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EXAMINING THE RELATIONSHIP BETWEEN TEACHER COLLABORATION AND SELF-EFFICACY: TALIS 2018 TURKEY SAMPLE

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ABSTRACT

Teaching and Learning International Survey (TALIS) developed by the Organization for Economic Cooperation and Development provides comprehensive information about teachers and school administrators. The purpose of this study is to investigate the relationship between teacher self-efficacy and teacher collaboration obtained from the TALIS survey. This study was designed in the relational research model. The study group of the research consists of teachers who participated in TALIS 2018. Teacher self-efficacy and teacher collaboration scales obtained from the teacher questionnaire were used as data collection tools. Canonical correlation analysis was applied to investigate the relationships between these variables. According to the findings of the study, teachers' self-efficacy in classroom management is higher than other self-efficacy sub-dimensions. However, it was concluded that the sharing and coordination sub-dimension had a higher mean than the professional cooperation sub-dimension. It was also found that these variables shared 11% of the variance. In the sets of variables that emerged as a result of the canonical correlation analysis, it was seen that the variable that made the highest contribution to the first set was the sharing and coordination variable and the lowest was the professional cooperation variable. However, according to the correlation coefficients in the second set, it was concluded that the variable of self-efficacy in classroom management made the highest contribution and the variable of self-efficacy in understanding students made the lowest contribution. As a result, it was found that there were significant and positive relationships between teachers' self-efficacy and professional collaboration. It is thought that this study will contribute to the literature by providing practical suggestions that can benefit the professional development of teachers. Within the scope of this study, it can be suggested that school principals should carry out activities in schools to increase teachers' self-efficacy beliefs, encourage professional cooperation among teachers and carry out supportive studies in this regard. In future studies, different countries can be compared with each other using the same variables. In addition, the study can be repeated with different data analysis methods using different variables that teachers have.

Keywords: TALIS, teacher self-efficacy, teacher cooperation.

INTRODUCTION

Developed by the Organization for Economic Cooperation and Development, TALIS (Teaching and Learning International Survey) documents processes such as sampling and data collection. The first in a series of international surveys focusing on the learning environment and working conditions of teachers in schools, TALIS asks teachers and school principals for their perspectives on school contexts. Countries can then use this information to deepen the analysis of the questions TALIS examines and to help develop policies on these issues (OECD, 2019). It provides information on demographic characteristics of teachers and school leaders, professional development, teacher evaluation and feedback, school effectiveness, teacher satisfaction and beliefs ((Ceylan, Özdoğan-Özbal, Sever & Boyacı, 2020).

Wei, Darling Hammond, Andree, Richardson, & Orphanos (2009) stated that in order for teachers' professional development to be successful, training programs should be intensive, continuous and practice-based, focused on specific subject content, and strong working relationships should be developed among teachers (Chong & Kong, 2012). Successful collaborations between teachers and their colleagues allow teachers to talk knowledgeably about their own theories, methods and teaching processes and to learn to improve classroom teaching. These collaborative processes between teachers have been shown to improve student work and performance outcomes and reduce student dropout (Strahan, 2003). Teachers' collaboration with their colleagues also affects teacher self-efficacy. In this context, as teachers' self-efficacy levels increase, they will affect student achievement by revealing the existing potential of students and increase their collaboration with their colleagues. For this reason, it is thought that examining teachers' self-efficacy and collaboration with colleagues will contribute to the literature in terms of teachers, administrators and students in educational environments. The purpose of this study is to examine the relationship between teachers' self-efficacy and collaboration.

Teacher Self-Efficacy

Teacher self-efficacy has received considerable attention from educational researchers due to the promising role that teachers play in students' learning (Liu, Bellibaş, & Gümüş, 2021). The higher people's perceived self-efficacy in fulfilling professional roles, the wider the range of career options they intend to pursue, the greater their interest in them, and the more successfully they fulfill their professional roles (Bandura, 1999).

Research has shown that teachers with high self-efficacy beliefs are more effective in increasing student achievement (Atıcı, 1999; Henson, 2001; Parker, Bindl, & Strauss, 2010). Teachers with low self-efficacy beliefs are unable to motivate students to learn because they are more pessimistic towards difficulties in schools. This situation negatively affects productivity and performance in the educational process (Aslan, Bal, Akbulut, & Çetin, 2023). In addition, Zee & Koomen (2016) found positive relationships between teachers' self-efficacy and student academic achievement and psychological well-being in a study.

Teacher Collaboration

Teacher collaboration is an important research topic that has been widely discussed around the world due to its important role in strengthening and reflecting teachers' expectations, developing their capabilities, and promoting organizational learning in schools (Hargraeves, 2019). New constructs of teacher collaboration have emerged through the use of large-scale data studies such as TIMSS (Trends in International Mathematics and Science Study) and TALIS (Teaching and Learning International Survey). Although the items presented in these large-scale surveys varied, they revealed key elements of exchanging materials and engaging in collective teaching practices that are widely practiced by many education systems (Xie, Sui, Liu & Liu, 2023).

