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Interaction Style of Teachers of Vocational Subjects

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Abstract | Introduction: In this paper, teacher interaction style will be explored by means of the Slovak adaptation of Leary's concept by Gavora et al. (2003). The research conducted so far has yielded different results. Many studies have shown the relationship of teacher's interaction style with students' achievement or their satisfaction with their relationship with the teacher. However, it is also possible to find studies that concluded the absence of a relationship between these variables or even the existence of a negative correlation. Objectives: The aim of the study is to analyse the interaction styles of teachers in a selected secondary school in Poprad through the use of a standardised questionnaire adapted in Slovakia. Methods: To determine the interaction style, we will use an adaptation of the Teachers' Interaction Style Questionnaire (Gavora et al., 2003). The respondents were five classroom teachers, who also teach a vocational subject in their classroom, and their students. The research population consisted of a total of 72 respondents, including 5 teachers (6.9%) and 67 students (93.1%). Among the educators, 4 female class teachers (80%) and 1 male class teacher (20%) participated in the research. Completion of the questionnaire was voluntary. Results: The research was carried out in the selected school, as work at this school includes the teaching of adolescents with the predominance of male students. The findings of the research show that the self-perception of the interaction style by the teachers themselves and their students is different and there is no significant relationship between the interaction style of the teacher and the student's achievement or the frequency of student's satisfaction with the teacher. Discussion: In our opinion, the lack of relationship between teachers' interaction style and students' achievement and the frequency of students' satisfaction with their relationship with teachers may be due to the nature of the school and its students. Effective management of such an environment is characterized by the need for increased pedagogical skills, so we also focus on the teacher's interaction style, which we consider to be a key element of a quality pedagogical process. The study can also be the foundation for support programmes for teachers, for example in the context of their innovative training. The main purpose of the study is to compare the results between teachers' own perception of their interaction style and students' perception thereof. The research also included an analysis of the relationships of teachers' interaction styles with students' achievement and the frequency of students' satisfaction with their relationship with their teachers. The main contributions include conducting a probe into the analysis of the interaction styles of the selected teachers, which may have practical benefits for them.

Keywords | interaction style of teachers, questionnaire, student's achievement, student-teacher relationship

Introduction

Statistics show that the average teacher will influence at least 3,000 students over the course of their career, 98% of people believe that a good teacher can influence the direction a student will take in life, and 75% of students in turn see their teachers as mentors and their role model to change direction (EducationWeek, 2017; ING Foundation Survey, 2010; National Center for Education Statistics, 2018).

Research in 2011 found that the most crucial factor influencing school quality is "teacher quality", followed by "the quality of the teacher-student relationship" (Juščáková, 2011, p. 8-9). However, it is often difficult on the part of educators to find motivation for this vocation that they have chosen as a job. The root of this, among other things, is the relatively low status that the teaching profession occupies in our country, frequent school reforms and the constant increase in the demands on teachers' work. As part of the OECD Programme for International Student Assessment (PISA), a long-term research project, questions are also addressed to teachers. In PISA 2018, out of a sample of 107,367 teachers, 89,641 responded to a statement worded "I think the teaching profession is valued in society", but 60% of answers of these respondents were "disagree" (PISA, 2018).

The aforementioned arguments illustrate how important it is for both society and the state to support teachers, constantly motivate them and help them in difficult situations. Well-being and balance in the process of their work should be the concern of the whole society. The personality of an educator plays a key factor in the quality of the educational process and indirectly influences the shape of the future society.

Interaction style of teachers

Teacher-student interaction is a necessity and prerequisite of the educational process, which further influences the classroom climate, the teacher's behaviour, the students' performance, and the students' relationship with the teacher. The very nature of the interaction style of a particular teacher is conditioned and shaped by many factors, therefore, in an attempt to classify them, several typologies of interaction styles have emerged. The older typology comes from a trio of authors, Lewin et al. (1939, p. 273), whose observation of social phenomena was significant for their division, when they named interaction styles as democratic (socially interactive), authoritarian (autocratic) and liberal (laissez faire). The authoritarian style here is characterized by an impersonal teacher-student relationship; the teacher here acts in a strictly authoritarian manner and demands strict discipline. A teacher with a democratic teaching style discusses with students, supports them and uses positive criticism to motivate them. A passive teacher-student relationship is characteristic of the third style of this typology. The laissez faire style is characterized by a high degree of neutrality (Dupkalová & Krajčová, 2015, p. 32; Virčíková, 2011, p. 328).

Wubbels and Levy (1993) characterized a typology of 8 teachers based on the prevailing interaction style: directive type; authoritarian type of teacher; tolerant-authoritarian type of teacher; tolerant type of teacher; insecure-tolerant type of teacher; insecure-aggressive type of teacher; repressive type of teacher; "hardworking" teacher (Wubbels & Levy, 1993).

Another typology of teachers' interaction style based on dimensions is by the Polish author Pilkiewicz (in Zelinová & Zelina, 1997), who distinguished three dimensions (1) demanding vs. undemanding, (2) control vs. freedom, and (3) rewarding vs. punishing. A coherent typology is also offered by Slovak authors, led by P. Gavora, who drew on the theories of T. Wubbels' team based on the interpersonal theory of T. Leary. This theory will be the foundation for our research, so we

will analyse it in detail in the following parts of the study.

Research has shown that the way students perceive teachers' interaction style is closely related to their achievement, as well as to students' attitudes towards the subject (den Brok et al., 2004; den Brok et al., 2005a, b; Fisher et al., 2005; Kyriakides, 2005; Wubbels, 1993; Wubbels et al., 2006). Wubbels (1993) conducted research in Australia and the Netherlands, investigating the relationship between teachers' interaction style and students' achievement. The findings showed that students' perceptions of teachers' interaction styles account for much of the variation in results between classes of the same ability level. Perceptions accounted for 70% of the variability in students' achievement. Den Brok et al. (2004) investigated the effectiveness of high school teachers' interaction styles by analysing data from two samples: a study of 45 physics teachers and their third-grade classes; and a study of 32 teachers teaching English as a foreign language and their third grade classes. The results showed significant relations between teachers' interaction style and students' achievement, with 14.7 – 67% of the classroom-level variance explained for the physics sample and 3.5-50% of the classroom-level variance explained in the English sample. This amount of variance (and positive associations) remained even after including prior results and motivation and various students, classes and school characteristics, and taking into consideration non-random selection of respondents (using multilevel analysis methods). In contrast, a negative correlation between teachers' interaction style and students' achievement was demonstrated by Wei et al. (2009) in their research.

