

## **The Sensation Seeking Tendency and Learning Style of Grammar School Students with Extended Physical Education and Sports Training**

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### **Abstract**

The study examines the sensation seeking tendency – Zuckerman's concept (1978) and student's learning style – Dunn's concept (2000). The study is of descriptive character and uses quantitative methods. To collect data, two standardized questionnaires are combined into one – Learning styles, Interests and Hobbies Inventory. Students of Czech grammar schools with extended physical education and sports training were observed. Analysis of Variance has found that boys seek sensation extensively more than girls regardless of their class type; furthermore, students from classes with P.E. and sports specialization do not seek sensation more extensively in comparison with students from general classes. Statistically significant differences in preferred learning styles have been identified between both types of classes.

*Keywords: learning, learning style, sensation, sensation seeking tendency, grammar school students, descriptive study*

### **Introduction**

The presented paper aims to contribute to the debate on improving the educational process from the perspective of the sensation seeking tendency and preferred learning styles.

### Research Problems

The objective of this study was to determine the level of the sensation seeking tendency among students of general classes and classes with extended physical education and sports training in Czech grammar schools (gymnasiums), and to find out if there are differences in the learning styles between these two groups.

The basic concepts in this study are the *learning style*, defined by Rita Dunn (Dunn, 2000) and the *sensation seeking tendency* according to the concept of Marvin Zuckerman (Zuckerman, 1978). *Sensation* is understood as a new, strong and exceptional or extraordinary experience, and it is used in the context of the sensation seeking tendency. This tendency is determined by both genetic and environmental factors (Zuckerman, 1994). It is related to risk-taking (Zuckerman, 2001) and is an essential part of the pupil's personality.

The used concept of learning styles by Dunn (2000) is highly pragmatic and refers to the learning style of twenty-one factors, which are divided into four groups: environmental influences, emotions, social needs and physical needs.

### Research Focus

The studies explicitly related to sensation seeking and to education (Farley, 1981; Wentzel, 1993; Stewin & Carter, 1999; Blum, Beuhring & Rinehart, 2000; Ang & Woo, 2003) demonstrate that students with a high sensation seeking tendency have a negative approach to school attendance and are more inclined to hyperactivity and crime than students with a low tendency. It indicates a link between the sensation seeking tendency, poor study skills and general dissatisfaction with teachers, the school and the learning process.

The general aim of the presented study was to relate the student's sensation seeking tendency and learning styles, and analyse the possible relationship between these two variables to bring a new overview on teaching and learning process. Rybenský (2008), Krášová and Rost (2008) and Kuban (2001) in their studies came to the conclusion that the followers of a specific lifestyle, particularly young people engaged in some kind of sports, show a highly significant (above average) sensation seeking tendency. Also for this reason, this study was carried out among students of secondary schools with extended physical education and sports training. The specific aim of the study was to find out if students who are engaged in sports, respectively students of grammar schools with P.E. and sport specialization have a higher tendency of sensation seeking, if there are any specificities about their learning styles, and if there are any relationships between their level of sensation seeking and the way they prefer to learn.

### Research questions

1. Are there any differences in the sensation seeking tendency between students of general grammar school classes and classes with extended physical education and sports training? If so, what differences are there?
2. Are there differences in preferred learning styles between students of general grammar school classes and classes with extended physical education and sports training? If so, what differences are there?

### Hypotheses

- H1: The sensation seeking tendency of the students from classes with extended P.E. and sports training is statistically significantly higher than that of the students from general classes.
- H2: There are statistically significant differences in preferred learning styles between the students of general grammar school classes and those from classes with extended P.E. and sports training.

## **Research Methodology**

### **General Background of Research**

The study is of descriptive character and uses quantitative methods. Analysis of Variance (ANOVA) was used and two standardized questionnaires were applied to collect data.

### **Research Sample**

The research group was selected by the random stratified selection of Czech grammar schools (Gymnasiums) which offer study programs with extended physical education and sports training. The basic set of schools was taken from the Institute for Information on Education and it consisted of 16 institutions. Through random selection, ten schools were selected and seven of them became involved in this study while other three schools refused to participate. In these seven schools, third grade students (in four-year schools), and seventh grade students (in eight-year schools) were investigated. The total number of filled-in questionnaires was 300. Responses came from 17 different classes, containing 142 students from general classes and 158 students of extended sports training and physical education, with a total of 148 girls and 147 boys. Five samples were excluded due to poor completion (not all the questions were answered).