Teacher collaboration has attracted the attention of teachers, educators and policy makers globally. As a result of teacher collaboration, students are more reflective about their teaching practices, willing to try new teaching strategies, and teachers have more potential to provide professional development (Reeves, 2017).

Cooperation between teachers is a necessary condition for the long-term implementation of collaborative learning. Among the reasons for this are the following:

- The implementation of new teaching methods, which differ significantly from traditional whole-class teaching, creates many problems that teachers have to solve collectively.
- If innovative teaching methods such as cooperative learning are to be adopted for daily instruction in classrooms, schools must establish new norms of professional behavior (Shachar & Shmuelevitz, 1997).

The development of collegiality and cooperation among teachers will mean the development of the school (Bakioğlu, 1998). The cooperation of teachers working in schools, which is an educational organization, with their colleagues will increase the effectiveness of education (Özdoğru, 2021). The evaluation of interpersonal cooperation has become an important necessity in organizations and workplaces. Communities of practice in social learning environments are a concrete example of this (Gajda & Koliba, 2007).

Teacher Self-Efficacy and Collaboration

Researchers have found that there are multiple relationships between self-efficacy and collaboration. For example, when teachers focus on their own development and collaborate together to make instructional changes, they are more capable of improving student learning. In this case, teachers' self-efficacy is also supported (Goddard & Kim, 2018). Teachers working in collaborative have higher teaching confidence and feel less isolated than teachers working alone (Reeves, Pun, & Chung, 2017). Teacher collaboration activities are an important predictor of teacher self-efficacy Effective teacher activities help teachers' personal development (self-efficacy, morale, commitment, etc.) (Duyar, 2013). Teacher self-efficacy as a personal characteristic is an important teacher characteristic that is not only influenced by learning environments, but also can effectively mediate their commitment to work and their working mood (Xie et al., 2023). In this context, it can be said that

teacher collaboration has an effect on increasing teachers' self-efficacy. Therefore, the purpose of this study is to investigate the relationship between teacher self-efficacy and teacher collaboration. In line with this purpose, answers to the following questions were sought:

1. How teachers' self-efficacy and collaboration are distributed descriptively?
2. Is there a significant relationship between teachers' self-efficacy and collaboration?

METHOD

Research Model

This study aimed to examine the relationships between teachers' collaboration and self-efficacy scale scores in the TALIS 2018 teacher survey. For this purpose, the correlational research model was used in the study. According to Fraenkel and Wallen (2006), the correlational research model provides an understanding of phenomena by examining the relationships between two or more variables.

Participants

Schools participating in TALIS 2018 are selected by the Organization for Economic Cooperation and Development (OECD) using a two-stage sampling method (OECD, 2019). This two-stage sampling method can provide a description of the teacher population of each participating country (Xie, et al., 2023). The TALIS 2018 Turkey sample included 14666 participants after removing missing and outliers from the data obtained from the participating teachers. According to Hair et al. (2010), if the large number of missing data does not affect the sample size, it can be excluded from the analysis. It was calculated that 53% of the sample was female (7776) and 47% was male (6890).

Data Collection Tools

Within the scope of this study, the teacher self-efficacy and teacher collaboration scales in the TALIS 2018 teacher survey were used.

Teacher Self-Efficacy: The Teacher Self-Efficacy Scale (T3SELF) includes 12 items collected in three dimensions of teachers' self-efficacy in classroom management, self-efficacy in teaching, and self-efficacy for student engagement. The items are scored from "1 = never" to "4 = very much" (OECD, 2018). The Cronbach Alpha reliability coefficient of the scale was obtained as .96. As a result of the exploratory factor analysis of the whole scale, KMO= .91 ($p<0.001$) was calculated. The factor loadings of the items belonging to this scale vary between .83 and .56.

Teacher Collaboration: Teacher collaboration scale (T3COOP) consists of two sub-dimensions: professional collaboration and change-coordination. Each dimension consists of 4 items. It ranges from "1 = Strongly

disagree" to "4 = Strongly agree" (OECD, 2018). The Cronbach Alpha reliability coefficient of the scale was obtained as .94. As a result of the exploratory factor analysis of the whole scale, KMO= .93 ($p<0.001$) was calculated. The factor loadings of the items belonging to this scale vary between .79 and .43.

Data Analysis

The aim of this study is to investigate the relationship between teacher self-efficacy and teacher collaboration. The relationships between these variables were calculated by canonical correlation analysis method using the statistical package program in social sciences. Canonical correlation analysis is used to explain the relationship between two sets of variables (Tabachnick & Fidell, 2007; Tinsley & Brown, 2000). The basic principle is to develop a linear combination of each set of variables (both independent and dependent) in a way that maximizes the correlation between the two sets (Anderson, 2003). The variable sets used in the study were teacher self-efficacy and collaboration. Teacher self-efficacy has two sub-dimensions and teacher collaboration has three sub-dimensions. The model to be used for canonical correlation analysis is given in Figure 1.

