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"Assessing Attitude Towards Physical Education Among Students By Using A Previously Validated Instrument"

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Abstract
The study purpose was to assess attitude towards physical education among students by using apreviously validated instrument. The participants included males and females of classes 7 = 113, 8 = 100, 9 = 68, 10 = 72. Considering the instrument in total attitude scores, a two-way ANOVA was applied and considering the instrument in subscales, a two-way MANOVA was applied. Considering in total attitude scores of the instrument, descriptive statistics revealed that all the classes had favorable attitude towards physical education regardless of gender and with regard to gender. Two-way ANOVA indicated that there were no statistically significant differences across classes, among gender and interaction of class and gender on the total attitude scores of the instrument. Considering in subscales of the instrument, descriptive statistics revealed that all the classes indicated a favorable attitude on each of the subscales regardless of gender and with regard to gender. Two-way MANOVA indicated that there were no statistically significant differences across classes, among gender and interaction of class and gender on each of the subscales of the instrument. Although, previous studies indicated that attitude towards physical education decreases with respect to increase in class however, based on the findings in this study, we did not find as such. The reason could be attributed to a possible positive experiences felt by the students in physical education class leading to formation of positive salient behavioral beliefs and hence positive or favorable attitude towards physical education.
Keywords: *salient behavioral beliefs, attitude, physical education*

Introduction

Studies related to attitude can play a crucial role in physical education. A favorable attitude towards an activity leads to engagement in that activity and vice versa (Ajzen & Fishbein, 1980).
It is important to asses attitude towards physical education since researches in India has indicated that the majority of children are found to be sedentary and that suggested levels of physical activity were not met (Katapally et al., 2016). A study reported that students in New Delhi (India) were not very much aware of obesity and hypertension and also the growing cases of obesity in India due to sedentary lifestyle and high caloric diet are matters of concern (George et al., 2014; Ahirwar & Mondal, 2019). Coupled with these problems was a study conducted in Delhi (India) where students reported that there was limited sports opportunities in school for engagement in physical activity (Satija et al., 2018).
For a solution to these problems, positive attitude towards physical education can be one of the possible effective tool in curbing insufficient physical activity and obesity particularly among students however, positive experiences in physical education class are the prerequisites. Ennis (1996) stated that creating a positive experience leads to positive attitude towards physical education. And this is important since it is assumed that it leads to execution of positive behavior i.e. a student finding meaningful and actively engaging in physical education class inside the school may help in achieving active lifestyle outside the school or even for a lifetime participation in physical activity (Subramaniam & Silverman, 2007; Constantinides & Silverman, 2018). If this is not carried out, physical activity through physical education class is only limited to school which may not suffice.
Attitude in simple sense is readiness to respond to an object as favorable or unfavorable (Fishbein & Ajzen, 1975; Ajzen & Fishbein, 1980; Fishbein& Ajzen, 2010). We refer the attitude object as physical education in this study.
In relation to our study, few comparable studies using valid and reliable instrument have been presented here owing to issues in measurement of attitude towards physical education (Silverman & Subramaniam; 1999; Silverman, 2017). Therefore, based on their reviews, only instruments which had sound psychometric properties for measuring attitude towards physical education have been considered in this study (Subramaniam & Silverman, 2000; Phillips & Silverman, 2012; Constantinides & Silverman, 2018). In their studies, subsequent observations were made on attitude towards physical education after their instruments were validated (Subramaniam & Silverman, 2007; Phillips & Silverman, 2015; Constantinides and Silverman, 2018). They found that students' positive attitude towards physical education decreases with respect to increase inclass which is probably the trend. They have suggested based on their results that cognitive (perceived usefulness) or affective (enjoyment) as the major factors for decrease in positive attitude. They also suggested that those factors should be taken into consideration in order to develop a positive attitude towards physical education. Fishbein and Ajzen (2010), prefers using cognitive and affective as instrumental and experiential since they

may overlapped during analysis and therefore, not necessarily have distinctive factors since they measure the same thing i.e. attitude.

This study assumed that it will add knowledge to the existing comparable literatures on attitude towards physical education by using an appropriate instrument suitable for the Indian physical education context.