## Instrument and Procedures

### *Methods of data collection*

To collect data, the following research tool was used – a *Questionnaire of learning styles, interests and hobbies* composed of two standardized questionnaires. The first part consists of a *Questionnaire of learning styles* (Slavík & Mareš, 2004) and the second part of a *Test of interests and hobbies* (Kuban, 2006). The *Test of interests and hobbies* was included in a complete form and from the *Questionnaire of learning styles* only some variables were used. The main reason for selecting only certain variables was a higher time-efficiency and prevention of follow-up degradation of the quality of answers in the second half of the questionnaire. Another reason for not having used certain variables was their poor relation to the main purpose of the research, which increases the validity of the results. Reliability is not reduced by this procedure, since it is counted from the sets of questions (variables) that are maintained, rather than from the whole questionnaire.

### *Learning styles, interests and hobbies questionnaire*

The standardization of the Czech version of the *Test of interests and hobbies* was conducted in 2003 by Kuban (2006) and its original version was devised in 1978 by Zuckerman (1978) under the *Sensation Seeking Scale form V* (SSS-V). The SSS-V consists of forty items divided into four subscales with ten items in each subscale. The first subscale is *Thrill and Adventure Seeking* (TAS), which is an area of sports and physical activity. The second subscale is *Experience seeking* (ES), the area of sensory perception. The third subscale is *Disinhibition* (Dis), the level of respect for the legal, moral and social standards, and the fourth is *Boredom Susceptibility* (BS), the area of resistance to repeated stimuli. Each of the forty items contains two options that negate their importance to each other and maintains a form of forced choice. The total score expresses the sensation seeking tendency of the tested persons, and their level of adaptation to new things and new situations in life or lifestyle change (Kuban, 2006).

In 1967, Dunn and Dunn (1978) created an instrument called the *Learning style questionnaire* (LSQ). By 1975, this questionnaire had been tested and newly titled as the *Learning style inventory* (LSI). The Czech version was created from three independent translations by Pýchová, Kantorová and Mareš in 1992 (Mareš & Skalská, 1994). The questionnaire is designed for students of primary and secondary schools and it identifies what individual students prefer during their

studies, under what conditions they focus best, what they prefer when learning new or difficult subject matter, or when they learn new skills. Furthermore, it characterizes their learning styles. The questionnaire divides the questions into twenty-one variables, while in the *Questionnaire of learning styles, interests and hobbies* only eight are used: *internal motivation, persistence, responsibility, structuring tasks, experiential learning, morning/evening learning, morning learning and extrinsic motivation – the teacher*.

### **Data Analysis**

To calculate results, the statistical program STATISTICA version 9.0. was used. To compare the differences based on gender and class type, a two-way Analysis of Variance (surveyed factors is the gender and class type) was applied. As a *post hoc* test, the *Fisher LSD test* was used. This test points to significant differences between the two groups. For the complexity of the results, factual significance was calculated, while the importance of the influence of other factors was assessed relatively.

### **Research Results**

Using the Analysis of Variance, statistically significant differences were found. This applies only to some cases such as the *sensation seeking tendency (SST)*, *persistence (P)*, *morning/evening learning (ME\_L)* and *extrinsic motivation by the teacher (EM\_T)*.

Because there is a statistically significant difference only between the genders in the sensation seeking tendency (Tables 1 and 2, and Figures 1 and 2), but not between the classes, hypothesis H1 can be rejected. Based on the significance level of  $\alpha = 0.05$ , the observation that the sensation seeking tendency of the students from sports classes is statistically significantly higher than that of the students from the general classes can be rejected.

Although a statistically significant difference between the genders was identified, the results of the factual significance show a small effect of the gender factor on the SST variable, which is in accordance with the fact that the differences are not dramatic.

**Table 1.** Results of two-factor Analysis of Variance, factual significance (Partial eta – squared –  $\eta p^2$ ) and test efficiency for variables SST, Learning persistence, Morning/evening learning, Extrinsic motivation – the teacher

