of life, enjoyment and participation in physical activity. *BMC Public Health, 14*, 164. https://doi.org/10.1186/1471-2458-14-164

Hyndman, B. P., & Lester, L. (2015). The relationship between elementary school children's enjoyment of school playground activities and participation in physical activity during lunchtime recess. *Children, Youth and Environments, 25*(1), 80–99.

Jarrett, O. S., & Duckett-Hedgebeth, M. (2003). Recess in a middle school: What do the students do? In D. E. Lytle (Ed.), *Play and educational theory and practice* (pp. 227–241). Praeger.

Joens-Matre, R. R., Welk, G. J., Calabro, M. A., Russell, D. W., Nicklay, E., & Hensley, L. D. (2008). Rural-urban differences in physical activity, physical fitness, and overweight prevalence of children. *Journal of Rural Health, 24*(1), 49–54.

Juvonen, J., & Graham, S. (2014). Bullying in schools: The power of bullies and the plight of victims. *Annual Review of Psychology, 65*, 159–185. https://doi.org/10.1146/annurev-psych-010213-115030

Kasali, A., & Dogan, F. (2010). Fifth, sixth, and seventh-grade students' use of non-classroom spaces during recess: The case of three private schools in Izmir, Turkey. *Journal of Environmental Psychology, 30*, 518–532. https://doi.org/10.1016/j.jenvp.2010.03.008

Knowles, Z. R., Parnell, D., Stratton, G., & Ridgers, N. D. (2013). Learning from the experts: Exploring playground experience and activities using a write and draw technique. *Journal of Physical Activity and Health, 10*, 406–415.

Kuh, L. P., Ponte, I., & Chau, C. (2013). The impact of a natural playscape installation on young children's play behaviors. *Children, Youth and Environments, 23*(2), 49–77.

Lelonek, M., & Przychodni, A. (2020). Level of physical activity during school recess within aspect of available dedicated playing space. *Physical Activity Review, 8*(2), 30–37. https://doi.org/10.16926/par.2020.08.19

Lodewyk, K.R, & Mandigo, J. (2017). Early validation evidence of a Canadian practitioner-based assessment of physical literacy in physical education: Passport for Life. *The Physical Educator, 74*(3), 443–477.

Lodewyk, K., & McNamara, L. (2020). Relations among children's recess enjoyment, affect and preferences. *Journal of Teaching in Physical Education, 39*, 360–373. https://doi.org/10.1123/jtpe.2018-0316

Loewenthal, K. M. (2001). *An introduction to psychological tests and scales* (2nd ed.). Psychology Press.

London, R. A., Westrich, L., Stokes-Guinan, K., & McLaughlin, M. (2015). Playing fair: The contribution of high-functioning recess to overall school climate in low-income elementary schools. *Journal of School Health, 85*(1), 53–60.

Malina, R. M., Bouchard, C., & Bar-Or, O. (2004). *Growth, maturation, and physical activity* (2nd ed.). Human Kinetics.

Massey, W. V., Stellino, M. B., Claassen, J., Dykstra, S., & Henning, A. (2018). Evidence-based strategies for socially, emotionally, and physically beneficial school recess. *Journal of Physical Education, Recreation & Dance, 89*(5), 48–52.

McDonough, M. H., & Crocker, P. R. E. (2007). Testing self-determined motivation as a mediator of the relationship between psychological needs and affective and behavioral outcomes. *Journal of Sport and Exercise Psychology, 29*, 645–663.