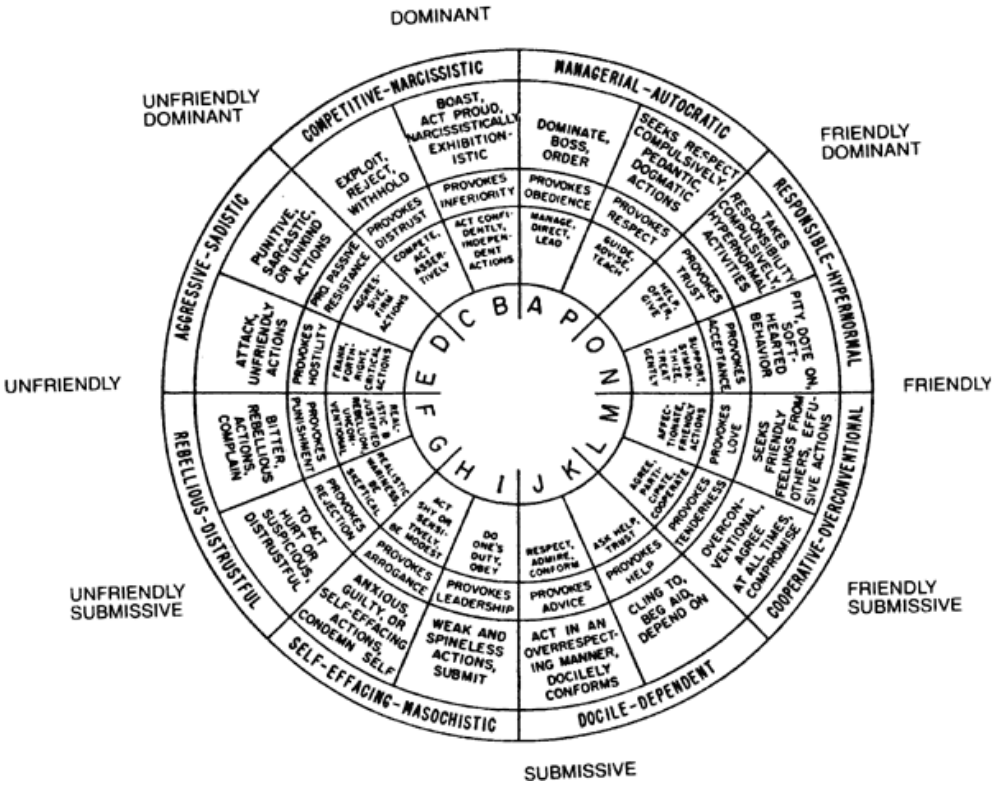
Different conclusions were reached in the research of Levy et al. (1992) when they used students' grades as a measure, the relationships with teachers' interaction style were inconclusive. These studies did not find the relationship between perceptions of teachers' interaction and its impact on students' grades on the report card.

Status of the issue examined (current status and historical background)

Timothy Leary developed one of the most well-known theories of interpersonal behaviour, which he based on the proposition that a person's effect on others is determined primarily by their own personality. "Leary argued that a person's behaviour is consistent - a person behaves in the same way in similar situations..." (Gavora et al., 2003, p. 127). Leary saw the differences between people in the extent of their ability to avoid fear and maintain self-confidence. Thus, in an identical situation, some people behave authoritatively and uncompromisingly, while others behave amicably and openly. According to Leary, these specific qualities in people are manifested in verbal expressions and non-verbal behaviour, and if we are able to analyse these phenomena, we can, according to the author, get to the essence of a person's personality (Gavora et al., 2003, p. 127). Leary also translated the theoretical background of into a diagnostic tool, which consisted of two dimensions - closeness and influence. The dimensions are executed on two axes, where the extreme points of the closeness dimension (the horizontal axis also called proximity) are affection/cooperation (closeness) and resistance (distance), and the boundaries of the second dimension concerning influence are dominance and submissiveness. In the literature we can also encounter the designation of these boundary points or bipolar dimensions as dominance and submissiveness and hostility and affiliation (Mlčák, 1996, p. 153). "A fundamental element of this model is the principle of complementarity."(Vašíčková, 2015, p. 9) The interpersonal circumplex consists of 16 bipolar dimensions that "...reflect and generalize specific interpersonal personality expressions." (Mlčák, 1996, p. 152-153)

The interpretation of Leary's typology through its categorization into five levels was developed by Kožený and Ganický (Figure 1). [1]

Figure 1 *T. Leary's classification of interpersonal behaviour (Kožený & Ganický, 1976)*



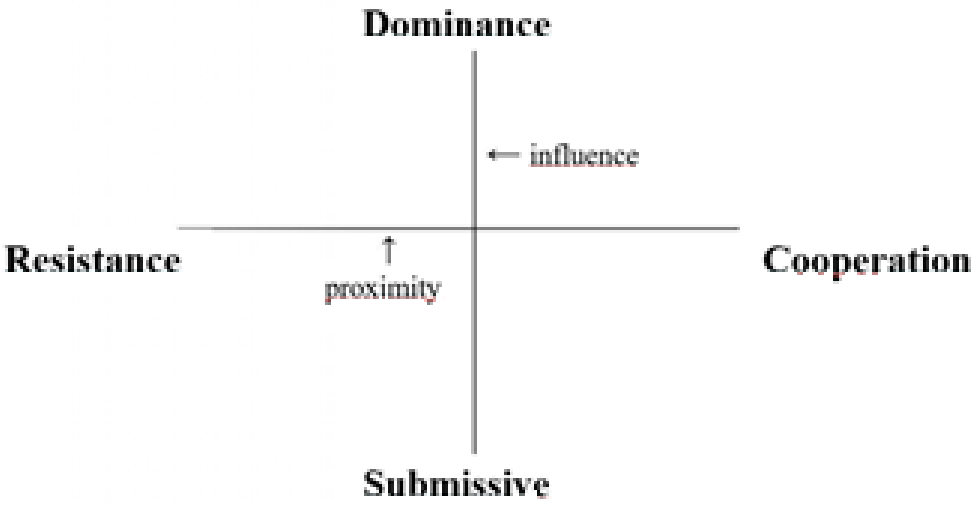
The first level (shown in the middle of the figure) consists of 16 variables that are presented in 8 octants "... (AP - power and strength, BC - self-assertion, DE - aggression and hostility, FG - distrustful resistance, HI - submissiveness, JK - dependence, LM - affection and filiation, NO - protectiveness) (Dupkalová & Krajčová, 2015, p. 42). Level two represents an individual's conscious action, which results in their perception of themselves and the form of their interpersonal world. The third level integrates the individual's symbolic image of themselves but also of their environment - it is the individual's inner psychological world. The interpersonal expressions that the individual refuses to consciously express and avoids are depicted in the fourth level of the figure. At the edge of the diagram is the final fifth level, which includes the individual's moral world.

Leary's simplified interpersonal circumplex integrates 8 initial types of social behaviour, where from the centre along the linear line to the edge of the circular diagram the intensity of a particular specific personality trait increases. This means that the closer the results is to the centre of the diagram, the more adaptive the individual's behaviour. Adjacent types are placed deliberately in the diagram because they are linked to each other, while oppositely placed types are opposed to each other.[2]

Application of the interpersonal model of behaviour in pedagogy

The aforementioned model of T. Leary (Kožený & Ganický, 1976) has become interdisciplinary and has been adopted by pedagogy, among other sciences. The pedagogical adaptation of this model required its transformation and adaptation, which was implemented by several authors, among the most famous are the Dutch educators from the University of Utrecht (Wubbels, Brekelmans, Créton, Hoomayers) (Figure 2).