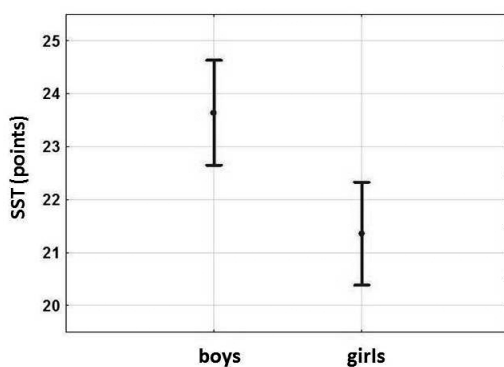
	n	F	p	$\eta p^2$	Power of the test
SST – gender	n <sub>b</sub> = 147, n <sub>g</sub> = 148	<b>10.495</b>	<b>0.00134</b>	0.034809	0.897761
Persistence – gender	n <sub>b</sub> = 147, n <sub>g</sub> = 148	<b>7.956</b>	<b>0.00512</b>	0.026613	0.802723
Persistence – class type	n <sub>sp</sub> = 158, n <sub>sgc</sub> = 142	<b>9.687</b>	<b>0.00204</b>	0.032215	0.87329
Morning/evening learning: gender vs. class type	n <sub>bsp</sub> = 86, n <sub>gsp</sub> = 72 n <sub>bgc</sub> = 61, n <sub>ggc</sub> = 76	<b>3.990</b>	<b>0.04670</b>	0.013526	0.512384
Extrinsic motivation – the teacher: class type	n <sub>st</sub> =sp 158, n <sub>ggc</sub> = 142	<b>6.094</b>	<b>0.01414</b>	0.020512	0.69163
Extrinsic motivation – the teacher: gender vs. class type	n <sub>bsp</sub> = 86, n <sub>gsp</sub> = 72 n <sub>bgc</sub> = 61, n <sub>ggc</sub> = 76	1.499	0.22182	0.005125	0.230481

Notes: b – boys, g – girls, sp – students of sports classes, sgc – students of general classes, bsp – boys of sports classes, gsc – girls of sports classes, bgc – boys of general classes, ggc – girls of general classes; statistically significant values in bold

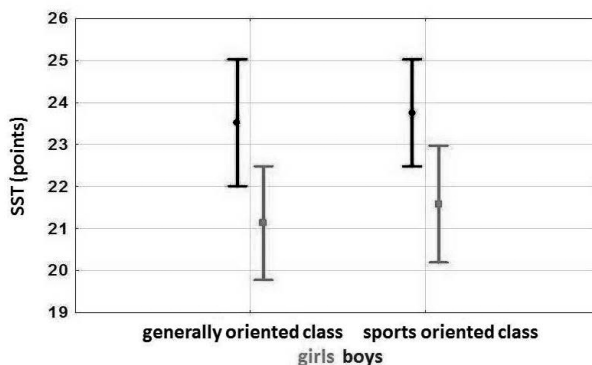
**Table 2.** Values of probability of LSD test in variable SST based on gender and type of class

	gender	class	n	{1}	{2}	{3}	{4}
1	boys	general	61		0.871023	<b>0.015907</b>	0.107843
2	boys	sports	86	0.871023		<b>0.005118</b>	0.054903
3	girls	general	76	<b>0.015907</b>	<b>0.005118</b>		0.408152
4	girls	sports	72	0.107843	0.054903	0.408152	

**Figure 1.** Difference between boys and girls in sensation seeking tendency (SST)



**Figure 2.** Difference in the sensation seeking tendency between boys and girls of sports and general classes (SST)

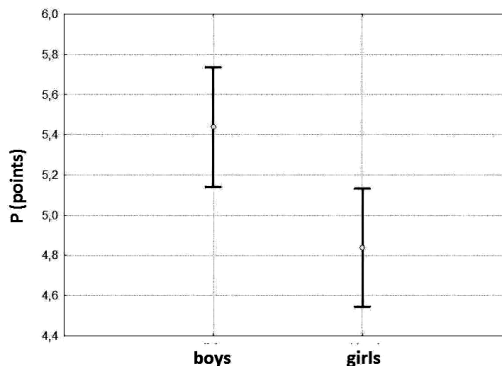


In terms of the learning style, lower persistence in learning was detected among the boys than among the girls (Tables 1 and 3; Figure 3). Lower persistence was also found among the students from the sports classes than from the general classes (Tables 1 and 3; Figure 4).

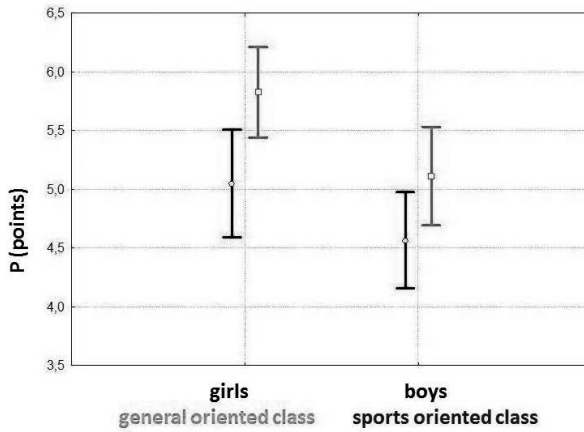
**Table 3.** Values of probability of LSD test in variable Learning persistence based on gender and type of class

gender	class	n	{1}	{2}	{3}	{4}
1	boys	61		0.010882	0.121310	0.844234
2	boys	86	0.010882		0.000014	0.014026
3	girls	76	0.121310	0.000014		0.067932
4	girls	72	0.844234	0.014026	0.067932	

