16th Biennial Conference Earli 2015

European Association for Research on Learning and Instruction

Adaptation of Teacher Power Use Scale to Lower Secondary Learners, Student Teachers, and Czech Conditions

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THEORY

Power can be defined as an ability of a person or a group to influence opinions, values, and behaviour of others (McCroskey et al., 2006). This implies that realisation of instructional aims is enabled by clearly established *power relationships* in the class (Šalamounová & Švaříček, 2012) which is why the topic of power is so crucial for educational settings and theory. 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 of their teaching subjects, but they do not know how to meet conditions for establishing power relationships in the class. These might by one of the main reasons why novice teachers quit their profession (Šalamounová, Bradová & Lojdová, 2014) which is regarded as a social and economic problem in many European countries.

The most influential, traditional typology of power as a *relational* phenomenon from French and Raven (1960) distinguishes *teacher`s power* in relation to a (by students perceived) principle on which it is based on, i.e. *coercive*, *reward*, *legitimate*, *referent*, and *expert power*. The typology developed during the years and was precised. Nevertheless, main instruments measuring power (e.g. McCroskey & Richmond, 1983; Roach, 1995; Schrodt, Witt, & Turman, 2007) were based on this original typology. Most of the studies conducted with questionnaires based on the typology focused on tertiary students and teachers.

AIM

In our study, which aims at validisation of the French and Raven theory in broader context, we focus on younger learners (i.e. lower secondary students), on student teacher`s power (i.e. beginning teachers) instead of teacher`s power, and on Czech sociocultural conditions of power in the classes.

For this purpose we adapted one of the latest and most used instruments measuring perceived power of teacher – *Teacher Power Use Scale* (Schrodt, Witt, & Turman, 2007).

METHOD

The original *Teacher Power Use Scale* (TPUS: Schrodt, Witt, & Turman, 2007) measures 5 power bases with 30 items on a 7-point Likert scale. It showed better psychometric properties than *Perceived Power Measure* by McCroskey and Richmond (1983) and Roach`s (1995) *Power Base Measure*. TPUS demonstrated better internal reliability, concurrent and discriminant validity, and it contained more valid and reliable indicators for the 5 power bases (coefficient of reliability Cronbach`s alpha ranges between .77 to .90). TPUS was better in measuring of so called *anti-social forms of power* (coercive and legitimate) and *pro-social forms of power* (referent and reward) at the aggregated level.

The Czech adaptation of TPUS measuring the perceived student teacher`s power bases included re-designing the instrument for lower secondary students and their teachers, and for the Czech conditions. The adaptation (Vlčková, Mareš, Ježek, & Šalamounová, 2015) included independent parallel translations, multiple cultural and linguistic adaptations, multiple expert reviews, and cognitive interviews with relevant respondents. The scale was reduced to 5 points. In contrast to original TPUS the items were reformulated from singular passive (reporting about others in generally) to singular active (reporting about oneself) form which bring according to us more psychometrically reliable respondent's answers. In order to ensure the instrument equivalence validity and reliability we applied: confirmatory factor analysis (CFA) in MPlus version 6.1, item analysis, estimation of scales reliability, repeated CFA on reduced items, and exploratory factor analysis. Validity of the 5 self-report scales as instruments measuring the concept of power bases, other possibilities of power measurement and the possibilities of triangulation can be discussed as this paper is a part of research project which also includes observations, field notes, diaries and interviews.

The adapted instrument was tested on 2188 lower secondary students in 117 classes. The CFA model on the reduced number of items terminated normally: $\chi 2 = 3784{,}577$, df = 729, p < .00; CFI = .872; SRMR = .067; RMSEA = .044, 90 % CI [.043, .045] with the difference that coercive and legitimate power (the „negative" power bases) were suggested to be integrated in one factor. They were highly correlated (.90). Some other correlations among factors were relatively high, but it is implied in theory. According to our fourth CFA model and scales reliability analysis some items were excluded if the factor loadings were under .40 or under .60 but the item decreases the scale reliability. The final questionnaire consisted of 45 items (9 more than TPUS) with different numbers of items per a scale as the criterion of content complexity was preferred (referent power: 10 items, α = .87; expert: 8 items, α = .90; legitimate/coercive: 11 items, α = .80; reward: 6 items, α = .80).

