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Adaptation of Teacher Power Use Scale to Lower Secondary Students and Student Teachers[1]

Adaptace Teacher Power Use Scale na žáky nižšího sekundárního vzdělávání a studenty učitelství

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Abstract

Power can be defined as an ability to influence opinions, values, and behaviour of others. The realisation of curricular aims is enabled by clearly established power relationships in classes. Newly qualified teachers often struggle with establishing power relationships. French and Raven's influential typology of social power as a relational phenomenon distinguishes coercive, reward, legitimate, referent, and expert bases of teacher power. In our methodological study we adapted *Teacher Power Use Scale* – TPUS (Schrodt, Witt, & Turman, 2007) measuring these power bases. The adaptation focuses (instead of tertiary teachers, their students, and Anglo-Saxon context) on student teachers, lower secondary students, and reflects the Czech sociocultural context. The non-probability adaptation sample consists of 1686 students from 96 lower secondary classes taught by 96 student teachers on their long term practice. Our data basically support French and Raven's theory and the

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original TPUS, except that the structure of student teacher power bases seems to be naturally simpler in the perception of lower secondary students. Above all, legitimate and coercive power bases were strongly inter-correlated, i.e. perceived by students as one factor; similar to teacher power bases structure in the Czech data.

Key words
Power bases, Teacher Power Use Scale, student teachers, lower secondary education, scale adaptation, confirmatory factor analysis.

Power in the social science context can be understood as an ability of a person or a group to influence opinions, values, and behaviour of others (McCroskey et al., 2006). Power is viewed as *situational* (Jacobs, 2012, Schulz & Oyler, 2006), *circular* (Buzzelli & Johnston, 2001, Aultman, Williams-Johnson, & Schutz, 2009) and *reciprocal* phenomenon (McCroskey, 2006; Moscovici, 2007). As such it represents one of the most studied phenomena in social sciences (e. g. Simmel, 1896; Weber, 1922; Foucault, 1975). It is obvious from the definition that power is crucial for educational and instructional settings.

Teacher power

Recent research shows that the realisation of instructional aims is enabled by clearly established *power relationships* in classes (Šalamounová & Švaříček, 2012). This supports Bernstein's (1996) theory of dominance of *regulative instructional discourse* while the *didactic discourse* constitutes a part of the regulative one. *Power negotiation* and *use of power* is understood as an inherent part of educational process (McCroskey & Richmond, 1983; Šeďová, 2011). As Sarason (1990) notes, *teachers' professional competence* can be also measured in relation to their ability to set up power relations in the classes.

According to the research findings (Richmond & McCroskey, 1992; Staton, 1992) newly qualified teachers know necessary information related to their teaching subjects, but they do not know how to meet conditions for establishing power relationships in the class. Harsh and rude part of the reality of everyday classroom life can cause collapse of their ideals formed during teacher training – "the reality shock" (Veenman, 1984). These might by one of the main reasons why novice teachers quit their profession (Šalamounová, Bradová & Lojdová, 2014; Blížkovský, Kučerová, Kurelová et al., 2000, p. 169) which is regarded as a social and economic problem in a lot of European countries. Therefore it is important to focus the educational research on the topic of power relationships in the classroom and to develop reliable instruments to measure it.

Typology of teacher power: power bases

Traditional and the most influential typology of social power as a *relational* phenomenon comes from French and Raven (1959). It distinguishes teacher's power regarding to a (by students perceived) principle which it is based on.[2] The typology of power bases was developed during years and partly revised but the main five power bases remained (Raven, 1992, 1993).

Reward power comes from student's perception that the teacher can provide him/her with positive benefits or rewards (extra points, grades, psychological reward such as affirmation from teacher, relational rewards such as being complimented by the teacher in front of the classmates). Teacher power emanates in this case from student wishing to receive the benefits.

Coercive power presents student's awareness that the teacher can punish him/her for example through grade penalties, critique, disciplining in front of classmates, or losing favour of teacher. Teacher power in this case emanates from student wishing to avoid unpleasantness.

Legitimate power reflects the teacher's authoritative role in relation to student. Social norms assign to persons who hold position of legitimate authority a certain right to verse or influence others.

Referent power reflects a student's positive reward for and personal identification with the teacher perceived as similarity or interpersonal affinity being manifested by the student's feeling of unity with the teacher, or the desire to have such an identity (admiring the teacher). The teacher's ability to influence a student stems from the positive regard in which the student holds the teacher.

Expert power emanates from the teacher's knowledge or expertise as an educator in the subject area. In the class student may recognize the professional background, superior understanding of the subject, as well as teaching skills of the teacher.

Instruments measuring teacher power bases

Attempts to measure teacher power bases as defined above led to the construction of *Perceived Power Measure* (PPM) and *Relative Power Measure* (RPM) by McCroskey and Richmond (1983) and later to construction of *Power Base Measure* (PBM) by Roach (1995a). In recent years an improved *Teacher Power Use Scale* (TPUS) was developed by Schrodt, Witt and Turman (2007).

Perceived Power Measure – PPM (McCroskey & Richmond, 1983) was originally constructed by Richmond, McCrosky, Davis, and Koontz (1980) who were inspired by Student's (1968) measure designed for employees in general. Student used a single-item-type measure on a five-point Likert-type scale. Richmond et al. (1980) decided to use five seven-point bipolar scales (*agree-disagree*, *wrong-right* etc.) for each type of power to be able to estimate reliability. Later McCroskey and Richmond (1983) made a minor modification of this instrument. Respondents are given the definitions of the five power bases and answer five

[2] Examples of situations of each power base can be seen in appendix in Czech original adaptation of TPUS or in table 1 in English back translation of the Czech adaptation.

statements regarding these power bases on a Likert type scale. Teachers answer statements of the following character: *I use … power*. Students answer statements: *My teacher uses … power*. Richmond et al. (1980) as well as McCroskey and Richmond (1983) report high reliability of the instrument. For McCroskey and Richmond (1983) it was important to measure not only the relative use of power bases, but the degree of use of each power base as well, therefore they designed another instrument called *Relative Power Measure* – RPM which accompanies the PPM. The RPM also first explains the five power bases to respondents; then asks them to estimate the percentage of total power usage that stems from each base, with the requirement that the total equals 100 percent.