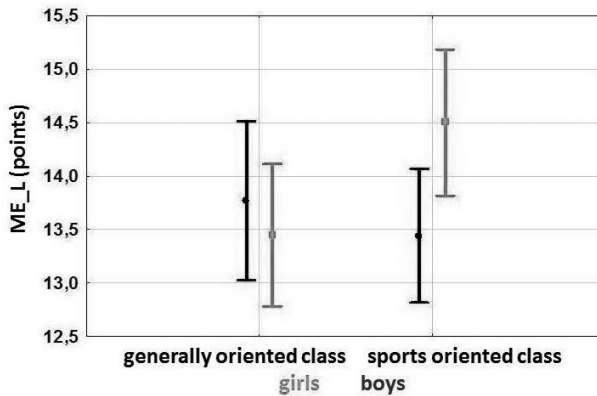
**Figure 3.** Difference in learning persistence (P) between boys and girls



**Figure 4.** Difference in learning persistence (P) between boys and girls of sports and general classes



**Figure 5.** Difference in the morning/evening learning preference (ME\_L) between girls and boys of sports and generally oriented classes



When considering the differences in preference of day-time learning, it was found that the girls from sports classes tend to learn in the morning while the other observed groups had a tendency to evening learning (Tables 1 and 4; Figure 5). The more points the respondents obtained in this variable, the more they prefer morning learning and less evening learning, and vice versa.



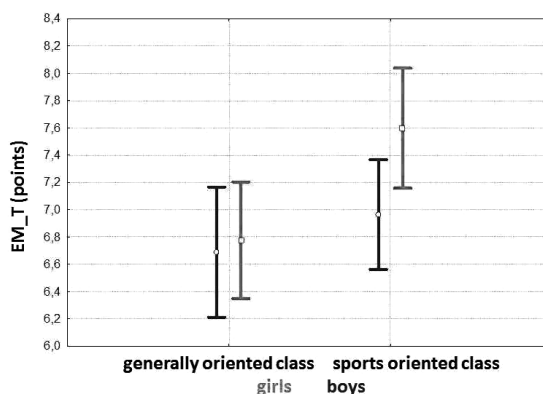
**Table 4.** Values of probability of LSD test in variable Morning/evening learning based on gender and type of class

	gender	class	n	{1}	{2}	{3}	{4}
1	boys	general	61		0.505789	0.524050	0.155909
2	boys	sports	86	0.505789		0.990535	<b>0.025326</b>
3	girls	general	76	0.524050	0.990535		<b>0.030655</b>
4	girls	sports	72	0.155909	<b>0.025326</b>	<b>0.030655</b>	

According to Table 1, in terms of extrinsic motivation from teachers, the students from sports classes, regardless of their gender, are statistically significantly more motivated by teachers than the students of general classes. From Table 5 and Figure 6, it is obvious that the girls from sports classes are more motivated by teachers than any other group.

**Table 5.** Values of probability of the LSD test in variable Extrinsic motivation – the teacher, based on gender and type of class

	gender	class	n	{1}	{2}	{3}	{4}
1	boys	general	61		0.383849	0.787690	<b>0.006216</b>
2	boys	sports	86	0.383849		0.527239	<b>0.037606</b>
3	girls	general	76	0.787690	0.527239		<b>0.008872</b>
4	girls	sports	72	<b>0.006216</b>	<b>0.037606</b>	<b>0.008872</b>	

**Figure 6.** Difference in extrinsic motivation – the teacher (EM\_T) between girls and boys of sports and general classes

The power of the test of factual significance for preferred learning styles is sufficient in addition to the factors of gender and class type. Based on the above-mentioned results, hypothesis H2 is confirmed (significance level  $\alpha = 0.05$ ). There are statistically significant differences in preferred learning styles between the students of general grammar school classes and the classes with extended P.E. and sports training.