Figure 2 *Theoretical model of the interactional behaviour of the educator by the Dutch authors,1987 (Wubbels et al., 1987; Mareš & Gavora, 2004)*



The Dutch authors depicted interpersonal behaviour on a graph by mean of two axes. The extreme points of the vertical axis represent the traits dominant and submissive, which in the analysis correspond to the extent to which the teacher's interaction determines the behaviour of the students in the classroom. The traits at the extremes of the horizontal axis are accommodating and dismissive, which shows the extent to which the teacher is willing to (dis)accommodate students, (not)help them, etc. This model was the basis for the development of an eight-dimensional system of interactional behaviour, where "...the characteristics of the type of interpersonal behaviour in each sector emphasise primarily the relationship of the teacher's behaviour to the students. At the same time, it can be said that, compared to T. Leary's representation of behavioural categories, the downright extreme, maladaptive forms of behaviour are not taken into account in this model, which is modified for the school environment." (Lukas, 2005, p. 32-33).

The aforementioned eight-dimensional model was created for the needs of pedagogical diagnostics and was developed by the authors Gavora et al, who also adapted it to research in Slovak pedagogical conditions (Gavora et al., 2003, p. 128). The space between the four boundary points (the basis of T. Leary's model) is filled by eight other traits, the so-called behavioural sectors: "(1) organiser of teaching, (2) assisting students, (3) understanding, (4) guiding students to responsibility, (5) insecure, (6) dissatisfied, (7) reprimanding, (8) strict." (Gavora et al., 2003, p. 4)

The styles that are juxtaposed in the model are opposed to each other and those that are adjacent to each other are related. Octants that are perpendicularly placed in the (at right angles) have no correlation in pedagogical diagnostics. The axes in the model represent the individual teaching styles of the educators (e.g., the reprimanding teacher is dominant and keeps their distance). The model does not have a normative function, it does not determine the right or wrong interaction style, but each educator possesses these traits, only the extent of their representation differs. Those qualities that are dominant in an educator influence their teaching style to the greatest extent (Mareš & Gavora, 2004; Dupkalová & Krajčová, 2015, p. 49; Vašíčková, 2015, p. 9).

Interaction style of classroom teachers in a selected secondary school in Poprad

The study focuses on the analysis of the interaction style of the teacher as a determining element of the effectiveness of the educational process. The teachers' interaction style will be examined from the teachers' point of view and then subjected to a comparison with the perception of teachers by their students. The student-teacher relationship will be analysed only from the student's subjective point of view in relation to their perception of the interaction style of a particular teacher.

The aim of the study is to know and denominate the state of the interaction style of the selected teachers, which can help the school management that will have access to the results of the research, as well as the specific teachers in the selected school, but also help their colleagues from other institutions in their continuous improvement and the improvement of the educational process for which they are responsible. At the same time, the research can also be the foundation for support programmes for teachers, for example in the context of their innovative training.

Objective, research question and research hypotheses

The research objective of the study is to compare teachers' self-perceptions of their interaction styles with students' perceptions of their interaction styles. This comparison is significant in terms of feedback for these teachers, as well as a possible impetus for re-evaluation of their approach to students. The research will also focus on the overall perceptions of the teachers' interaction styles at this school by their students. We will also pay attention to the relationship between student's academic achievement and teacher's interaction style and an analysis of the student's perceived relationship with the teacher's interaction style. Five teachers and their students participated in the research.

We set one research question and three hypotheses for each teacher's analysis:

RQ: Does the self-perception of the teacher's interaction style differ from the students' perception of the teacher's interaction style?

H1: We hypothesize that teachers' interaction styles that we perceive as positive (organizing, assisting, understanding, guiding to responsibility) will have a significant positive relationship with students' achievement (e.g., the more the teacher is perceived as guiding to responsibility, the better the students' achievement), and vice versa.

H2: We hypothesize that there are statistically significant differences between students' achievement (excellent students, average students, poor students) and the different interaction styles of the teacher (organizing, assisting, understanding, guiding to responsibility).

H3: We hypothesize that the teachers' characteristics we consider accommodating (assisting and understanding) will have a significant positive relationship with the frequency of student's satisfaction with their relationship with their teacher.

H4: We hypothesize that there are statistically significant differences between the frequency of student's satisfaction with the relationship with their teacher (never, occasionally, sometimes, often, always) and the different interaction styles of the teacher (organizing, assisting, understanding, guiding to responsibility).

Methods

The analysed data come from a questionnaire research aimed at analysing the interaction style of classroom teachers working at a selected secondary school in Poprad, who also teach vocational subjects in their classes. Data collection was carried out in March 2022. Interaction style questionnaires were administered electronically via the Internet in the Google forms system. To ensure appropriate wording for teachers and students, two questionnaires were created - one, where the items were stylistically worded as self-assessment, was distributed to teachers, and the other, in which the wording corresponded to the teacher's assessment by students, was distributed directly to students. Both questionnaires were prefaced with the purpose for collecting the data, a disclaimer that the questionnaire was anonymous and would be used for research purposes only, as well as a thank you note addressed to each respondent who chose to complete the questionnaire.

Research population and collection method

The research was carried out in a selected secondary school in Poprad, which we will not specify further in order to preserve the rights to protection of personal and sensitive data.The school was chosen for two reasons. This secondary school is attended by adolescent students, pedagogical work with these students is highly demanding for teacher to be able to manage it effectively. The second reason for selecting this particular school was the high proportion of male students, which is attributed with more difficult teaching conditions for teachers. The combination of adolescence and the high representation of male students puts high demands on the teachers at the selected school, so we were interested in researching their interaction style, which in our opinion plays a key role in quality of teaching.

The research population consisted of a total of 72 respondents, including 5 teachers (6.9%) and 67 students (93.1%). Among the educators, 4 female class teachers (80%) and 1 male class teacher (20%) participated in the research. Teachers with different length of teaching experience participated in the research, class teacher I.A had 3 years of experience, class teacher I.B had 22 years of experience, class teacher II.C had 23 years of experience, class teacher III.B had 7 years of experience and class teacher IV.F had 17 years of experience. The gender representation within the student respondents was 51 boys (76.1%) and 16 girls (23.9%). The average class size in the school is 20 students/class. Students from 5 classes participated in our research, they were I.A (12 students, 17.91%), I.B (14 students, 20.89%), II.C (14 students, 20.89%), III.B (12 students, 17.91%), and IV.F (15 students, 22.40%).

The selection of respondents was done using the method of available selection and the criterion for selecting a respondent from a teachers was the position of a classroom teacher who also teaches a vocational subject in their classroom. The criterion for selecting the respondents from among the students was that they attend a class where the teacher holds the position of class teacher and also teaches a vocational subject. The completion of the questionnaire was not compulsory for the students, it was voluntary and the respondents confirmed their informed consent. The research population is therefore not larger, but it was sufficient for the purposes of such probe.