Thus, the primary purpose of the study was to assess attitude towards physical education among students by using a previously validated instrument. And the secondary purpose was to compare the attitude scores based on class, gender and the interaction of class and gender. According to the theory of planned behavior, attitudes are influenced through salient behavioral beliefs, meaning to say positive or negative attitude reflects either summation of positive or negative salient behavioral beliefs. Again, salient behavioral beliefs are influenced through experiences, positive salient behavioral beliefs reflect positive experiences, and vice versa (Ajzen, 1991).

Methods

The participants included classes 7, 8, 9 and 10(both males and females).Since data were collected during Covid-19, it was based on online using Google forms. In order to limit multiple responses from a same student the response limit was set to one (a student can submit only once).

The previously validated instrument of Mario and Das (2022) was used to measure attitude towards physical education**.**This instrument was based on salient behavioral beliefs and thereforethe summation of scores of the items reflects attitude.We believe this instrument was more appropriate for the physical education context of India particularly for schools which combine physical education and yoga in the general physical education curriculum itself. This 5-point Likert scale instrument consisted of eight items (one negative item placed at second place on games subscale and the rest are positive items). It has three subscales such as other activities i.e. related to experiential items, health i.e. related to instrumental itemsand games i.e. related to both experiential and instrumental items.

Purposive sampling was a suitable choice to suit the study. Manipur (India) was the state where 11 central schools were recruited. Permissions were obtained from Principals of each school. Following this, based on the consent (parents' permission) and assent to participate by the students the instrument using URL link i.e. Google forms was administered by the concerned physical education teacher(s) via WhatsApp. 353 student responses were usable for analysis out of the 433 student responses owing to the instrument validation process, incomplete responses and inconsistent response patterns. The students' responses usable for analysis from class 7, 8, 9 and 10 were 113, 100, 68 and 72 respectively.

The data used here was particularly the main study data which was used during the instrument validation process and we have considered this for further analysis, this may be permissible after an instrument is validated (Subramaniam & Silverman, 2007; Phillips & Silverman, 2015; Constantinides &Silverman 2018).

Statistical analysis

To perform analyses such as two-way ANOVA and two-way MANOVA it was necessary to sum the students' attitude scores on each item in order to be considered as interval. The summation was done in Microsoft Excel 2010 and subsequently with IBM SPSS Statistics 28.0.0.0 for analyses.

Firstly, two-way ANOVA was used when the instrument was considered in total attitude scores i.e. summation of eight items as the single dependent variable and classes as the four independent variables. Secondly, two-way MANOVA was used when the instrument was considered with regard to the three subscales i.e. summation of items on each of the three subscales as the three dependent variables and classes as four independent variables.

Normality or multivariate normality could not be fulfilled since removal of cases for the sake of removing non-normality or non-multivariate normality may not be appropriate as during the instrument validation process the data were already validated in that way. We also stated that the lack of multivariate normality led to the use of generalized least square estimation since it does not require multivariate normality, this is particularly referring to the confirmatory factor analysis during the instrument validation process.

Although, normality or multivariate normality assumption were violated for two-way ANOVA and two-way MANOVA, Norman (2010) stated that parametric statistics are robust for Likert data even with violation of assumptions.

Results

In table 1, considering in total attitude score, the maximum possible attitude score was 40. The overall mean attitude score of class regardless of gender was 33.71 (SD = 3.428) indicating a favorable attitude towards physical education. The overall mean attitude score for males and females were 33.92 (SD = 3.522) and 33.53 (SD = 3.342) respectively which both indicated a favorable attitude towards physical education.

Table 1: Descriptive statistics in total attitude score

Both males and females				**Males**				**Females**			
Class	**Mean**	**SD**	**N**	**Class**	**Mean**	**SD**	**N**	**Class**	**Mean**	**SD**	**N**
7	33.53	3.449	113	7	33.97	3.244	58	7	33.07	3.625	55
8	33.55	3.6	100	8	33.72	3.481	46	8	33.41	3.724	54
9	34.12	3.357	68	9	34.59	3.803	29	9	33.77	2.986	39
10	33.83	3.246	72	10	33.53	3.869	32	10	34.07	2.674	40
Total	33.71	3.428	353	Total	33.92	3.522	165	Total	33.53	3.342	188

SD = standard deviation N = number of students

Two-way ANOVA was performed and Levene's test showed that it was not significant since the p-value was 0.564 indicating that the variances are equal across groups. In table 2 of the tests between-subjects effects, the p-values for class, gender and the interaction of class and gender were 0.612, 0.328 and 0.537 respectively which indicated no statistically significant difference in all the cases since the p-values were all above 0.05 and therefore no follow-up test was done.