Later Roach's (1995a) *Power Base Measure* (PBM) improved the measurement of teacher power. PBM was primarily developed to measure power use of teaching assistants (Roach, 1995b) in relation to college outcomes. PBM consists of 20 Likert-type items[3] (four for each power base) describing perceived effects of teacher power on student behaviour (e.g. coercive power: *The student will experience negative consequences for noncompliance with instructor requests; referent power: The student should comply to please the instructor*; legitimate power: *The student must comply because it is a university rule or expectation;* expert power: *The student should comply because the instructor has great wisdom/knowledge behind the request;* reward power: *The instructor will see to it that the student acquires some desirable benefits if he/she does what is suggested*). PBM showed high overall reliability coefficients – over .85 (Roach, 1995a,b) and in subsequent research the alpha coefficients of reliability of individual scales ranged from .66 to .90 (Golish, 1999; Turman & Schrodt, 2006). Nevertheless, the factor loadings for the scale indicated that a number of items tended to cross-load onto multiple factors (Roach, 1995a). Turman and Schrodt (2006) reported weak factor loadings for legitimate and coercive power on teacher power. Schrodt, Witt and Turman (2007) found that PBM may not adequately represent the latent construct of power use in instructional contexts. According to them, one possible explanation for this result may be that the items representing coercive and legitimate power on the PBM are less salient to students in the college classroom than the items representing prosocial forms of power, such as expert, reward, and referent power. Also some items of reward power (e.g. *If the student complies with instructor requests, he/she will receive some type of compensation or prize*) may be perceived by students as manipulative and therefore measuring some aspects of coercive power. Thus, they designed another instrument.

Teacher Power Use Scale – TPUS (Schrodt, Witt, & Turman, 2007) presents the latest instrument measuring perceived (observable) power of teacher. Original TPUS measures the five above mentioned power bases with 30 items on a seven-point Likert-type scale ranging from *never* to *always*. Items were constructed on the basis of PPM, RPM, PBM and typologies of *behaviour alteration techniques* described in observational research. According to Schrodt, Witt and Turman (2007) the instrument shows better psychometric properties than *Perceived Power Measure* by McCroskey and Richmond's (1983) or Roach's (1995a) *Power Base Measure*. TPUS demonstrated better internal reliability, concurrent and discriminant

[3] With five-point frequency scale that ranges from *never* to *very often*.

validity, and it contained more valid and reliable indicators for the five power bases. Coefficient of reliability Cronbach's alpha ranged between .77 to .90. TPUS was better at measuring so called *anti-social forms of power* (coercive and legitimate) and *pro-social forms of power* (referent and reward) at the aggregated level as well. In future research this newest instrument might be improved and above all adapted to other educational levels and socio-cultural contexts, which is our attempt.

Findings on teacher power

Most of the studies that used instruments based on the French and Raven's typology focused on tertiary students and teachers. According to research findings, the most frequently used power base reported by high school students seemed to be coercive power, followed by legitimate and expert power; the least used were reward and referent power (Jamieson & Thomas, 1974). On the other hand, Schrodt, Witt and Turman (2007) found that in communication courses university students perceived the expert power base as the most used (average of two studies using PBM was 2.21 and 2.72; on a scale from *never* – 0 to *always* – 4), then legitimate (x = 1.93 and 2.33), reward (x = 2.26 and 1.75), referent (x = 1.94 and 1.75), and coercive power (x = 1.43 and 1.15). Students perceived the use of so called *harsh power mechanisms* as inappropriate and report discomfort when they were applied; on the other hand the expert power is perceived as the best (Elias & Loomis, 2004).

Referent, expert, and reward power (as prosocial forms of power) were positively correlated with *cognitive* and *affective learning*, and *student motivation*, whereas legitimate and coercive power (viewed by students as antisocial forms of power) were negatively associated with these learning outcomes (Kearney, Plax, Richmond, & McCroskey, 1984; McCroskey & Richmond, 1983; Plax et al., 1986; Richmond, 1990; Richmond & McCroskey, 1984). Other studies reported also relation of teacher's power and students' *inappropriate behaviour* (Myers, 1999; Tauber, 1999).

Higher power use among teaching assistants was associated with lower argumentativeness (Roach, 1995a,b). Students often communicated from the same power bases as they exert social influence on their teachers (Golish, 1999; Golish & Olson, 2000). Students' perceptions of teacher *confirmation behaviours* are positively associated with prosocial forms of power and negatively associated with antisocial forms of power (Turman & Schrodt, 2006). No influence of teacher's gender on student's perception of their power was found (Elias & Mace Britton, 2005).

The relevance of these findings needs to be further supported with findings on different samples, i. e. above all on younger students and in different socio-cultural contexts. Sufficient findings regarding student teachers or novice teachers are missing as well as findings about perception of (student) teacher power by younger learners. Logically, the instruments measuring the phenomenon at these educational levels are missing as well; this regards international situation as well as the Czech Republic.

Aims of our study

In accordance to this state of the art and needs of further theory and methodology development our methodological study aims to adapt the *Teacher Power Use Scale – TPUS* (Schrodt, Witt, & Turman, 2007) for the specific context of student teachers in lower secondary classrooms. At the national level, our aim was also the adaptation of TPUS to Czech educational conditions.