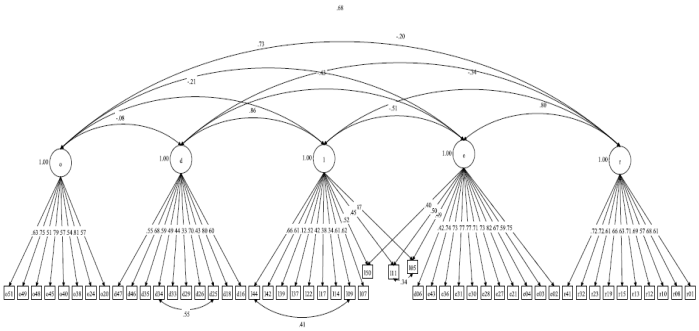
Second step of the instrument adaptation was the adaptation for measuring student teacher`s power instead of teacher`s power. New items for each power base were developed, some were reformulated or cancelled. The questionnaire adaptation consisted of 51 items: 11 items for coercive power base, 10 for expert, 12 for legitimate, 8 for reward, and 10 reference power base.

SAMPLE

The non-random sampling was conducted in 2014 in 96 lower secondary classes (ISECD A2) of 96 student teachers on their second long term practice in different school subjects. The sample included 1686 students from 6th to 9th grade, i. e. between 11 and 17 years old; the majority was 13-15 years old. At average there were 18 students per class. 1306 students were taught by a woman, 380 students from our sample were taught by a man student teacher. 1560 (93 %) students were from lower secondary school called „základní škola" ("elementary school"), 126 (7 %) students were from lower secondary academic schools called „gymnázium", i. e. in the sample were 7 "gymnasium" and 58 "základní škola". The student teachers taught Civics (21 student teachers), Foreign Languages (18), Czech Language (14), Mathematics (14) or History (9), Physics (3), ICT (3), Science (6), Health Education (5) or Geography (4).

FINDINGS

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 structural model with all 51 items terminated inadequately: Chi-Square Test of Model Fit = 12073.613, df = 1213, p < .00; CFI = .784; WRMR = 3.397; RMSEA = .000, 90 percent CI [.072, .074]. Two items were inter-correlated (L05 and L11) having low loadings on the factor as well. Some other items (D29, L17, L07) demonstrated low loadings on respected factors. These two items were eliminated from the model 2 and a correlation of two items (L05 and L11) was allowed in order to improve the model (see picture 1 – model 2). Factor loadings for reference power base were between .57 to .72, expert power base between .42 to .82, legitimate power base between .34 to .74 (except L05 and L11 with loadings under .07 and negative), coercive power base between .31 to .81 and reward power base between .51 to .81.



Picture 1. Structural model 2 with standardised item loadings

Table 3. Descriptive statistics

Variable	Mean	Median	Std.Dev.
Expert	3,97	4,09	0,73
Reward	3,53	3,60	0,80
Referent	3,26	3,30	0,83
Legitimate	2,29	2,17	0,82
Coercive	2,24	2,22	0,73

Table 1. Correlations among factors

Power base	Expert (E)	Referent	Legitimate	Coercive
Referent (R)	0.80			
Legitimate (L)	-0.50	-0.33		
Coercive (D)	-0.42	-0.20	0.79	
Reward (O)	0.73	0.79	-0.22	-0.08

Table 2. Scale reliability

Power base	Code	Cronbach´s alpha	Number of items
Expert	E	.87	11
Referent	R	.85	10
Legitimate	L	.68	6
Coercive	D	.77	9
Reward	O	.81	8

DISCUSSION

Czech data support the Anglo-Saxon model of relational power with 5 main power bases, with a difference that „negative" student teacher´s power bases (coercive and legitimate) were seen by the students as one; as well as expert and referent power bases; i.e. a more simple model could be suggested for the student teachers power bases in lower secondary classes in the Czech conditions. Our findings of factor correlations are not exceptional – also in international findings some power bases were reported to be strongly correlated (e.g. Kantek & Gezer, 2010).

ACKNOWLEDGEMENT

This paper was funded by Czech Science Foundation – Project GA13-24456S "Power in the Classes Taught by Student Teachers".

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