Statistical methods

The obtained research results were processed by means of descriptive statistics methods, next we used a non-parametric substitute for analysis of variance Kruskal-Wallis test (due to the failure to meet the conditions of equal distribution of respondents in each category) in IBM SPSS, version 21.

In the analysis of the variables of students' achievement with the frequency of student's satisfaction with the relationship with their teacher, we used Spearman's correlation coefficient. When using statistical methods, we respected the conditions of use of the tests.

Methodology

To determine the interaction style, we will use an adaptation of the Teachers' Interaction Style Questionnaire (Gavora et al., 2003), which was based on the QTI (Questionnaire on Teacher Interaction) of the Dutch authors Wubbels et al. (1987) and also took into account the structure of T. Leary's model. The authors drew on Leary's interpersonal personality model and the Interpersonal Check List (ICL). The QTI questionnaire uses scaled items where respondents have the option to indicate their answers on a 5-point scale (0 - never, 4 - always). The questionnaire contains 64 scales that analyse each sector of the teacher's interaction style. Thus, based on the results, this method of diagnosis can be a useful means for the teacher to get to know themselves better, but also for other stakeholders to get to know the teacher, which represents an indispensable source of self-assessment. The respondent was given the opportunity to select on a scale the frequency of occurrence of the particular behaviour of the teacher. In terms of result assessment, the means for the whole class assessing their particular teacher was calculated separately for each sector (parts of the interpersonal circumplex). The mean had to be in the range 0-4 and the higher the value, the more often the teacher demonstrated the behaviour in question. The adaptation of the questionnaire by Gavora et al. (2003) represents a constructively validated and, based on the calculations of Cronbach's alpha coefficient, a reliable instrument for assessing teacher-student interaction in the Slovak environment (Gavora et al., 2003, p. 132-135; Dupkalová & Krajčová, 2015, p. 51-52).

The research methodology is based on the analysis of the following interaction styles of the teacher:

"*Teacher organiser* – "I know about everything that happens in the classroom" - notifies what is going to be done, leads, organizes, commands, assigns tasks, determines the procedure, explains, directs attention;

Assisting teacher – "when we don't understand something, she/he explains it again" - helps, shows interest, joins in with what is going on, is friendly or considerate, tactful, able to joke;

Understanding teacher – "when we have something to say, she/he listens to us" - listens with interest, shows empathy, shows trust and understanding, accepts apologies, looks for ways to settle disputes, is patient, open;

Teacher guiding to responsibility – "we can participate in her/his decisions" - gives space for independent work; waits for the class to relax, gives freedom, liberty along with responsibility, respects students' suggestions;

Insecure teacher – "looks like she/he doesn't know what to do" - keeps out of the way, doesn't interfere; apologizes, waits to see how things turn out; admits that the fault may lie with themselves;

Dissatisfied teacher – "whatever we do, she/he thinks it's wrong" - waits for silence, weighs up reasons for and against; demands calm, makes dissatisfaction known; looks sullen, morose, grumpy, keeps asking questions, criticising;

Reprimanding teacher – "has prickly remarks" - tends to be angry, rebuke students; tends to be irritable, annoyed; likes to forbid, point out mistakes, reprimand and punish;

Strict teacher – "her/his demands are very high: - keeps discipline, controls students, tests them strictly, evaluates them, grades them; enforces silence in the classroom, keeps the class quiet; she/he is strict, insists on observance of rules and regulations (Vašíčková, 2015, p. 10)."

The questionnaire we used included the initial variables. For students, we asked what class they attend, their gender, self-assessment of their school achievement (excellent student, average student, poor student), and on a 5-point scale (never-always) we asked whether they were satisfied with their relationship with their teacher. For the teachers, we first asked in which class they are both a class teacher and teacher of a subject, their gender and the years of teaching experience.

Results

The mean scores of all students and all teachers on the interaction styles assessment can be found in Table 1. The highest scores in all teachers' assessments were observed in the "understanding" sector (M = 3.27; SD = 0.51) and the second highest scores were observed in the "assisting" sector (M = 3.17; SD = 0.79). On the other hand, the lowest scores in the assessment of all teachers can be seen in the "insecure" sector (M = 0.91; SD = 0.83) and in the "reprimanding" sector (M = 1.20; SD = 0.70). Based on the results mentioned above, we can assume that comprehensively, teachers tend towards the accommodating type and the dominating expression.

Table 1 *Mean scores of all students and all teachers on the interaction styles assessment*

	Teachers		Students	
	Mean	**Standard deviation**	**Mean**	**Standard deviation**
Organising	2.77	0.63	3.03	0.86
Assisting	3.17	0.79	3.26	0.84
Understanding	3.27	0.51	3.19	0.82
Guiding to responsibility	2.87	0.51	2.90	0.67
Insecure	0.91	0.83	0.93	0.91
Dissatisfied	1.24	0.83	0.98	0.90
Reprimanding	1.20	0.70	0.95	0.89
Strict	1.87	0.26	1.37	0.78

In terms of the assessment of the means of all students, we recorded the highest scores in the assessment of the interaction style for all teachers together in the "assisting" sector (M = 3.26; SD = 0.84) and the second highest scores were recorded in the "understanding" sector (M = 3.19; SD = 0.82). The lowest mean of all students' responses related to the style of all teachers at M = 0.93 (SD = 0.91) is in the "insecure" sector and we recorded the second lowest in the "reprimanding" sector (M = 0.95; SD = 0.89). The "dissatisfied" sector (M = 0.98; SD = 0.90) also received a low score in the students' evaluation. The ratings of all students agreed with those of all teachers in many ways; students are also likely to perceive their teachers as accommodating and probably more dominant. In their perceptions, teachers are not likely to be dismissive of their needs or submissive in their relationship with them.

The research question can also be answered by analysing the responses of all respondents. Despite some similarities, there are differences in the perceptions of teachers' interaction styles by the teachers themselves and the perceptions of their styles by their students. To better illustrate the aforementioned differences, we have arranged the means of teachers' and students' responses

from highest to lowest - Table 2. The second half of the responses are similar for teachers and students, but the 4 highest ranking interaction styles have different scores for the two groups.

Hypothesis 2 was tested using the Kruskal-Wallis test, the results of which showed no statistically significant differences ($p > 0.05$) between students' achievement and each sector of teachers' interaction styles. We did not confirm Hypothesis 2. The results of the Kruskal-Wallis test between the different sectors of teachers' interaction styles and students' achievement are presented in Table 3 below. For convenience, we report the mean and standard deviation.