The adaptation was guided by the need of measurement of power bases of student teachers and lower secondary students, above all in our larger research project on student teacher power (see Vlčková et al., 2015). The measurement instrument had been missing not only in Czech but also in international conditions. The adaptation of TPUS to younger learners and students teacher's instruction had been missing in the theory, research, and practice therefore it is important to find out whether the instrument can show a similar structure like in the case of teachers and tertiary students. Simultaneously, there is only limited knowledge about power bases of student teachers used when they start their teacher profession and how students whom they teach perceive their power. Student teachers find themselves in a specific position at schools. They are not really perceived by their students as well as their mentor teachers as regular teachers. Their power vastly depends on power relations set by their mentor teachers and school management and how they introduce them to the classes where they learn to teach (more findings in Lojdová, 2015).

Research design

Adaptation of measuring instrument

Along the recommendations of Hambleton, Merenda, and Spielberger (2005) our adaptation of *Teacher Power Use Scale* – TPUS (Schrodt, Witt, & Turman, 2007) with the aim to measure the perceived student teacher power bases included re-designing the instrument for lower secondary students (from university students) and student teachers (from university teachers), and for the Czech conditions (from the Anglo-Saxon context). We found the original TPUS suitable for the intended adaptation (i.e. significantly different population and socio-cultural context) and as it is the newest and most advanced instrument measuring teacher power we decided to adapt it, but some changes (as described below) had to be done.

The adaptation included independent parallel translations, multiple cultural and linguistic adaptations, multiple expert reviews, and cognitive interviews with relevant respondents. The instrument was first adapted for lower secondary student and their teachers (Vlčková, Mareš, Ježek, & Šalamounová, 2016, in preparation), afterwards for measuring the student teacher power in lower secondary classrooms. For measuring the student teacher power, new items were developed for each power base according to theory (table 1). Some items measuring teacher power were reformulated or removed. The changes in comparison to original TPUS are presented in table 1.

Table 1

Adapted and developed items of scale *Power Bases: Version for Student Teachers (*Vlčková, Mareš, & Ježek)[4]

Power base	Scale items		
	Adapted from TPUS	Newly created or alternative to adapted or original item	New items developed for the student teacher context
Coercive	16, 18, 29, 33, 35, 36	06, 26, 47	25, 34
Reward	20, 24, 38, 48, 49	45	40, 51
Referent[5]	1, 8, 13, 19, 23	10, 12, 15, 32, 41	4
Legitimate	7, 14, 22, 37, 39, 50	5, 11, 42	9, 17, 44
Expert	3, 21, 27, 31, 36	2, 28, 30, 43	-

In contrast to the original TPUS the items were reformulated from singular or plural passive (reporting about others in generally) to singular active form (reporting about oneself) which allows more psychometrically reliable respondent's answers.

The scale version for adaptation consisted of 51 items (appendix 1 and 2): 11 items for coercive power base, 10 for expert, 12 for legitimate, 8 for reward, and 10 referent power base. The response scale was adapted for younger learners, i. e. reduced to 5 points (1 – *I agree*, 5 – *I don't agree*)[6] in comparison to original TPUS. The responses were put on a response scale of agreement instead of frequency because of the limited students' experience with the assessed student teacher. To assess the psychometric properties of the instrument we used confirmatory factor analysis (CFA) in Mplus and item analysis with internal consistency estimation.

Data collection

The scale was administered in 2014 to lower secondary classes/students (ISCED A2) taught by student teachers of master study programmes at Faculty of Education of Masaryk University in the Czech Republic. The student teachers had their second semester of their practice at schools. The student teachers administered the questionnaire themselves (90 %) to their students at the end of their long term continual practice, mostly after 3-6 or 10 lessons which they had taught in the class. In some cases (10 %) the questionnaire was administered by a mentor teacher, class teacher or substituting teacher. The student teachers computed the

[4] The scale items can be seen in appendix 1 (in Czech, as used in the research) or in table 2 (in English back-translation).

[5] One item from original TPUS was not in direct meaning included in our instrument: *My teacher demonstrates commitment to the class by being authentic and genuine when interacting with students.*

[6] With introducing this response scale change (from frequency to agreement response scale) the factor analysis model estimates may change. It may result to the different psychometric properties of the model estimates compared to the original TPUS. This problem was considered in the analysis. The change of length of the response scale (from 7 point to 5 point) is considered not to have an effect on the estimates in our study.

results themselves and used them for self-reflection in the teaching practice seminars at the faculty. This helped us to assure better data quality for our research purposes as well. The data were collected as nonprobability sampling; most of the schools were from city Brno and its surroundings.

Sample

The sample included 1686 students from 6th to 9th grade (12 % in the 6th grade, 23 % in the 7th, 41 % in the 8th, and 24 % in the 9th grade). The students were between 11 and 17 years old; the majority was 13–15 years old[7]. In total we analysed 96 classes/student teachers. At average there were 18 students per class. 1306 students were taught by a woman teacher, 380 students from our sample were taught by a man student teacher. 1560 (93 %) students were from lower secondary school (základní škola), 126 (7 %) students were from lower secondary comprehensive schools (víceleté gymnázium); i.e. in the sample there were 7 lower secondary academic schools and 58 lower secondary schools. The student teachers[8] taught Civics (21 student teachers), Foreign Languages (18), Czech Language (14), Mathematics (14), History (9), Science (6), Health Education (5), Geography (4), Physics (3), and ICT (3).

