

Physical environment of school and its relation to aggression

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ABSTRACT

Children spend half of their waking time in schools at a time when they are the most active and supple in their lives. Their role in Indian schools is very passive and they are forced to be in the environment, subject to its physical facilities especially water, light, toilet facilities, spaciousness and cleanliness of the building and premises. This research studies how these physical factors affect children's aggression level. Data was collected from 100 school students aged between 13 to 16 years, studying in both private and government schools. It was found that cleanliness of the school building, especially of toilets was significantly related to aggression while lighting, drinking water, and spaciousness were not significantly related to aggression.

Keywords: *School Environment, Spaciousness, Cleanliness, Toilets, Aggression*

Considering young children spend about 8 hours of their waking life in schools, the facilities provided there could have an impact on their behaviour. Schools in Kerala and India function in a way that children spend about 80% of the time sitting quietly and listening to the teachers, especially at an age when they are most supple and inclined to move about. They are relatively passive agents and the physical environment and teachings are thrust on them. The amount of freedom is relatively less for students and the only time they get to relieve or satisfy their physiological needs and movement need are during the break times. Inadequate satisfaction or frustration of these can possibly lead to aggression.

Aggressive Behaviour

“Aggression can be defined as an emotion that tends to hurt, harm or destroy something or someone, (Roland & Idsoe, 2001). Aggressive behaviour can be reactionary behaviour which occurs in many situations. Aggressive behaviour includes verbal and nonverbal or physical behaviour that injures another person which directly or indirectly results in extraneous gains for the aggressor. Aggression is a stable personal trait lasting from childhood, through adolescence to adulthood (Lobber, Hay, 1997) but can also be triggered by the external factors or thwarting of needs. It may be said that aggressive behaviour is increasing in schools as also seen in news articles in India and abroad about school violence and even shooting.

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School environment includes the physical and aesthetic surroundings, the psychosocial climate and culture of the school. Factors that influence the physical environment include the school building and the area surrounding it, biological or chemical agents, and physical conditions such as temperature, noise and lighting. The psychological Environment includes the physical, emotional and social conditions that affect the well-being of students and staff (CDC, 2005). The importance of the physical environment of the school is of importance. The physical environment of school buildings and school grounds is a key factor in the overall physical and mental health and safety of students, staff, and visitors. School buildings and grounds ideally are designed and maintained to be free of health and safety hazards, and to promote learning. Policies and protocols by the government provide guidelines for food protection, sanitation, safe water supply, healthy air quality, good lighting, safe playgrounds, violence prevention, and emergency response, among other issues that relate to the physical environment of schools (Govt of Kerala Policy, 2011). A positive school environment is defined as a school having appropriate facilities, well-managed classrooms, available school-based health supports, and a clear, fair disciplinary policy. Cleanliness is one of the important factors in positive school environment. Cleanliness involves spaciousness, classroom environment, hygiene facilities proper ventilation toilet cleanliness etc.

Hertzberg (1964) in his two-factor theory proposed that the hygiene factors which include policies, security, relationships and actual physical conditions can have an effect on the motivation of workers. Low hygiene factors can lead to dissatisfaction. This can be extended to students in the classroom too. One of the factors within the hygiene factor is the physical place of being. Can the dissatisfaction, if any, be exhibited as aggression by the students?

Research problem

While it may not be possible to explore all aspects of the school environment, this group of researchers who are all females, based on their personal experience, felt that the cleanliness and hygiene of the school was an important determiner of their mood and overall mentality while in the classroom. Untidy classrooms and school premises, unhygienic toilet facilities, inadequate toilet facilities, drinking water availability, lighting within the classroom and spaciousness were significant factors that negatively influence their state of mind, and thereby their receptivity to education, as well as influencer of other unhealthy external behaviour such as irritability, and depression, all possibly leading to aggressive behaviour. Can the dissatisfaction with physical facilities which are part of hygiene factors as propounded by Hertzberg be displayed as aggression? In short, how does the school physical environment affect the mental state of school students? We decided to study this issue in this research project.

Objectives of the study

1. To determine if the spaciousness of the classroom is related aggression
2. To determine if the lighting of the classroom is related aggression
3. To determine if lack of availability of drinking water in the school is related aggression
4. To determine if classroom cleanliness related aggression
5. To determine if adequacy of toilet facility is related aggression
6. To determine toilet cleanliness is related aggression

METHODOLOGY

Research design and techniques – a cross-sectional survey was the research design adopted

Participants – data was collected from 100 school students, 41 males, and 59 females from 5 schools which included both government and private schools in Kochi. The students were in the age range of 13-16yrs or from high school

Sampling procedure – convenience sampling method was adopted due to the paucity of time.

Tools and Data collection method – the students were approached personally with the printed questionnaires. Rapport was built with them, and they were asked consent to participate in the survey. Those willing were given a questionnaire and with the help of the researchers, data was collected from them.

The tools used were 1.the Brief Aggression Questionnaire (BAQ) by Webster et al (2014), a 12-item scale developed as a more efficient alternative to the 29-item Aggression Questionnaire (BPAQ; Buss & Perry, 1992). The BAQ had 4 subscales -physical aggression, verbal aggression, hostility and anger, and 3 items each under each subscale. 2. Physical Facilities form which collected on 10 aspects- availability of drinking water, lighting, windows/ ventilation, perception of spaciousness, actual size of classroom, number of students accommodated in the class (to measure space per student), number of toilets, perception of cleanliness of toilets, perception of cleanliness of the classroom and cleanliness of school premises. This form had two parts- part 1 which collected information from the students and part 2 which was noted by the researchers (size of classroom, number of toilets, lighting, ventilation, water availability). Some aspects were common in both the form such as availability of water, ventilation, lighting, and number of toilets.