Table 2 *Mean of teachers' and students' responses from highest to lowest*

	Teachers			Students	
		Mean			Mean
1	Understanding	3.27	1	Assisting	3.26
2	Assisting	3.17	2	Understanding	3.19
3	Guiding to responsibility	2.87	3	Organising	3.03
4	Organising	2.77	4	Guiding to responsibility	2.90
5	Strict	1.87	5	Strict	1.37
6	Dissatisfied	1.24	6	Dissatisfied	0.98
7	Reprimanding	1.20	7	Reprimanding	0.95
8	Insecure	0.91	8	Insecure	0.93

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Table 3 *Results of the Kruskal-Wallis test (Hypothesis 2)*

	Test Statistic	Standard deviation	p
Organising teacher	2.844	2	0.241
Assisting teacher	3.277	2	0.194
Understanding teacher	1.503	2	0.472
Teacher guiding to responsibility	1.990	2	0.370
Insecure teacher	2.863	2	0.239
Dissatisfied teacher	2.031	2	0.362
Reprimanding teacher	1.546	2	0.462
Strict teacher	2.593	2	0.274

It was the same for the assessment of school achievement by all students in relation to interaction styles, the results of the Kruskal-Wallis test between teachers' interaction style and the frequencies of satisfaction with students' relationship with teachers did not show statistically significant differences ($p > 0.05$). Hypothesis 4 was not confirmed. The results of the Kruskal-Wallis test analysis between teachers' interaction style and frequencies of satisfaction with students' relationship with teachers are presented in Table 4.

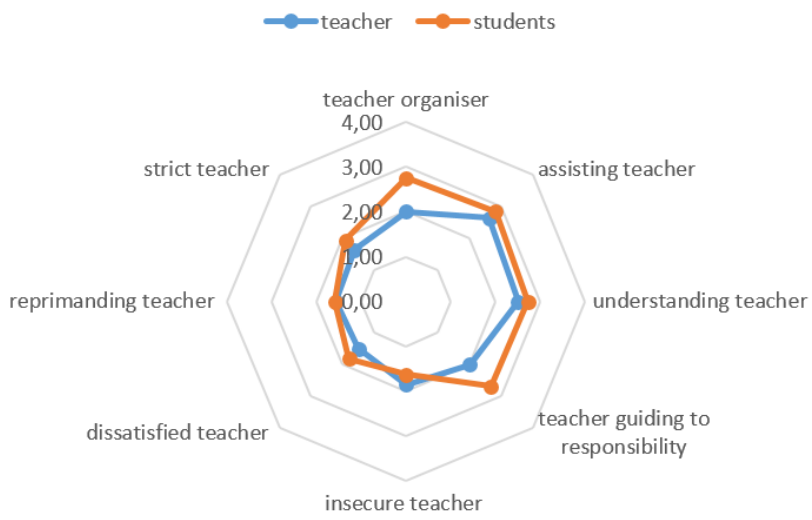
Table 4 *Results of the Kruskal-Wallis test (Hypothesis 4)*

	Test Statistic	Standard deviation	p
Organising teacher	1.811	4	0.771
Assisting teacher	1.267	4	0.867
Understanding teacher	3.713	4	0.446
Teacher guiding to responsibility	1.107	4	0.893
Insecure teacher	4.538	4	0.338
Dissatisfied teacher	0.987	4	0.912
Reprimanding teacher	4.305	4	0.366
Strict teacher	2.691	4	0.611

Teacher 1

The analysis of Teacher 1's interaction style is shown in Figure 3.

Figure 3 *Interaction style of Teacher 1*



It can be seen that this teacher scored the highest in the "assisting" sector (M = 2.63) of the evaluation of their interaction style, which allows us to conclude that their self-reflection corresponds to the more dominant and accommodating type of teacher. The highest score in the students' assessment of this teacher's interaction style was also obtained in the "assisting" sector (M = 2.83; SD = 1.32). The teacher's self-assessment and the students' assessment coincide in this case.

The same is true for the second highest score in the assessment of this teacher's interaction style, where in the "understanding" sector the teacher self-assigned a score of M = 2.50, and the second highest mean of the students was also represented in this sector (M = 2.72; SD = 1.53). By this double agreement in the evaluation of teacher 1's interaction style by himself and his students, we can conclude that he/she is probably a teacher with a predominantly accommodating interaction style, who is friendly and considerate, patient, understanding and always tries to find all possible ways to settle disputes in the classroom.

The educator gave themselves the lowest score in the "dissatisfied teacher" sector (M = 1.50) and their students gave them the lowest score in the "reprimanding teacher" sector (M = 1.59; SD = 1.60). Given the fact that the items "assisting" and "understanding" are positioned opposite to the items "reprimanding" and "dissatisfied" in the circumplex, we can assume that Teacher 1's interaction style is dominated by the assisting interaction style, and the lowest representation in their interaction style is for demonstrations of dismission. The answer to the research question for Class 1 is that Teacher 1's perception of their own interaction style differs from the students' perception of his style.

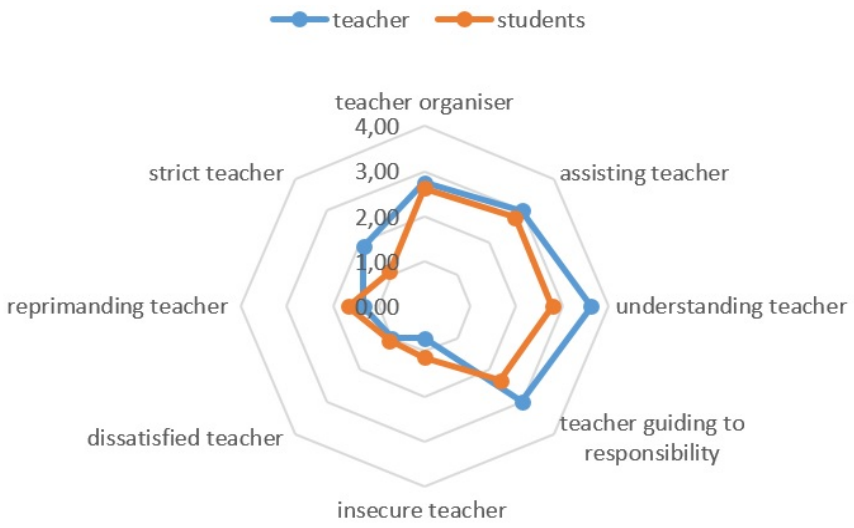
The existence of potential relationships between the student's achievement and the type of interaction style of the teacher, as well as between the frequency of student's satisfaction with their relationship with their teacher and the interaction style of the teacher were examined using Spearman's correlation coefficient. In the classroom of Teacher 1, when we analysed the correlations of the perceived student relationship with all types of teacher interaction styles, we observed a non-significant relationship for all sectors. A summary of the results is presented in the following list: organizing teacher (r = 0.50; p = 0.667), assisting teacher (r = 0.87; p = 0.333), understanding teacher (r = 0.87; p = 0.333), teacher guiding to responsibility (r = 0.87; p = 0.333), insecure teacher (r = -0.87; p = 0.333), dissatisfied teacher (r = 0.00; p = 1.000), reprimanding teacher (r = -0.87; p = 0.333), strict teacher (r = -0.87; p = 0.333).

The above results did not support our hypothesis 3, because all the qualities of Teacher 1 including the accommodating ones here do not have a significant positive relationship with the frequency of student's satisfaction with their relationship with their teacher.