Findings

Confirmatory factor analysis

A confirmatory factor analysis in Mplus, version 7.11 (Muthén & Muthén, 2013), was conducted to confirm the data structure suggested by theory of French and Raven (1959) and TPUS (Schrodt, Witt, & Turman, 2007), i.e. the existence of five power bases in student's perception of student teacher power use in the classes. The first five-factor model with all 51 items produced unsatisfactory fit indices. The model treated all items as continuous and used the MLR correction for deviations from normality. Then we allowed the residuals of items that explicitly mentioned the status of the student teacher to correlate. The resulting model (model 1, table 2) did not fit the data perfectly but at least allowed rough interpretation (chi^2 = 5296, df = 1210, $p < .001$; CFI = .81; SRMR = .083; RMSEA = .045).

Model 1 had a number of deficiencies. Item C06 (*When I do not hand in my homework to this teacher, I feel really bad*) had a minimum loading on the coercive factor while the modification indices strongly suggested its loading on the expert factor. Items L05 (*This teacher says that teachers have to be obeyed*) and L11 (*This teacher emphasizes that we have*

[7] 11-year-old students (1.73 %), 12 (13.25 %), 13 (25.67 %), 14 (37.61 %), 15 (20.54 %), 16 (1.13 %), 17 years old (.06 %).

[8] The percentage of our sample of students in different subject was following: Foreign Languages (French 2 % of students, English 1 %, Russian 7 %, German 4 %) and Czech language (15 %), in Mathematics (15 %), Physic (3%), Informatics (3 %), Science (8 %), Health Education (7 %), History (9 %), Civics (23 %), and Geography (4 %). The classes in foreign languages are of the half size of standard classes therefore there are fewer students compared to number of student teachers.

to obey at school) did not load well on legitimate factor and were substantially locally dependent. Moreover, from the practical standpoint the high correlation between legitimate and coercive factors (model 1 in table 3) suggested that the factors are nearly indistinguishable. A final argument for modification came from the analysis of the adapted TPUS for lower secondary teachers (Vlčková, Mareš, Ježek, & Šalamounová, 2016, in print), in which a four-factor model performed better.

Thus we tested an alternative four-factor model (model 2, table 2) with the items of legitimate and coercive power loading on a common factor. We also removed the problematic items C06, L05 and L11. While its fit indices were only marginally better ($chi^2 = 5241$, df = 1210, $p < .001$; CFI = .82; SRMR = .082; RMSEA = .044), it enables for a much clearer interpretation.

Table 2
Standardized factor loadings in models 1 and 2[9]

Item	Model 1 loading	Model 2 loading
Factor: Referent power		
R01: I have a lot in common with this teacher.	.61	.61
R04: I find this teacher nice because she has to learn as I do.	.63	.55
R08: This teacher is friendly to me.	.55	.46
R10: This teacher is fair to me.	.46	.62
R12: I like to talk with this teacher also during breaks.	.62	.61
R13: I see this teacher also as a human, not just as a teacher.	.61	.59
R15: I think of this teacher as of a friend.	.59	.64
R19: This teacher and I have the same point of view.	.64	.60
R23: I can see things in the same point of view as this teacher.	.60	.66
R32: I want to be like this teacher.	.66	.59
R41: What this teacher says and does is very important to me.	.59	.63
Factor: Expert power		
E02: When this teacher explains something while teaching, it is comprehensible.	.67	.67
E03: This teacher tells different news connected to the subject.	.53	.53
E21: I think this teacher is great at teaching.	.76	.75
E27: When this teacher teaches, I know what to do and when to do it.	.67	.67
E28: This teacher is able to show me how I can practically use what I learn.	.65	.65
E30: This teacher understands what she teaches very well.	.70	.69

[9] Items are only translation from original Czech items; they are only for orientation, not for use in the research. Original scale items of the Czech version are in the appendix.

E31: When this teacher explains something, I can believe it.	.69	.69
E36: This teacher is a real expert in this subject.	.69	.69
E43: This teacher is able to explain to me anything I do not understand.	.68	.68
		Factor: Legitimate/coercive
Factor: Legitimate power		
~~L05: This teacher says that teachers have to be obeyed.~~	.26	
L07: This teacher is persuaded that she can decide about everything when she is a teacher.	.61	.56
L09: When this teacher does not like my behaviour, she cannot do anything about it anyway because she does not belong to our school.	.43	.44
~~L11: This teacher emphasizes that we have to obey at school.~~	.24	
(L14: This teacher has a reserved approach to me.)	.34	.32
(L17: I obey this teacher because our teacher has told me to do so.)	.36	.33
(L22: This teacher says that it does not matter if I do not like something in the class.)	.39	.39
L37: This teacher obviously shows that a teacher is something more than a student.	.56	.49
(L39: This teacher suggests that what she wants is also supported by our teacher, headmaster or school rules.)	.32	.26
L42: This teacher says things like: “I end the lesson, not you.”	.52	.52
L44: When this teacher does not like my behaviour, she cannot do anything about it because she is not a proper teacher yet.	.46	.48
(L50: This teacher thinks that students have to obey because a teacher is an authority.)	.33	.26
Factor: Coercive power		
~~C06: When I do not hand in my homework to this teacher, I feel really bad.~~	-.01	
C16: Although I criticize the rules, this teacher does whatever she wants anyway.	.51	.52
C18: When I do not work in the class as well as this teacher imagines, she embarrasses me in the class.	.55	.55
(C25: When I misbehave in the class of this teacher, she tells it to our teacher.)	.40	.38
C26: This teacher is angry with me when I express myself in the class that I do not agree with what she is saying.	.57	.56
(C29: When I do not follow this teacher’s instructions, she punishes me.)	.40	.37
C33: When I hand in my homework late, she behaves in such a way it makes me feel bad.	.47	.44
C34: When I do not work as this teacher wants, she tells our teacher about it.	.45	.44

