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Review of the Dissertation

Measuring the Teacher Effect on Academic Achievement

by

Maciej Koniewski

The **cumulative dissertation** of Maciej Koniewski contains an introduction and three papers, which were published in peer-reviewed journals.

The introduction aims to link the three papers to educational research. Meeting this objective is very difficult, because educational research has increased tremendously over the last 20 years, with a general shift in educational policy in most Western countries since the 1990s towards output, competencies, efficiency and effectivity. The Programme for International Student Assessment (PISA) by the OECD and other largescale, international studies have accelerated this process. In Germany, for example, universities have established many chairs on empirical educational research. Austria, as a further example, introduced the central exam, defined competencies for different levels of schooling and founded a research institute, called the “Bundesinstitut für Bildungsforschung, Innovation & Entwicklung des österreichischen Schulwesens” (BIFIE). Similar examples may be found in Poland and

many other countries. For example, Poland's founded Educational Research Institute (IBE) has similar objectives as the BIFIE.

Koniewski solves the challenge of linking his research to this huge body of research findings **in a very creative way**. He starts with the pioneering study by James Coleman and others in the 1960s, which raised the question of whether schools influence students' achievement and can equalize opportunities and conditions. This question has raised controversy over the following decades. Koniewski describes the main authors and arguments in this controversy. Empirically, different factors have been studied for their influence on students' achievement. The dissertation classifies them as factors associated with student, family, class and other factors.

The introduction discusses each of these factors, **concentrating on those variables with a direct or strong effect, or both**. Therefore, Koniewski does not debate social class position, education, occupation or income of parents or migration background. Instead, he focusses on parental support, which more strongly affects students' achievement than the socio-demographic variables that are usually used in educational sociology. The advantage of this approach is that it provides hints for interventions. It is not possible to change the social position of parents, but it is possible to change their support. At the end of this part of the introduction, the author discusses different, lesser-known interaction effects of class composition and teachers' instruction on students' achievement, like boutique effects and focus effects.

Summarizing his review of factors influencing students' achievement, the author formulates a **hypothesis** that a teacher can have an important effect. However, he argues in the next section, these effects are difficult to measure, and educational research has done little to seriously measure teachers' effects. The research has mainly concentrated on "objective" attributes of teachers, such as gender, years of training or experience and formal education. More important, according to his

argument, are psychological factors, such as motivation or beliefs. The three papers in the dissertation attempt to contribute to research on teachers' effectiveness. They are described briefly in the final part.

The **introduction** has a clear structure, and his arguments develop stepwise and convincingly. Although some research on teachers' personality, attitudes and motivations exists, I can agree with Koniewski's conclusion that sociological research on teachers' effects has focused on "objective" attributes of teachers. One merit of this dissertation is that he reminds sociology not to ignore (social) psychology.

The aim of the **first paper** in the dissertation,¹ which was published in *EDUKACJA*, was to estimate the effect of teachers on students' achievement. Data from a nationwide, largescale study in Poland on mathematical and Polish language achievements in lower secondary schools are analysed by hierarchical, multilevel linear models. Koniewski combines deductive analytics (defining hierarchical models) with an explorative method to identify the most powerful factors. After statistically controlling for other relevant factors, teachers appear to explain 5% of differences in mathematical achievements and 4% of differences in Polish language achievements. **Teachers' ability to manage a classroom productively** (establishing discipline, avoiding disorder in class, establishing a positive learning climate) proved the most powerful of the analysed teacher effects for both domains. For mathematical achievement, an activating teaching style also had a significant revealed effect. For language achievements, the variable of "helpful teachers" also showed significant influence.

Nonetheless, the variance explained by teachers' effects is low. Poor measurement, the author suggested, might be one explanation. Therefore, he has tried to test and improve instruments that measure

¹ Koniewski, M. (2014). Estimating the teacher effect on academic achievement by hierarchical linear modelling. *Edukacja*, 5(130), 70–91

teachers' convictions and motivations. Another explanation is the fact that indirect teachers' effects are not computed. That is, the analysis controls for the influence of a student's previous test score and of the average student score of a class. It measures correctly the added value (net effect) of teachers on an individual level, but prior years' teachers influence the variables which are controlled in the analysis.

In the **second paper**,² published in the *European Journal of Psychological Assessment*, Koniewski analyses the so-called **Teacher Self-Efficacy Scale (TSES)**. This scale, which was originally developed by Tschannen-Moran and Woolfolk Hoy (2001),³ has three subdimensions: (1) instruction, the belief in being familiar with teaching material and in being able to select the appropriate instructional strategy; (2) management, the belief in ability to avoid disruptions in class and to provide a productive climate and (3) engagement, the belief in ability to support and motivate students and to help them to develop their personalities.

Koniewski translated the TSES into the Polish language and validates the instrument on the basis of large, representative samples of teachers at primary and lower secondary schools. Confirmatory factor analysis (CFA) is applied to test the assumed factor structure. In order to obtain a satisfactory model fit, some modifications are necessary. In general, the instrument proves to be reliable and can reproduce the three-dimensional structure. Altogether, the results support the assumption of measurement invariance, namely, that the same factor structure is observable in both primary and lower secondary schools. In addition, the author reviews TSES and re-analyses the original data of Tschannen-Moran.