Table 2: Tests Between-Subjects Effects

Dependent Variable: Total attitude scores						
Source	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**	**Partial Eta Squared**
Class	21.443	3	7.148	.605	.612	.005
Gender	11.344	1	11.344	.960	.328	.003
Class * Gender	25.744	3	8.581	.726	.537	.006

In table 3, considering in subscales of the instrument, maximum possible scores for other activities (OA), health (H) and games (G) were 15, 10 and 15 respectively. In OA subscale, overall mean attitude score regardless of gender was 12.14 (SD = 1.665) indicating a favorable attitude towards physical education. For males and females, overall mean attitude scores were 12.2 (SD = 1.739) and 12.08 (SD = 1.598) respectively indicating a positive or favorable attitude towards physical education. In H subscale, overall mean attitude score regardless of gender was 8.77 (SD = 0.977) indicating a positive or favorable attitude towards physical education. For males and females, overall mean attitude scores were 8.88 (SD = 1.035) and 8.68 (SD = 0.916) respectively indicating a positive or favorable attitude towards physical education. In G subscale, overall mean attitude score regardless of gender was 12.79 (SD = 1.643) indicating a favorable attitude towards physical education. For males and females, overall mean attitude scores were 12.82 (SD = 1.675) and 12.77 (SD = 1.618) respectively indicating a favorable attitude towards physical education.

Table 3: Descriptive statistics in subscales

Subscales	**Both Males and Females**				**Males**			**Females**		
	Class	**Mean**	**SD**	**N**	**Mean**	**SD**	**N**	**Mean**	**SD**	**N**
Other activities	7	12.06	1.644	113	12.16	1.565	58	11.96	1.732	55
(OA)	8	12.09	1.764	100	12.15	1.699	46	12.04	1.832	54
	9	12.37	1.62	68	12.62	1.935	29	12.18	1.335	39
	10	12.14	1.613	72	12.06	1.933	32	12.2	1.324	40
	Total	12.14	1.665	353	12.22	1.739	165	12.08	1.598	188
Health	7	8.79	0.871	113	8.93	0.835	58	8.64	0.89	55
(H)	8	8.61	1.034	100	8.61	1.164	46	8.61	0.92	54
	9	8.96	0.984	68	9.21	1.013	29	8.77	0.931	39
	10	8.81	1.03	72	8.88	1.129	32	8.75	0.954	40

	Total	8.77	0.977	353	8.88	1.035	165	8.68	0.916	188
Games	7	12.68	1.644	113	12.88	1.579	58	12.47	1.698	55
(G)	8	12.85	1.678	100	12.96	1.52	46	12.76	1.811	54
	9	12.79	1.724	68	12.76	1.921	29	12.82	1.587	39
	10	12.89	1.534	72	12.59	1.864	32	13.12	1.181	40
	Total	12.79	1.643	353	12.82	1.675	165	12.77	1.618	188

SD = standard deviation N = number of students

Two-way MANOVA was performed and Box's M test for equality of covariance matricesindicated a non-significant value since the p-value was .002 suggesting that the covariance matrices of the attitude scores on the subscales i.e. the dependent variables are equal across groups. In multivariate tests (table 4), the p-value of Wilk's Lambda for class, gender and the interaction of class and gender were 0.419, 0.214 and 0.572 respectively. These showed that there were no statistically significant differences in all the cases and therefore no follow-up test was done.

Table 4: Multivariate test

Effect		**Value**	**F**	**Hypothesis df**	**Error df**	**Sig.**	**Partial Eta Squared**
Class	Wilks' Lambda	.974	1.023	9.000	834.922	.419	.009
Gender	Wilks' Lambda	.987	1.503[b]	3.000	343.000	.214	.013
Class * Gender	Wilks' Lambda	.978	.848	9.000	834.922	.572	.007

Discussions

The results indicated that all the classes both in total attitude scores and subscales of the instrument had favorable attitude towards physical education regardless of gender and also with regard to gender.