C35: When I do not do in the class what this teacher wants, she looks at me angrily.	.55	.53
C46: This teacher ignores me as a punishment when I do not work as she wants.	.61	.60
C47: When I do not have my materials for the class, this teacher is upset.	.54	.52
Factor: Reward power		
RW20: When I know something extra in the class, this teacher points it out.	.52	.52
RW24: When I work well in the class, this teacher appreciates it.	.64	.64
RW38: When I behave in the class as this teacher wants, she rewards me.	.53	.53
RW40: When I work well in the class of this teacher, she tells our teacher about it.	.73	.73
RW45: When I learn what is required, this teacher praises me.	.51	.51
RW48: When I make effort in the class, this teacher is nicer to me.	.73	.73
RW49: When I do in the class what this teacher demands, she praises me for that.	.51	.51
RW51: When I behave well in this teacher's class, she praises me to our teacher.	.52	.52

Table 3 reports the correlations among factors in model 1 and model 2. In model 2 legitimate and coercive power are integrated into one factor. Correlations between reward, expert, and referent power are high as well. The authors of original TPUS Schrodt, Witt and Turman (2007) reported similar findings (see Discussion).

Table 3

Correlations among factors in models 1 and 2

Model 1					Model 2			
	Expert	Legitimate	Coercive	Reward		Expert	Legitimate/coercive	Reward
Referent	.77	-.17	-.18	.69	Referent	.77	-.21	.69
Expert		-.31	-.42	.70	Expert		-.43	.70
Legitimate			.85	-.07	Legitimate/coercive			-.12
Coercive				-.09				

Note. All correlation $p < .01$.

Scales reliability

According to the CFA model 2 (table 2 and 3) we estimated internal consistency reliability for four power bases scales (the legitimate and coercive power bases were integrated into one factor). Reliability was sufficiently high – over .80 in all cases (see table 4). No exclusion of any item would improve the coefficient of reliability. The scale items can be seen in appendix 1 (in Czech, as used in the study) or in table 2 (in English back-translation).

Table 4

Scales reliability and descriptive statistics (model 2)

Power base	Cronbach's alpha	Number of items	Mean	Median	SD
Expert	.88	9	4.13	4.33	.75
Referent	.86	11	3.31	3.36	.82
Legitimate/coercive	.83	20	2.40	2.35	.63
Reward	.81	8	3.53	3.60	.80

Descriptive statistics

All four power bases (except legitimate/coercive power base) were quite strongly (over point 3 at a scale from 1 to 5) perceived by students as used by the student teachers at their long term practice as measured by our adaptation of TPUS (table 4). Students reflected as the most applied power base by the student teachers the expert power which means that student teachers were perceived as experts. The at least applied in the classes was legitimate/coercive power base (table 4). As the instrument needs validation, these findings are preliminary.

Instrument shortening and validation of the short version

The adapted student teacher scale – compared to the original TPUS – has a different number of items per a scale (see table 4) caused above all by merging of original legitimate and coercive factors and by our preference of the criterion of content coverage (not primarily high internal consistency as in the original instrument). In further development of the instrument some items can be excluded to shorten the adapted TPUS. The shortening can be suggested for the purpose of validation of our presented findings as well as because of the practical reasons of instrument administration at schools. I.e. for further validation of the instrument the approach of excluding some items according to the CFA model 2 loadings (table 1) and scales reliability analysis can be applied. Exclusion of items with factor loadings under .40 can be realised (no item was under .60 and above .40 and at the same time decreasing the scale reliability). This reduction regards actually only items from legitimate/coercive power base (e.g. L14, L17, L39, L50, D25, and D29). After this reduction the scales reliability of legitimate/coercive power base remains high ($\alpha = .82$). From the referent power base scale the item R08 can be excluded because it seems that it uses an archaic word and not all students understand it precisely. These new scales of power bases in the Czech conditions need to be

validated on another data sample which we are currently conducting. New findings will be published in the instrument manual (Mareš, Vlčková, Ježek et al., 2016, in print).

Discussion

The aim of the study was to adapt a scale measuring perceived teacher power in Anglo-Saxon context to Czech condition and from tertiary level to lower secondary level students, from teachers to student teachers. Confirmatory factor analysis was conducted and the Czech data basically supported the original model of relational power with five main power bases, with the difference that the structure of student teacher power bases seems to be less-dimensional in the perception of lower secondary students. Coercive and legitimate student teacher power bases were very highly inter-correlated, and many items of these scales tended to crossload among the two factors. Our interpretation is that the two power bases are not differentiated by the lower secondary students. Alternatively, the two factors may not be differentiated in student teachers' behaviour. Consequently, a four factor model was suggested for the Czech conditions. These findings are similar to our findings concerning Czech teachers and their lower secondary students (Vlčková, Mareš, Ježek, & Šalamounová, 2016, in print). Also in international findings these power bases were reported to be strongly correlated (e.g. Schrodt, Witt, & Turman, 2007). The four factor solution (i.e. combining two latent constructs – legitimate and coercive power) was consistent with the test of PBM by Schrodt, Witt and Turman (2007). The four factor solution was also tested by Schrodt, Witt and Turman (2007) in development of TPUS. These two power bases produced highest intercorrelations (.83) but the four-factor solution produced in their analysis decline in model fit, suggesting that the five-factor solution was most appropriate for their data.

Our decision for the four-factor solution (not three-factor solution) was also indirectly supported by the structure of teacher power data from the Czech adaptation of *Teacher Power Use Scale* for lower secondary student and teachers (Vlčková, Mareš, Ježek, & Šalamounová, 2016, in print) where a four factor solution was found superior.