² Koniewski, M. (2018). The Teacher Self-Efficacy Scale (TSES) factorial structure evidence review and new evidence from Polish speaking samples. *European Journal of Psychological Assessment*. <https://doi.org/10.1027/1015-5759/a000475>

³ Tschannen-Moran, M., & Woolfolk-Hoy, A. (2001). Teacher-efficacy: Capturing an elusive construct. *Teaching and Teacher Education*, 17, 783–805.

The **third paper**,⁴ published in *Journal of Career Assessment*, has Anna Hawrot as co-author. The paper tests the validity of the **Maslach Burnout Inventory for Educators** (MBI-ES). The instrument, developed by Maslach and Jackson in the 1970s and 1980s,⁵ assumes—similar to TSES—three dimensions: emotional exhaustion (EE), depersonalization (DP) and reduced personal accomplishment (PA). The fifth wave of the Educational Value-Added panel study of primary schools was used as the analysed data.

Based on a thorough literature review, the authors specify different factorial models for MBI-ES. Among these, a bifactor model performs best. It assumes a general burnout factor and the three subdimensions EE, DP and PA.

Maciej Koniewski has submitted a **convincing dissertation** that shows he is **familiar with the most advanced and elaborate methods of educational research**, like hierarchical multilevel modelling, confirmatory factor analysis, complex sampling and robust estimation of standard errors. These methods avoid the faulty conclusions that characterize older research. For example, older publications ignored the cluster effect of sampling of students within classes or within schools, consequently overestimating the significance of their results.

The author cannot only apply these methods correctly, but he also possesses **didactical competencies**. His paper on hierarchical linear modelling could be used as a perfect example in lectures on these research methods. The modelling and interpretation of results are both described in an intersubjective way. The other two papers are more demanding to read due to space limitations. I am sure Maciej Koniewski could have also described their applied methods didactically and in detail.

⁴ Hawrot, A., & Koniewski, M. (2017). Factor Structure of the Maslach Burnout Inventory-Educators Survey (MBI-ES) in a Polish-speaking Sample. *Journal of Career Assessment*, doi: 1069072717714545.

⁵ Maslach, Chr., & Jackson, S.E. (1981), The Measurement of Experienced Burnout. *Journal of Occupational Behavior*, 2, 99–113, <https://doi.org/10.1002/job.4030020205>

In summary, he is an **excellent methodologist and researcher**. In addition to the three papers, he has published a series of other works, for example on evaluation in complex environments or on sex differences in guessing and item omission.⁶ I am convinced that he will play a successful role in the international scientific community. Besides his own methods and research, he is familiar with international literature in this research field.

Furthermore, he has made **important contributions to improve the measurement of teachers' effects on children's achievement at school**. I hope he will continue to work on these topics. A next "natural" step would be to test the causal effect of the measurement instruments that the doctoral thesis analysed. It might be helpful to develop and use experimental designs, rather than largescale studies, to identify and isolate the causal effects of teachers. Another approach might be to identify different configurations of positive teachers' effects by latent class analysis including several variables. In addition, Koniewski should bring his knowledge to the development of teachers' education and training programs, for example by participating in the development of a program to strengthen teachers' self-efficacy, parental support or other variables with strong effects on students' achievement. His cooperation with Anna Hawrot, a psychologist, might be a good interdisciplinary basis for this enterprise.

Finally, he has brought **back (social) psychology to sociology**. Cooperation between psychology and sociology has been successful in the past. As examples, I just want to mention the cooperation between Talcott Parsons and Gordon Allport in *Toward a General Theory of*

⁶ Koniewski, M. (2018). Measuring the teacher effect on academic achievement. Cracow: Doctoral thesis, p. 6–8. In total, he enumerates 16 publications, not including the three papers of the doctoral thesis.

Action,⁷ Parsons' appreciation of psychology in *The Social System*,⁸ the seminal work of Melvin Kohn on *Class and Conformity*,⁹ or, more recently, the writings of Heinz Bude, a very popular German sociologist, whose work is based on social psychology, including, for example, social psychological research on anxiety.¹⁰ A re-vitalisation of this cooperation would be fruitful, in my opinion, and Koniewski has taken a first step in this direction. One next step in his research might be to link teachers' variables to social structure, socialization and societal development.

In summary, Maciej Konieski has written a **distinguished doctoral thesis**. I strongly recommend without reservation to **admit the dissertation to a public defence**. Congratulations to the Institute of Sociology at Jagiellonian University and to the supervisor for this excellent student and dissertation.

Linz, May 14th, 2018



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⁷ Parsons, T., & Shils, E. (Eds.) (1962 [1952]). *Toward a General Theory of Action*. Cambridge, Massachusetts: Harvard University Press.

⁸ "Psychology, as the science of personality, is thus not the 'foundation' of the theory of social systems, but one main branch of the great tree of action theory of which the theory of social systems is another." Parsons, T. (1991 [1951]). *The Social System*. London: Routledge, p. 11.

⁹ Kohn, M. (1969). *Classes and Conformity: A Study in Values*. Homewood, Illinois: The Dorsey Press Krause.

¹⁰ Bude, H. (2015). *Gesellschaft der Angst* (Society and Anxiety). Hamburg: Hamburger Edition.