Teacher 2

When analysing the interaction style of Teacher 2, we found that the teacher rated themselves with the highest score in the "understanding" sector (M = 3.63) and the lowest score in the "insecure" sector (M = 0.71). The students rated the highest, equally high scores of the teacher's interaction style in two sectors, namely "understanding" (M = 2.79; SD=0.85) and "assisting" (M = 2.79; SD = 0.75) and also rated the lowest scores in two sectors "dissatisfied" (M = 1.08; SD = 0.47) and "strict" (M = 1.08; SD = 0.73). Teacher 2 is likely to be an accommodating teacher with good organizational skills, based both on their own self-assessment, as well as the students' assessment. They tend to help students, show empathy and trust. An overview of the scores and averages of the assessment of the interaction style of Teacher 2 can be seen in Figure 4.

Figure 4 *Interaction style of Teacher 2*



The answer to the research question for Class 2 is that there is also a difference in the teacher's own perception of their interaction style and that of their students.

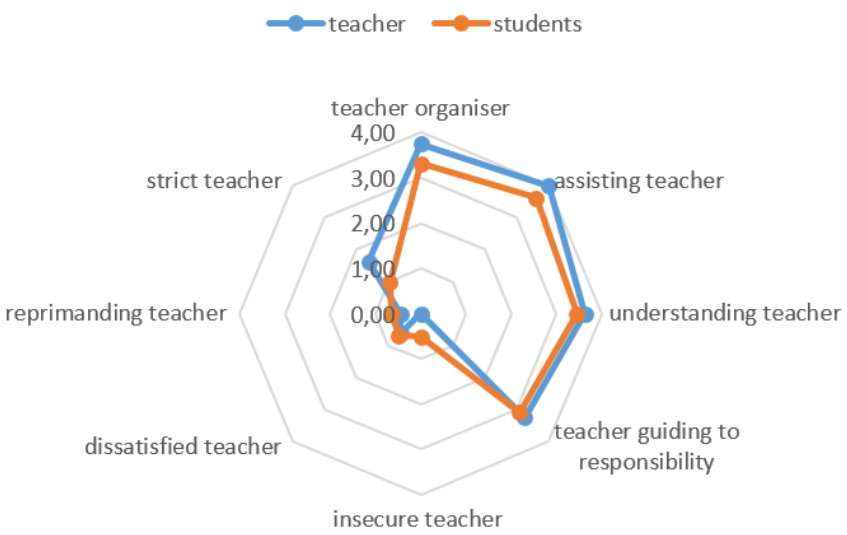
The calculation of Spearman's correlation coefficient confirmed the existence of a non-significant relationship between the student's achievement and the type of interaction style of Teacher 2, a summary of the results is given in the following list: organizing teacher ($r = 0.22$; $p = 0.595$), assisting teacher ($r = -0.11$; $p = 0.797$), understanding teacher ($r = -0.06$; $p = 0.897$), teacher guiding to responsibility ($r = 0.33$; $p = 0.429$), insecure teacher ($r = -0.11$; $p = 0.797$), dissatisfied teacher ($r = 0.38$; $p = 0.347$), reprimanding teacher ($r = 0.44$; $p = 0.276$), strict teacher ($r = 0.66$; $p = 0.073$). These results of Spearman's correlation coefficient refute Hypothesis 1, because even the interaction styles that we considered positive in the research (organiser, assisting, understanding, guiding to responsibility) did not show a significant relationship with the students' achievement.

The second analysis by Spearman's correlation coefficient concerning the relationship of the frequency of satisfaction with the student-teacher relationship and the different interaction styles of Teacher 2 showed us statistically non-significant relationships. We present all the results in a summary: organizing teacher ($r = 0.34$; $p = 0.417$), assisting teacher ($r = -0.16$; $p = 0.709$), understanding teacher ($r = -0.09$; $p = 0.829$), teacher guiding to responsibility ($r = -0.28$; $p = 0.504$), insecure teacher ($r = -0.12$; $p = 0.775$), dissatisfied teacher ($r = -0.07$; $p = 0.863$), reprimanding teacher ($r = -0.38$; $p = 0.347$), strict teacher ($r = -0.45$; $p = 0.258$). The results mentioned above do not support our Hypothesis 3, as none of the qualities of Teacher 2, even those that we consider accommodating in the research (assisting and understanding) have a significant positive relationship with the frequency of student's satisfaction with their relationship with their Teacher 2.

Teacher 3

Research on the interaction style of Teacher 3, using descriptive statistics, showed us that this teacher scored the highest in the "assisting" sector of their interaction style ($M = 4.00$). This sector also shows the highest mean when analysing the ratings of this teacher by their students ($M = 3.61$; $SD = 0.47$). The second and third highest scores were attributed to this teacher in the sectors "organiser" ($M = 3.75$) and "understanding" ($M = 3.63$). These same sectors are also rated highly in the students' assessment, however, the second highest score here was scored by Teacher 3 in the "understanding" sector ($M = 3.44$; $SD = 0.62$) and the third highest score was recorded in the "organiser" sector ($M = 3.31$; $SD = 0.59$). The teacher scored the lowest in the "insecure" sector ($M = 0.00$) and evaluated themselves equally low in the "reprimanding" sector ($M = 0.44$). In this case, the lowest average of student ratings was also observed in the "insecure" sector ($M = 0.50$; $SD = 0.36$), but we can also observe the low average of student responses in the "reprimanding" ($M = 0.63$; $SD = 0.56$) and "dissatisfied" ($M = 0.68$; $SD = 0.51$) sectors. An overview of all the averages is shown in Figure 5.

Figure 5 *Interaction style of Teacher 3*



Based on the analysis of the results of Teacher 3 themselves and their students, we can state that in terms of the interaction style of this teacher, the dominant-assertive approach probably prevails, as it is characterized by a higher degree of organising, assisting, understanding qualities, and there is also a considerable tendency to guide students to responsibility. The results equally address our stated research question, which we can confirm - despite the many similarities in the assessment of the interaction style of teacher 3 between the teacher's own perceptions and those of their students, there are differences in the two assessments.

The calculation of Spearman's correlation coefficient proves to us the existence of non-significant relationships between students' achievement and teachers' interaction styles, except for the sectors "teacher organiser" ($r = -0.41^*$; $p = 0.029$), "assisting teacher" ($r = -0.46^*$; $p = 0.013$) and "dissatisfied teacher" ($r = 0.45^*$; $p = 0.013$). The analysis of the correlations of the interaction styles "organising teacher" and "assisting teacher" with students' achievement shows a moderate negative significant relationship, which suggests that the higher levels of organising and assisting tendencies of Teacher 3 will be reflected in weaker results for these particular students. On the other hand, we found a moderately strong positive significant relationship by analysing the correlations of the interaction style "dissatisfied teacher" with students' achievement, which may imply that a higher level of expression of dissatisfaction in the interaction style of the teacher will motivate these students to better results. These results contradicted our Hypothesis 1. We present the results of the other sectors in the summary: understanding teacher ($r = -0.33$; $p = 0.080$), teacher guiding to responsibility ($r = -0.27$; $p = 0.150$), insecure teacher ($r = 0.15$; $p = 0.442$), reprimanding teacher ($r = 0.23$; $p = 0.240$), strict teacher ($r = -0.02$; $p = 0.905$).