Our observational data from a research project on student teacher power and open and thematic coding of the data (Vlčková, Lojdová et al., 2015) show that for example student teachers perceived as experts demonstrated higher referent power, and opposite; when student teachers were perceived as having high referent power they could motivate students with rewards more easily; and when student teachers were perceived as experts they gave students actually more rewards etc. Coercive power was enabled by legitimate power and was used in a milder modus in the context of student teachers since they are under control of their mentor teacher and in our research also cameras and researcher in the classroom (Vlčková, Lojdová et al., 2015). Lower secondary students were not able to distinguish the coercive (student) teacher power from the legitimate one.

The superiority of the four-factor model on our data does not impact on the meaningfulness of the five power base theory. The findings of the factor analyses (compared to TPUS by

Schrodt, Witt and Turman, 2007) can be affected by our methodological changes of the original TPUS like items reformulation for younger students, development of new items (which were more specifically formulated), stress primarily on complexity of the items not only high reliability, and by response scale change, etc. Also, the assessing students did not know the student teachers for as long as their regular teachers; they were asked to report on their behaviour after a short time of their practice in their classes.

As this scale was developed on the basis of the Czech adaptation of TPUS for teachers and then adapted for student teachers, the CFA showed that the newly suggested items specific for student teachers were not as fitting to the scales as the previous items because the new suggested items were more specific about the situation or form of student teacher behaviour. This regards to some extent also (in accordance with theory) newly developed items for teacher scale, on which the student teacher scale was based on. Therefore, some modifications of these items are desirable.

Preliminary (adapted scale needs validation) descriptive findings show that the expert power is perceived as the most used and the legitimate/coercive power as the least used power. Students were surprisingly (as they are just preparing for becoming a teacher in the subjects) very strongly perceived as experts. This corresponds to the findings of Schrodt, Witt and Turman (2007) based on previous measure for teacher power (Roach's PBM, 1995a) with the difference that legitimate power was perceived as the second most used one. It corresponds with the findings of McCroskey and Richmond (1983) as well – teachers and students saw the biggest proportion of power use to stem from reward, referent, and expert base. Nevertheless, contradicting results reported Jamieson and Tomas (1974) for high school students/teachers – the coercive and legitimate power bases were the most used. These might be caused by socio-culturally specific situation of schooling in the U.S.A. at the beginning of 1970.

The situation of the student teachers on their long term practice is very different to the situation of a regular teacher (Vlčková, Lojdová et al., 2015). Student teacher power bases are only "borrowed" from the regular teacher (mentor) and not always fully handed over. For example, student teachers can give grades, but only the best grades functioning only as reward, but they don't write them to the students' record book as this is done only by the regular teacher probably in order to keep the continuity of assessment clear during the school term. Or for example, students are often unsure if the student teacher can somehow punish them if they don't obey or don't do their (home)work etc. This uncertainty is not only on the side of students, but also on the side of student teachers as well as their mentors (regular class teachers) because the power conditions are often first set in the classroom when a situation occurs and not in advance.

Conclusion

The presented study attempted to contribute to the field of teacher, specifically student teacher power measurement in the (Czech) classes and its theory by adapting the TPUS Schrodt, Witt, & Turman, 2007) measuring the five power bases suggested by French and Raven (1959). In

this study we presented the above mentioned instrument adaptation for international academics in English to demonstrate that the adaptation of the TPUS to younger students as well as student teachers is possible and can bring reliable results.[10] For Czech scientists also the original Czech adaptation version for their use is published in the appendix. The adapted instrument can be used for self-evaluation by student teachers on their teaching practices in schools as well as by teacher educators and school mentor teachers to support the student teachers educational expertise and their reflective practice.

For Czech student teachers, teachers, and teacher educators we are preparing an instrument manual (Mareš, Vlčková, & Ježek, 2016, in print) for both instruments adapted by us: *Student Teacher Power Use Scale – Czech version* (Báze moci: verze pro studenty učitelství – BMS) and *Teacher Power Use Scale – Czech version* (Báze moci: verze pro učitele – BMU).

For further research, it can be suggested to test the *Student Teacher Power Use Scale – Czech version* developed by us on other data for its structure and for its fit to Czech data. The adaptation of *Student Teacher Power Use Scale – Czech version* as well as TPUS to the educational context of other countries can be suggested as well.

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References

Aultman, L. P., Williams-Johnson, M. R., & Schutz, P. A. (2009). Boundary dilemmas in teacher-student relationships: Struggling with "the line". *Teaching and Teacher Education*, *25*(5), 636–646.

Bernstein, B. (1996). *Pedagogy, symbolic control and identity.* London: Taylor and Francis.

Blížkovský, B., Kučerová, S., Kurelová M. et al. (2000). *Středoevropský učitel*. (Central European teacher) Brno: Konvoj.

Buzzelli, C., & Johnston, B. (2001). Authority, power, and morality in classroom discourse. *Teaching and Teacher Education*, *17*(8), 873–884.

[10] A successful adaptation of TPUS to Turkish college condition was reported by Özer et al. (2014). Findings are preliminary; the authors conducted only exploratory factor analysis.

Elias, S. M. & Loomis, R. J. (2004). The effect of instructor gender and race/ethnicity on gaining compliance in the classroom. *Journal of Applied Social Psychology*, 34(5), 937-958.

Elias, S. M., & Mace Britton, L. (2005). Social power in the classroom: Student power in the classroom: Student attribution for compliance. *Journal of Applied Social Psychology*, *35*(8), 1738–1754.

Foucault, M. (1975). *Surveiller et punir: Naissance de la prison*. Paris: Gallimard.

French, J., & Raven, B. (1959). The bases of social power. In D. Cartwright & A. Zander (Eds.), *Group dynamics* (259–269). New York: Harper & Row.

Golish, T. D. (1999). Students' use of compliance gaining strategies with graduate teaching assistants: Examining the other end of the power spectrum. *Communication Quarterly*, *47*, 12–32.