McNamara, L. (2013). What's getting in the way of play? An analysis of the contextual factors that hinder recess in elementary schools. *Canadian Journal of Action Research, 14*(2), 3–21.
McNamara, L. (2021). School recess and pandemic recovery efforts: Ensuring a climate that supports positive social connection and meaningful play. *FACETS, 6*, 1814–1830. https://doi.org/10.1139/facets-2021-0081
McNamara, L., Lodewyk, K., & Franklin, N. (2018). Recess: A study of belongingness, affect, and victimization on the playground. *Children and Schools, 40*(2), 114–121. https://doi.org/ 10.1093/cs/cdy006
McNamara, L., Vaantaja, E., Dunseith, A., & Franklin, N. (2014). Tales from the playground: Transforming the context of recess through collaborative action research. *International Journal of Play, 4*(1), 1–20.
Motl, R. W., Dishman, R. K., Saunders, R., Dowda, M., Felton, G., & Pate, R. R. (2001). Measuring enjoyment of physical activity in adolescent girls. *American Journal of Preventive Medicine, 21*(2), 110–117.
Olsen, E. B., Tsuda, E., Wyant, J. D., et al. (2024). The dissemination and implementation of recess guidelines, policies, and practices during the COVID-19 pandemic. *Journal of Teaching in Physical Education, 43*, 123–132. https://doi.org/10.1123/jtpe.2022-0196
Olweus, D. (1993). *Bullying at school: What we know and what we can do*. Blackwell.
Ontario Ministry of Education. (2009). *School climate survey: A survey for students in grades 4 to 6 about equity and inclusive education and bullying/harassment*. https://www.edu.gov.on.ca/eng/safeschools/survey4to6.pdf
Parrish, A. M., Chong, K. H., Moriarty, A. L., Batterham, M., & Ridgers, N. D. (2020). Interventions to change school recess activity levels in children and adolescents: A systematic review and meta-analysis. *Sports Medicine, 50*, 2145–2173. https://doi.org/10.1007/s40279-020-01347-z
Pawlowski, C. S., Tjørnhøj-Thomsen, T., Schipperijn, J., & Troelsen, J. (2014). Barriers for recess physical activity: A gender-specific qualitative focus group exploration. *BMC Public Health, 14*(1), 639–649.
Pellegrini, A. D., & Bohn, C. (2005). The role of recess in children's cognitive performance and school adjustment. *Educational Researcher, 34*(1), 13–19.

Pringle, R. (2010). Finding pleasure in physical education: A critical examination of the educative value of positive movement affects. *Quest, 62*(2), 119–134.
Ramstetter, C. L., Murray, R., & Garner, A. S. (2010). Crucial role of recess in schools. *Journal of School Health, 80*(11), 517–526.
Ridgers, N. D., Salmon, J., Parrish, A. M., Stanley, R. M., & Okely, A. D. (2012). Physical activity during school recess: A systematic review. *American Journal of Preventive Medicine, 43*(3), 320–328.
Robert Wood Johnson Foundation. (2010). *The state of play: Gallup survey of principals on school recess*. Princeton, NJ. http://www.rjwf.org
Scanlan, T. K., & Simons, J. P. (1992). The construct of sport enjoyment. In G. C. Roberts (Ed.), *Motivation in sport and exercise* (pp. 199–215). Human Kinetics.
Smith, M. A., & St. Pierre, P. E. (2009). Secondary students' perceptions of enjoyment in physical education: An American and English perspective. *The Physical Educator, 66*(4), 209–224.
Standage, M., Duda, J. L., & Ntoumanis, N. (2006). Students' motivational processes and their relationship to teacher ratings in school physical education: A self-determination theory approach. *Research Quarterly for Exercise and Sport, 77*(1), 100–110. https://doi.org/10.1080/02701367.2006.10599336
Stellino, M. B., Sinclair, C. D., Partridge, J. A., & King, K. M. (2010). Differences in children's recess physical activity: Recess activity of the week intervention. *Journal of School Health, 80*(9), 436–444.
Svanelöv, E. (2023). 'You don't want to do things alone': Children in low to middle schools talk about physical activity during recess time. *Sport, Education and Society*. Advance online publication. http://dx.doi.org/10.1080/13573322.2023.2246475
Tabachnick, B. G., & Fidell, L. S. (2006). *Using multivariate statistics* (4th ed.). Allyn & Bacon.
Tran, I., Clark, B. R., & Racette, S. B. (2013). Physical activity during recess outdoors and indoors among urban public school students, St. Louis, MO, 2010–2011. *Preventing Chronic Disease, 10*, 130–135. http://dx.doi.org/10.5888/pcd10.130135
Vaillancourt, T., Brittain, H., Bennett, L., Arnocky, S., McDougall, P., Hymel, S., & Cunningham, L. (2010). Places to avoid: Population-based study of student reports of unsafe and high bullying areas at school. *Canadian Journal of School Psychology, 25*(1), 40–54. http://dx.doi.org/10.1177/0829573509358686

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54*(6), 1063–1070.