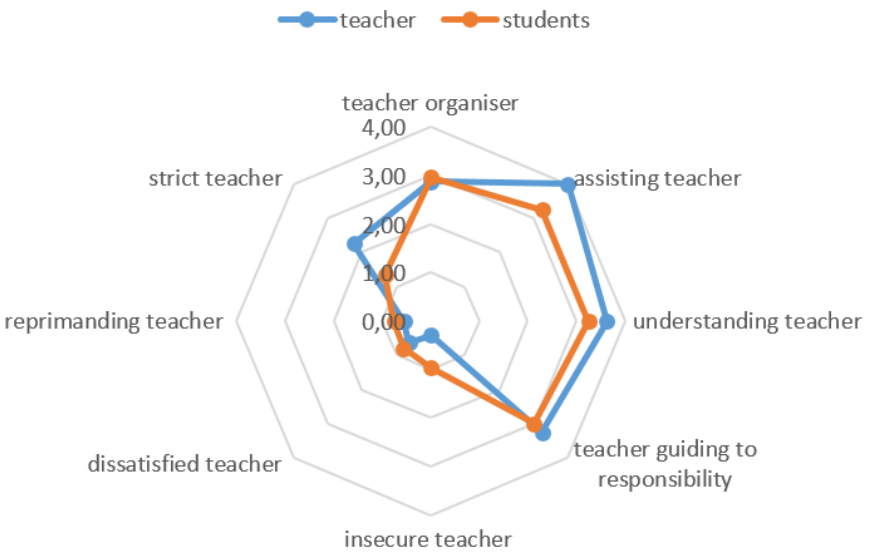
The calculation of Spearman's correlation coefficient did not show a significant relationship between the frequency of student's satisfaction with their relationship with the teacher and the different interaction styles of the teacher. A summary of the results is presented in the following list: organising teacher ($r = 0.078$; $p = 0.688$), assisting teacher ($r = 0.13$; $p = 0.505$), understanding teacher ($r = 0.21$; $p = 0.280$), teacher guiding to responsibility ($r = 0.24$; $p = 0.22$), insecure teacher ($r = -0.25$; $p = 0.192$), dissatisfied teacher ($r = 0.08$; $p = 0.699$), reprimanding teacher ($r = -0.34$; $p = 0.072$), strict teacher ($r = -0.12$; $p = 0.506$). The absence of significant relationships between the items analysed here contradicted our Hypothesis 3, because all the qualities of Teacher 3, including the accommodating ones, do not have a significant positive

relationship with the frequency of student's satisfaction with their relationship with the teacher.

Teacher 4

The research on the interaction style of the teacher in class 4 showed that the answer to our research question related to this class is that there are differences between the teacher's assessment of the interaction style of the teacher by themselves and that of their students. The teacher themselves scored highest in their self-assessment in the "assisting" sector of the interaction style (M = 4.00) and the mean of the students' responses scored highest in the "understanding" sector (M = 3.25; SD = 0.65). The "understanding" sector achieved the second highest score in the responses of the teacher (M = 3.63) and the second highest mean in the students' responses was registered in the "assisting" sector (M = 3.24; SD = 0.87). The lowest score in the responses of the teacher 4 occurred in the "insecure" sector (M = 0.29) and the lowest mean in the students' responses can be seen in the "reprimanding" sector (M = 0.75; SD = 0.61). An overview of the teacher's scores, as well as all the means of the students' responses can be seen in Figure 6.

Figure 6 *Interaction style of Teacher 4*



However, based on the results, we can assume that dominant style consisting of good organising and assisting habits prevails in the interaction style of Teacher 4. This teacher probably excels in managing classwork efficiently, directing students' attention, but equally seems to behave in a friendly manner and joins in what is happening in the classroom.

In terms of students' achievement, there was no significant relationship between students' achievement and the type of teacher interaction style, except for one sector - "assisting teacher" (r = -0.73*; p = 0.025), which showed a moderate negative significant relationship. This result may mean that the better the students' achievement, the less the teacher assists them in their work. This result, as well as the absence of positive significant relationships for interaction styles that we consider positive, contradicted our Hypothesis 1. We give an overview of the other correlational results in the following list: organizing teacher (r = -0.56; p = 0.114), understanding teacher (r = -0.59; p = 0.096), teacher guiding to responsibility (r = -0.62; p = 0.074), insecure teacher (r = -0.18; p = 0.638), dissatisfied teacher (r = -0.26; p = 0.505), reprimanding teacher (r = -0.18; p =

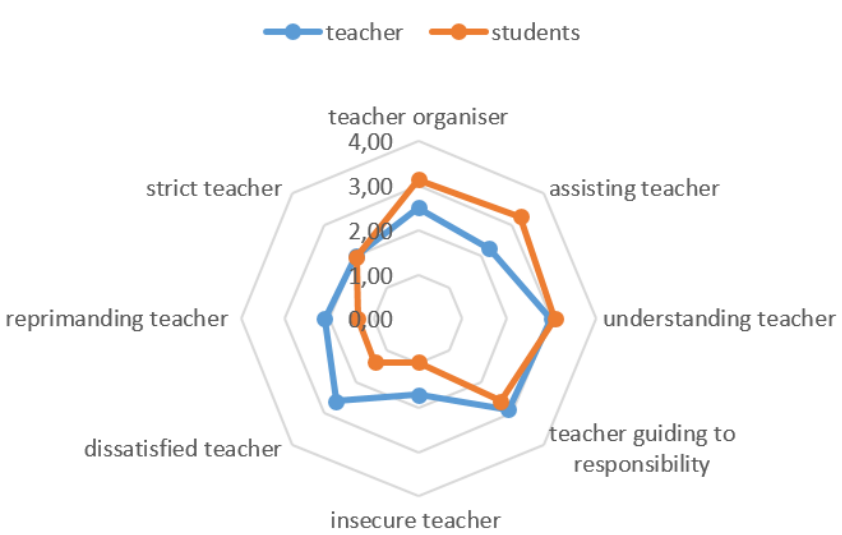
0.638), strict teacher (r = -0.33; p = 0.384).

The correlation results showed the absence of significant relationships with the frequency of students' satisfaction with their relationship with the teacher for all interaction styles, thus we refuted Hypothesis 3. A summary of all results is presented in the list: organizing teacher (r = 0.13; p = 0.742), assisting teacher (r = 0.09; p = 0.812), understanding teacher (r = 0.28; p = 0.466), teacher guiding to responsibility (r = 0.02; p = 0.963), insecure teacher (r = -0.32; p = 0.402), dissatisfied teacher (r = -0.24; p = 0.537), reprimanding teacher (r = -0.25; p = 0.523), strict teacher (r = -0.08; p = 0.832).