The students' favorable attitude towards physical education reveals that students might be having a positive experiences in physical education class as positive experiences leads to formation of positive salient behavioral beliefs and hence a favorable attitude (Ajzen, 1991).

In this study, two-way ANOVA i.e. considering as analysis in total attitude score of the instrument, none of the outcomes were significantly different, according to the findings across classes, among gender and also the interaction of class and gender. However, Constantinides and Silverman (2018) reported that there was a significant effect particularly for grade level.

Again, in this study, two-way MANOVA i.e. considering as analysis in subscales of the instrument i.e. other activities (experiential), health (instrumental) and games (both experiential and instrumental), none of the outcomes were significantly different, according to the findings across classes, among gender and also the interaction of class and gender on the subscales of the instrument. In previous studies comparable to this study, they found out that the outcome was significantly different, according to their findings in subscale. In the case of Subramaniam and Silverman (2007) and Phillips and Silverman (2015), MANOVA indicated a statistically significant difference particularly on the class level. Follow-up using discriminant analysis indicated a significant effect particularly on the affective subscale and then using ANOVA it indicated significant differences between grades in relation to the affective subscale. Subramaniam and Silverman (2007) mentioned that the decrease on the affective subscale was probably the repetitious nature of physical activity and they suggested implementing new activities in order to overcome it. Affective subscale were scored higher by students in comparison to the cognitive subscale which indicated the importance of affective factor that it leads to students' attraction towards physical education or physical activity(Phillips & Silverman, 2015). In another study,MANOVA indicated a statistically significant difference for grade level and follow-up discriminant analysis indicated a significant effect on the cognitive subscale and then using ANOVA it indicated a significant difference among grade levels in relation to cognitive subscale (Constantinides & Silverman, 2018). They stated that the activities implemented in physical education were found to be enjoyable (affective factor) by the students however the students

considered it as decreasingly useful (cognitive factor) and mentioned that physical education curriculum should be reassessed in order to overcome it.

Based on the results, we assumed that instead of repetition of same activities (for example football, basketball, yoga, etc.) which leads to decline in attitude, either a new or variation of activities every year has been introduced in the physical education curriculum (Subramaniam & Silverman, 2007; Constantinides & Silverman, 2018). This could have created positive experiences leading to formation or maintenance of positive salient behavioral beliefs and hence a favorable attitude towards physical education. Satija et al. (2018) reported on limited sports opportunities in school for engagement in physical activity by students can also be overcome by positive experiences for example, variation of activities despite of the limited sports facilities. We have interpreted affective as experiential and cognitive as instrumental and mentioned the reason behind in the introductory section of this study.

Through this study, although students' attitude did not seem to decline as class increases in comparison to previous studies however, we suggest the decision making bodies of physical education in India to carefully examine and introduce new or variation of activities time to time.

We encourage future studies to involve a large scale study i.e. inclusion of various states in India to see a clearer picture since we have mentioned about the sedentary pursuit and insufficient physical activity among majority of the children along with the rising case of obesity in India and how positive attitude can be one of the possible effective tool in overcoming it. However, interested researchers should only choose schools that include yoga and physical education in the general or regular physical education curriculum when employing this instrument as in this study since during the instrument validation process only those schools were included. Also, for analysis with the data collected they should not analyze on single item basis which may lead to false results or interpretations since the instrument developed uses the summation of salient behavioral belief index to measure attitude towards physical education. We suggest that analysis should be conducted with summation of the eight items to measure attitude towards physical education and for comparison of subscales of the instrument measuring attitude towards physical education can be conducted with summation of items in each given subscales.

Conclusion

In this study we found that students had positive or favorable attitude towards physical education and also it did not decline as class increased. This reflects possible positive experiences felt by the students of various classes in physical education class leading to positive salient behavioral beliefs and hence attitude towards physical educationwere positive or favorable. The limitation in this study was that since this study was based on purposive sampling, it cannot be generalized to all the schools of Manipur. Finally it is important to note that positive experiences creates positive salient behavioral beliefs and hence positive or favorable attitude towards physical education and this could be because new or different activities were introduced in physical education class time to time and which is crucial.

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Conflict of interest

We hereby state that the study does not involve any conflicts of interest.

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