## **Discussion**

The present study rejects the hypothesis that “the sensation seeking tendency of the students from the classes with extended P.E. and sports training is statistically significantly higher than that of the students from general classes.” However, the research findings show that the sensation seeking tendency among boys may often be higher. Therefore, we can agree with Kuban’s (2006) statement that boys have a statistically higher tendency to sensation seeking than girls. The aforementioned studies (Farley, 1981; Wentzel, 1993; Stewin & Carter, 1999; Ang & Woo, 2003) demonstrate that students with a high sensation seeking tendency have a negative approach to school attendance and are more inclined to hyperactivity and crime than students with a low tendency. Furthermore, students with a high sensation seeking tendency are more often prone to having poor study skills and generally tend to be dissatisfied with teachers, the school and the learning process. Knowing that boys more frequently tend to seek sensation, their undesirable or disturbing behaviour can be identified as a normal fact based on their unsatisfied needs.

The hypothesis “there are statistically significant differences in preferred learning styles between the students of general grammar school classes and the classes with extended P.E. and sports training” was confirmed. Differences were found in the preference of the studying period of the day, learning persistence and inner motivation by the teacher. The boys from the classes with P.E. and sports specialization and the girls from the general classes tend to study in the evening. On the contrary, the girls from the classes with P.E. and sports specialization prefer to study in earlier parts of the day. These findings correspond to those of Slavík and Mareš (2004), whose theses deal with studying time preferences among sports talented girls attending 7<sup>th</sup> grades at elementary schools.

The students from the classes with P.E. and sports specialization are found less constant in their studying persistence. Less endurance in studying among the students from the P.E. and sports classes may seem to be surprising, as they practise

various sports, in which they are used to discipline, regular practise, self-denial and will.

The findings of Culková (2013) can be also mentioned: Culková detects that the more common characteristics of girls is a lower level of thrill and adventure seeking, not seeking new experiences, resistance to boredom and respect for social and moral norms. Culková also states that the common characteristic of boys from classes with P.E. and sports specialization is their lower learning responsibility, their need to have their homework structured, and their preference of experiential learning. Pettigrew and Zakrajsek (1984), Johnston and Bower (1997), D. Peters, Jones and J. Peters (2008) came to a similar conclusion that students of Physical Education subjects prefer hands-on experience, active experiments, and show a low interest in self-study and autonomous work. This statement can be partly confirmed by the finding that the boys and girls from the classes with P.E. and sports specialization prefer experiential learning (Culková, 2013).

Blum, Beuhring and Rinehart (2000) demonstrate that teaching routines may lead to strong feelings of boredom, attention problems, interruptions and other negative phenomena, especially among students with a higher sensation seeking tendency. Positive intellectual results depend significantly on choosing the right teaching methods (Wentzel, 1993), and these findings need to be borne in mind, especially when teaching such students.

## **Conclusions**

In conclusion, it can be stated that the objectives of the study were met. There were two alternative hypotheses tested, where the first one was rejected and the second one was confirmed.

At the significance level  $\alpha = 0.05$ , the rejected hypothesis was the alternative hypothesis  $H_1$ : the sensation seeking tendency of the students from the classes with extended P.E. and sports training is statistically significantly higher than that of the students from the general classes.

At the significance level  $\alpha = 0.05$ , the second alternative hypothesis  $H_2$  was confirmed: there are statistically significant differences in preferred learning styles between the students of the general grammar school classes and the classes with extended P.E. and sports training.

Furthermore, answers to the research questions were found. Research question 1: are there any differences in the sensation seeking tendency between students of general grammar school classes and classes with extended physical education

and sports training? If so, what differences are there? At the significance level  $\alpha = 0.05$ , a higher sensation seeking tendency was detected in the boys group than in the girls group.

Research question 2: are there any differences in preferred learning styles between students of general grammar school classes and classes with extended physical education and sports training? If so, what differences are there? At the significance level  $\alpha = 0.05$ , differences in persistence in learning, preference for the time of studying and extrinsic motivation from the teacher were found. The students from the sports classes are less persistent in learning than the students from the general classes and they are more motivated by teachers. The girls from the sports classes are motivated by teachers more than all the other groups, while the boys are less persistent than the girls regardless of their class type. The boys from the sports classes and the girls from the general classes more often prefer studying in the evenings, whereas the girls from the sports classes more often prefer to study in the mornings.

It is important to add that all the findings apply only to the 3<sup>rd</sup>-graders of the four-year study program and to the 7<sup>th</sup>-graders of the eight-year study program at Czech grammar schools. It also needs to be said that all the mentioned results are statistically significant, but the differences between the observed groups are not dramatic. That is confirmed by factual significance which shows a small effect in all the measured variables. Nevertheless, this study of the relationship between the sensation seeking tendency and preferred learning style contributes to the ongoing discussion concerning the educational process.

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