Teacher 5

By analysing the interaction style of the class teacher of Class 5, we can answer our research question. There are differences in the results of the self-assessment of the interaction style by the teacher themselves and their students. We observe the highest scores in the teacher's results in the "understanding" sector (M = 3.00) while the highest mean of the students' responses was observed in the "assisting" sector (M = 3.25; SD = 0.58). The second highest score was attributed by the teacher with their responses in the "guiding to responsibility" sector (M = 2.88) and the second highest mean of responses from the students was in the "organiser" sector (M = 3.14; SD = 0.49). We can see the lowest scores of the teacher's responses in the sector "insecure" (M = 1.71) and in the same sector we also register the lowest mean of the students' responses (M = 0.98; SD = 1.04). An overview of all the results can be seen in Figure 7. In the figure we can see that Teacher 5 is probably the most understanding, and thus their level of accommodation and cooperation is probably high, but at the same time we can also see many differences in their own perception of their style and the students' perception thereof (e.g. in the "dissatisfied" sector).

Figure 7 *Interaction style of Teacher 5*



The correlation results indicate a relationship between students' achievement and the type of the interaction style of Teacher 5. We found no significant relationship between student's achievement and almost all types of teacher's interaction styles, with the exception of the interaction style, where the teacher's assisting tendency is predominant. The correlation calculation for "assisting teacher" (r = 0.47*; p = 0.047) showed a moderate positive significant relationship. However, the other interaction styles, even those we classified as positive in the research, did not show the existence of a significant relationship with students' achievement. An overview of the results is

offered in the following summary: organising teacher (r = 0.36; p = 0.147), understanding teacher (r = 0.37; p = 0.136), teacher guiding to responsibility (r = 0.29; p = 0.247), insecure teacher (r = -0.13; p = 0.599), dissatisfied teacher (r = -0.23; p = 0.355), reprimanding teacher (r = -0.25; p = 0.308), strict teacher (r = -0.19; p = 0.454).

Hypothesis 3 was not confirmed in this case, as we did not find a significant relationship with the frequency of student's satisfaction with their relationship with the teacher for all types of interaction styles (Table 5).

Table 5 *Calculations for Hypothesis 3*

	r	p
Organising teacher -	0.075	0.769
Assisting teacher	0.048	0.849
Understanding teacher	0.046	0.857
Teacher guiding to responsibility	-0.304	0.220
Insecure teacher	-0.401	0.100
Dissatisfied teacher	-0.376	0.124
Reprimanding teacher	-0.153	0.545
Strict teacher	-0.161	0.522

Discussion and conclusion

The purpose of the study was to analyse the teachers' interaction style from the educators' point of view and then to compare it with their students' perception thereof. Our intention was to identify and designate the status of the interaction style of the selected teachers, as they work in a secondary school where teaching adolescents requires considerable pedagogical skills. Moreover, these teachers work in a school with a majority of male students, which may also appear as a more demanding situation to manage. We were able to meet the research objective. Among the most significant results are the findings concerning teachers' perceptions of their own interaction styles and their students' perceptions thereof. The results of the research correspond with the results of the research of Gavora et al. (2003), which concludes that there are differences in the teachers' and their students' perceptions of interaction styles. Of the five teachers examined, we did not observe a single case of identical perceptions of the teacher's interaction style by themselves and their students.

Although in many cases the teacher scores were close to the mean of their students' responses, in no case did this happen in all sectors of the teacher's interaction style observed. However, we consider the benefit of this research to be the qualitative feedback for specific teachers, which will provide them with a valuable idea of how they are perceived by their students.

The greatest contribution of the research for us is getting the overview of the perception of the teachers' interaction styles by their students. We do not generalise from the findings, but it is likely that in many cases students perceive their teachers at this school to be more likely to be assisting, cooperative, dominant with strong organisational skills and a willingness to help them acquire new knowledge and skills.

According to Vašíčková's (2013) research, we also examined the predicted significant positive relationship of teachers' interaction styles that we considered positive (organiser, assisting, understanding, guiding to responsibility) with students' achievement and the relationship of

interaction styles that we considered accommodating (assisting and understanding) with the frequency of student satisfaction with their relationship with their teacher. The correlation analysis showed no significant relationships between any teacher interaction styles and those we considered accommodating and the frequency of student satisfaction with their relationship with their teacher showed no significant relationships. When analysing the relationship between interaction styles and students' achievement, we observed two moderately strong positive relationships with students' achievement (the interaction style of Teacher 5 in the "assisting teacher" sector and the interaction style of Teacher 3 in the "dissatisfied teacher" sector) and three moderately strong negative significant relationships (the interaction style of Teacher 4 in the "assisting teacher" sector and the interaction style of Teacher 3 in the "organising teacher" and "assisting teacher" sectors).

The results of the research correspond with the findings of the investigation of Levy et al. (1992), who found no relationship between the perceptions of teacher's interaction style and its impact on students' achievement. We did not find statistically significant differences for any of the variables examined, still we consider the knowledge that students' achievement and the frequency of students' satisfaction with their relationship with their teachers are unlikely to have a significant relationship with teacher's interaction style to be beneficial, as this fact may also help educators in their profession. In our opinion, the lack of relationship between teachers' interaction style and students' achievement and the frequency of students' satisfaction with their relationship with their teachers may be due to the already mentioned nature of the school and its students. Achievement does not seem to play such a large role for the students of this school compared to other general secondary schools. Students are more focused on acquiring practical skills than better grades, so whatever the interaction style of the teacher, achievement will not be significantly affected. We see the same with the frequency of students' satisfaction with the relationship with the teacher.

In the case of conducting research set up in this way, it is not possible to generalise the findings. We include the diagnostic tool we used among the limitations. Despite the fact that it is designed for scientific purposes, it is a theoretical model that can downplay reality into theoretical models. It is also a model analysing an interaction that changes depending on many situations. Often it is a spontaneous reaction, one does not always behave in the same way in all circumstances. And at the same time, it is an assessment of the teacher by several students, whose perception is subjective and varied, so we have to take into account the considerable situationality of this model. Among the limitations we also include the non-representative, small sample of respondents and the way they were self-selected, it is therefore likely that teachers who may have perceived their interaction style other than positive did not intentionally participate in the research, and the ordinal measurement of students' achievement, as well as the high degree of subjectivity in their own assessment of their own achievement. As a recommendation for the future, we therefore suggest for the achievement to be more effectively measured through, for example, accurate mathematical grades.

Acknowledgments

The research was conducted in compliance with the ethical standards set by the Declaration of Helsinki (1964) and informed consent was provided to all participants.

Anonymized data and materials have been made publicly available at the osf.io and can be accessed at https://osf.io/xhcba/

The author did not preregister her analysis plan.

The author has no conflicts of interest to declare.

[1] English version of the model is available online on: https://directiojournal.org/19/1/personality-type-differences-and.html

[2] The model is available online on: https://www.pulib.sk/web/kniznica/elpub/dokument/Dupkalova1/subor/Dupkalova.pdf (p. 149).

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