Golish, T. D., & Olson, L. N. (2000). Students' use of power in the classroom: An investigation of student power, teacher power, and teacher immediacy. *Communication Quarterly*, *8*(3), 293–310.

Hambleton, R. K., Merenda, P. F., Spielberger, C. D. (2005). *Adapting educational and psychological tests for cross-cultural assessment*. Mahwah, NJ: Lawrence Erlbaum.

Jacobs, G. (2012). Models of power and the deletion of participation in a classroom literacy event. *Journal of Research in Reading*, *35*(4), 353–371.

Jamieson, D. W., & Thomas, K. W. (1974). Power and conflict in the student-teacher relationship. *Journal of Applied Behavioral Science*, *10*(3), 321–336.

Kantek, F., & Gezer, N. (2010). Faculty members' use of power: Midwifery students' perceptions and expectations. *Midwifery*, *26*, 475–479.

Kearney, P., Plax, T. G., Richmond, V. P., & McCroskey, J. C. (1984). Power in the classroom IV: Alternatives to discipline. *Communication Yearbook, 8*, 724–746.

Lojdová, K. (2015). Legitimní moc aneb vypůjčená role učitele. (Legitimate power or borrowed teacher's role). In K. Vlčková & K. Lojdová, et al. (2015), *Z poslucháry za katedru: mocenské vztahy ve výuce studentů učitelství* (From a Lecture Hall to a Teacher's Desk: Power Relations in Student Teacher Classes). Brno: Munipress. (in press)

Mareš, J., Vlčková, K., & Ježek, S. et al. (2016). *Báze moci: Manuál k nástroji*. Brno: Munipress (in preparation).

McCroskey, J. C. et al. (2006). *An introduction to communication in the classroom.* Boston: Allyn & Bacon.

McCroskey, J. C., & Richmond, V. P. (1983). Power in the classroom I: Teacher and student perceptions. *Communication Education*, *32*(2), 175–218.

Moscovici, H. (2007). Mirror, mirrors on the wall, who is the most powerful of all? A self-study analysis of power relationships in science methods courses. *Journal of Research in Science Teaching*, *44*(9), 1370–1388.

Muthén, L. K., & Muthén, B. O. (2013). *Mplus: Statistical analysis with latent variables. User's guide (Version 7.11).* Muthén and Muthén. PMCid:PMC3135722.

Myers, S. A. (1999). The relationship between college student challenge behaviour and instructor power. *Speech and Theatre Association of Missouri Journal, 28*, 8-17.

Özer, N. et al. (2014). Teacher power use in the college classroom: Turkish students' views. *Procedia – Social and Behavioral Sciences*, 116, 2589–2592.

Plax, T. G., Kearney, P., McCroskey, J. C., & Richmond, V. P. (1986). Power in the classroom VI: Verbal control strategies, nonverbal immediacy and affective learning. *Communication Education*, *35*, 43–55.

Raven, B. H. (1992). A power/interaction model of interpersonal influence: French and Raven thirty years later. *Journal of Social Behavior and Personality*, *7*(2), 217–244.

Raven, B. H. (1993). The bases of power: Origins and recent developments. *Journal of Social Issues*, *49*(4), 227–251.

Richmond, V. P. (1990). Communication in the classroom: Power and motivation. *Communication Education*, *39*, 181–195.

Richmond, V. P., & McCroskey, J. C. (1984). Power in the classroom II: Power and learning. *Communication Education*, *33*, 125–136.

Richmond, V. P., & McCroskey, J. C. (Eds.) (1992). *Power in the classroom. communication, control, and concern*. Hillsdale: Lawrence Erlbaum.

Richmond, V. P., McCroskey, J. C., Davis, L. M., & Koontz, K. A. (1980). Perceived power as a mediator of management communication style and employee satisfaction: A preliminary investigation. *Communication Quarterly*, Fall, 37–46.

Roach, K. D. (1995a). Teaching assistant argumentativeness and perceptions of power use in the classroom. *Communication Research Reports*, *12*, 94–103.

Roach, K. D. (1995b). Teaching assistant argumentativeness: Effects of affective learning and student perceptions of power use. *Communication Education*, *44*(1), 15–29.

Sarason, S. B. (1990). *The predictable failure of educational reform: Can we change course before it's too late?* San Francisco: Jossey-Bass.

Schrodt, P., Witt, P. L, & Turman, P. D. (2007). Reconsidering the measurement of teacher power use in the college classroom. *Communication Education*, *56*(3), 308–323.

Schultz, B. D., & Oyler, C. (2006). We make this road as we walk together: Sharing teacher authority in a social action curriculum project. *Curiculum Inquiry*, *36*(4), 423–451.

Simmel, G. (1896). Superiority and subordination as subject-matter of sociology. *American Journal of Sociology*, *2*(2), 167–189.

Staton, A. Q. (1992). Teacher and student concern and classroom power and control. In V. Richmond, & J. McCroskey, *Power in the classroom* (159–176). New Jersey: Lawrence Erlbaum.

Student, K. R. (1968). Supervisory influence and work-group performance. *Journal of Applied Psychology, 52*, 188–194.

Šalamounová, Z., & Švaříček, R. (2012). Komunikace z pohledu učitelů (Communication from the teachers' point of view). In K. Šeďová et al., *Komunikace ve školní třídě (Communication in the classroom)* (215–228). Praha: Portál.

Šalamounová, Z., Bradová, J., & Lojdová, K. (2014). Mocenské vztahy mezi začínajícími učiteli a jejich žáky. (Power relations between novice teachers and students). *Pedagogická orientace*, *24*(3), 375–393.

Šeďová, K. (2011). Mocenské konstelace ve výukové komunikaci (Constellations of power in educational communication). *Studia Paedagogica*, *16*(1), 89–118.