Methods used for data analysis – the collected data was analysed using the correlation method and t –test, as the data was found to be normally distributed.

RESULTS

Data collected from the 5 different schools was entered into a spreadsheet. Cases with missing data and with unengaged responses were removed, making the final count of students as 94, 37 boys and 57 girls. The average score of the dependent variable measured by the Aggression Scale was calculated. Various measures of the school physical environment was correlated with it. The correlation was calculated for the whole sample as well as for boys and girls separately as seen in Table 1.

Table 1: Correlation between Aggression and the various dimensions of Classroom Environment

	Aggression – all participants	Aggression Boys	Aggression Girls
Space per student	-0.06	-0.03	-0.08
Light in the classroom	0.01	0.15	-0.08
Water Availability	0.01	0.04	-0.04
Cleanliness of Classroom	-0.18	-0.15	-0.19
Adequacy of Toilets	-0.12	-0.49**	-0.09
Cleanliness of Toilet	-0.22*	-0.27*	-0.19

* - Correlation is significant at the 0.05 level (2-tailed).

** - Correlation is significant at the 0.01 level (2-tailed).

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When it came to the cleanliness of the class and toilets, a difference was found between the perception of boys and girls as seen in the t-test done. The results of the t-test is given in Table 2.

Table 2- T-test to test the difference between boys and girls among the study variables

	t-test for Equality of Means				
	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Aggression	0.596	90	0.553	0.94	1.58
Classroom Cleanliness	-2.424	90	0.017	-0.60	0.25
Toilet Cleanliness	-2.825	90	0.006	-0.54	0.19
Spaciousness	-1.166	90	0.247	-0.27	0.23

From Table 2 it can be seen that in overall aggression and spaciousness perception there is no significant difference between boys and girls. However, in the aspects of cleanliness there was a difference between the two groups. The correlation among the various measures of school environment factors is given in Table 3 and high correlation is seen among them the perception of cleanliness among the various school factors.

Table 3- Correlation between School Environment Factors

	Water Availability	Toilets Adequacy	Classroom Cleanliness	Toilet Cleanliness	School Cleanliness
Toilets Adequacy	.28**				
Classroom Cleanliness	.33**	.40**			
Toilet Cleanliness	.21*	.41**	.75**		
School Cleanliness	.36**	.43**	.64**	.64**	
Aggression	-0.01	-0.12	-0.18	-.22**	-0.14

* - Correlation is significant at the 0.05 level (2-tailed)

** - Correlation is significant at the 0.01 level (2-tailed)

DISCUSSION

Comparing the level of aggression displayed to the various aspects of the school environment, we had the following findings.

Space per student and Aggression: Even though the data was collected from several schools, the classroom size was almost similar in these 5 schools, about 25square meters and an average of 30 students; giving an average of 0.8sqmeters per student. This matched the 8sqft (0.74sqmt) of floor space recommended by the Kerala Government School building recommendation. The correlation between space and aggression was -0.06 and found to be not significant. This could be because of the adequacy of space, as well as the fact that there was little variation in space among the sample students' classrooms.

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Lighting and Aggression: The correlation between perception of classroom lighting and aggression was 0.01 and was found to be not significant. This could be because 70% of the students rated lighting as good/very good and there was no potential frustration due to it.

Drinking water Availability and Aggression: The correlation between drinking water availability and aggression was 0.009, which was not significant. The fact that in Kerala, all schools have good drinking water supply, could partly explain this, and it was also supported by the students' high average rating of 3.4 (out of 4) for that item, indicating that water was almost always available.

Cleanliness of the Classroom: There was a negative correlation of -0.178 between aggression and perception of cleanliness of the classroom. While it was not significant, it was found that this negative correlation was higher for the girls (0.19) than the boys (0.15). (Table 1), hinting the cleanliness of the class affects the girls more than the boys.

Cleanliness of the Toilets- Perception of cleanliness level of the toilet was found to be significantly negatively correlated to aggression at a correlation of -0.22. ($p < 0.01$); for the girls it was -0.19 and for the boys it was a significant correlation at -0.27. This was a surprising result as we assumed the girls would have greater discomfort. This result could be because aggression, the dependent variable, could be displayed or experienced more by boys than girls.

Adequacy of number of toilets- There was a low negative correlation of -0.12 between toilet adequacy and aggression level for the whole sample. However separate analysis showed that the correlation between the two factors for the boys was -0.49, a relatively high significant correlation ($p < 0.01$), and for the girls it was -0.09, not significant. The previous explanation of aggression being displayed and experienced more in boys than girls, could be the reason for this finding.

All the measures of school environment cleanliness had strong significant correlations with each other as seen in Table 3. The strongest significant correlations were between toilet cleanliness and classroom cleanliness (0.75) and toilet and school cleanliness (0.64). This also indicates that the cleanliness maintained by the school in the classroom, toilets and overall school premises were similar, and could also mean that how toilets are maintained also has an impact on how the school premises are perceived.

CONCLUSION

Aspect of the school physical environment such as lighting, spaciousness, water availability, cleanliness of school and toilets in school were correlated to aggression and it was found that while lighting, spaciousness and water availability were not significantly related to aggression, other aspects of the physical environment of the school such as cleanliness and adequacy of toilets were significantly related to aggression in the children, especially boys.

Implications

School and classroom cleanliness especially toilet cleanliness might lead to discomfort and thereby aggression among students, especially boys.

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Conflict of Interest

The author declared no conflict of interest.

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