Tauber, R. (1999). *Classroom management: Sound theory and effective practice*. Westport, CT: Bergin & Garvey.

Turman, P. D., & Schrodt, P. (2006). Student perceptions of teacher power as a function of perceived teacher confirmation. *Communication Education, 55*, 265–279.

Veenman, S. (1987). *On becoming a teacher: An analysis of initial training*. Paper presented at Conference on Education of the World Rasque Congress, Bilbao.

Vlčková, K. & Lojdová, K. et al. (2015). *Z posluchárny za katedru: mocenské vztahy ve výuce studentů učitelství* (From a Lecture Hall to a Teacher's Desk: Power Relations in Student Teacher Classes). Brno: Munipress. (in press)

Vlčková, K., Mareš, J., Ježek, S. & Šalamounová, Z. (2016). Báze moci používané učitelem ve školní třídě: česká adaptace dotazníku Teacher Power Use Scale (Power bases used by teacher in the classroom: Czech adaptation of Teacher Power Use Scale). *Pedagogika*, 2016. (in preparation).

Weber, M. (1922). *Wirtschaft und Gesellschaft*. Tübingen: Mohr.

Appendix

Items of adapted TPUS for student teachers (in Czech)[11]

Expertní moc (Expert power)

E02: Když tato učitelka ve výuce něco vysvětluje, je to srozumitelné.

E03: Tato učitelka říká různé novinky, které souvisí s vyučovacím předmětem.

E21: Podle mě tahle učitelka umí skvěle učit.

E27: Když tahle učitelka učí, vím, co a kdy mám dělat.

E28: Tato učitelka dovede ukázat, jak můžu učivo prakticky použít.

E30: Tahle učitelka velmi dobře rozumí tomu, co učí.

E31: Když tahle učitelka něco vysvětluje, dá se tomu věřit.

E36: Tato učitelka je skutečným odborníkem na tento předmět.

E43: Tato učitelkami umí vysvětlit to, čemu nerozumím.

Legitimní moc (Legitimate power)

~~L05: Tato učitelka říká, že učitelé se musí poslouchat.~~

L07: Tahle učitelka žije v tom, že musí být vždycky po jejím, když je učitelka.

L09: Když se téhle učitelce nelíbí, jak se chovám, stejně nemůže nic dělat, protože nepatří k nám do školy.

~~L11: Tato učitelka dává najevo, že ve škole se musí poslouchat.~~

(L14: Tahle učitelka se ke mně chová s odstupem.)

(L17: Tuhle učitelku poslouchám, protože mi to řekla naše paní učitelka.)

[11] Version for a female student teacher.

(L22: Tato učitelka říká, že i když se mi ve výuce něco nelíbí, je to jedno.)

L37: Tato učitelka dává najevo, že učitel je něco víc než žák.

(L39: Tahle učitelka naznačuje, že to, co chce ona, podporuje taky naše paní učitelka/učitel, ředitel nebo řád školy.)

L42: Tahle učitelka říká věci typu: „Zvoní pro mě, ne pro vás."

L44: Když se téhle učitelce nelíbí, jak se chovám, stejně nemůže nic dělat, protože ještě není učitelka.

(L50: Podle této učitelky mají žáci poslouchat, protože učitel je autorita.)

Donucovací moc (Coercive power)

~~C06: Když téhle učitelce nedonesu úkol, cítím se fakt špatně.~~

C16: I když kritizuji pravidla, tahle učitelka si stejně udělá, co chce.

C18: Když mi to v hodině nejde tak, jak si tahle učitelka představuje, před celou třídou mě ztrapní.

(C25: Když ve výuce téhle učitelky zlobím, řekne to na mě naší učitelce.)

C26: Tahle učitelka se na mě naštve, když dám v hodině najevo nesouhlas s tím, co říká.

(C29: Když neplním pokyny téhle učitelky, potrestá mě.)

C33: Když téhle učitelce donesu pozdě úkol, chová se tak, že se cítím špatně.

C34: Když nepracuji tak, jak by si tahle učitelka přála, řekne to naší učitelce.

C35: Když v hodině nedělám to, co tato učitelka chce, naštvaně na mě kouká.

C46: Tahle učitelka mě za trest přehlíží, pokud nepracuji tak, jak chce.

C47: Když nemám pomůcky, tahle učitelka je naštvaná.

Odměňovací moc (Reward power)

RW20: Když vím ve výuce něco navíc, tahle učitelka to vyzdvihne před ostatními.

RW24: Když mi to v hodině jde, tato učitelka to ocení.

RW38: Když se v hodině chovám tak, jak tato učitelka chce, nějak mě odmění.

RW40: Když mi to v hodině téhle učitelky jde, řekne to naší učitelce.

RW45: Když se naučím, co mám, tato učitelka mě pochválí.

RW48: Když se v hodině snažím, je na mě tato učitelka hodnější.

RW49: Když v hodině dělám, co tahle učitelka chce, pochválí mě za to.

RW51: Když jsem ve výuce téhle učitelky hodný/á, pochválí mě naší učitelce.

Referenční moc (Referent power)

R01: S touto učitelkou mám hodně společného.

R04: Tahle učitelka je mi sympatická, protože se musí učit do školy stejně jako já.

((R08: Tato učitelka je vůči mně vstřícná.))

R10: Tato učitelka se mnou jedná na rovinu.

R12: S touto učitelkou si rád/a povídám i o přestávce.

R13: Tuto učitelku vidím i jako člověka, nejen jako učitelku.

R15: Tuhle učitelku beru jako kamaráda.
R19: Já a tato učitelka máme stejný pohled na věc.
R23: Na věci se dokážu dívat stejně jako tato učitelka.
R32: Chtěl/a bych být jako tato učitelka.
R41: To, co říká a dělá tato učitelka, je pro mě důležité.