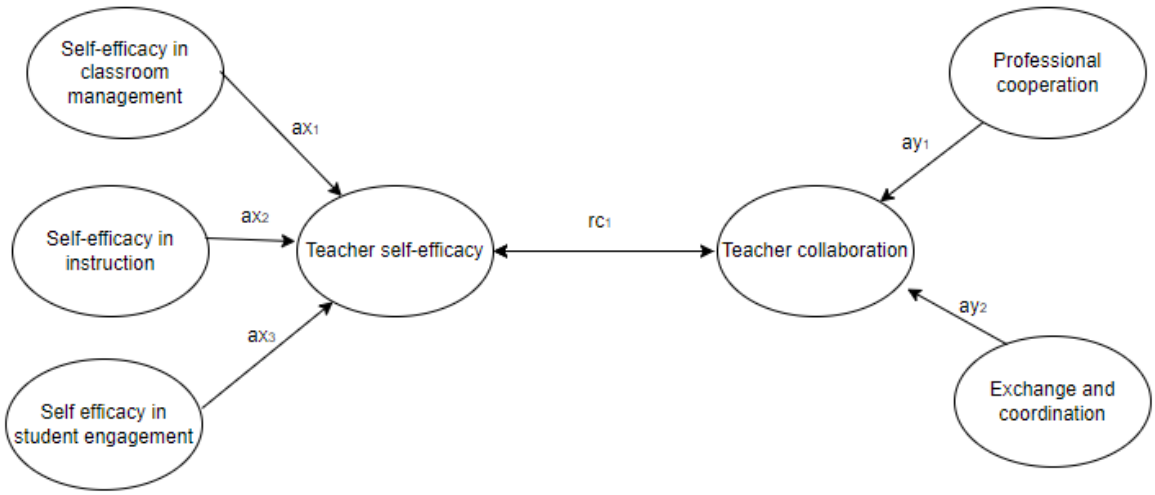

Figure 1: Conceptual Model

When Figure 1 is viewed, ax1, ax2 and ax3 show the canonical loadings for the X variable; ay1 and ay2 show the canonical loadings for the Y variable and rc1 means the correlation between the variables.

The assumptions in canonical correlation analysis are multicollinearity, normality and linearity (Kalaycı, 2014). In order to determine whether there is a multicollinearity problem between the variables, the correlation value between the variables was calculated. According to Büyüköztürk (2009), in order to say that there is a multicollinearity problem between independent variables, the correlation value between the variables should be at least 0.80, and for these values, it is seen that there is no multicollinearity problem between teacher self-efficacy and collaboration variables. For the normality assumption, the skewness and kurtosis coefficients of

the data set were examined and it was concluded that the data set was normally distributed since it was in the (-1,+1) value range (Büyüköztürk, 2009).

FINDINGS

The mean, standard deviation and correlation values of the variables and sub-dimensions used in the research are given in Table 1.

Table 1: Descriptive statistics and correlation values of variables

Variables	Mean	Std.dev.	1	2	3	4	5
1. Professional cooperation	2,71	1,19		,66*	,20*	,26*	,27*
2. Exchange and coordination	3,58	1,21			,22*	,30*	,26*
3.Self-efficacy in classroom management	3,33	,54				,69*	,71*
4.Self-efficacy in instruction	3,28	,53					,72*
5.Self-efficacy in student engagement	3,27	,57					

*:p < .05

Table 1 shows that the mean values of teachers' self-efficacy are higher than the mean values of professional collaboration. Teachers' self-efficacy in classroom management is higher than other self-efficacy sub-dimensions (mean= 3.33, sd=.54). However, it was concluded that the exchange and coordination sub-dimension had a higher mean than the professional cooperation sub-dimension (mean= 3.58, sd=1.21).

Table 1 shows the correlation values between the sub-dimensions of the scales. Accordingly, the highest correlation (r= .30; p<.05) was found between the self-efficacy in teaching sub-dimension and the sharing and coordination sub-dimension, and the lowest correlation (r= .20; p<.05) was found between the self-efficacy in classroom management and professional collaboration sub-dimension. This finding shows that there are generally low-level and significant relationships in the sub-dimensions of teacher self-efficacy and professional collaboration. The results of canonical correlation analysis of variable pairs are given in Table 2.

Table 2: Canonical Correlation Analysis Results

Roots	r_c	r_c^2	Eigenvalue	Wilks' Lambda	F	df	p
1	,33	,11	,12	,88	311,43	6	.00

When Table 2 is analyzed, it is concluded that a significant canonical variable pair was obtained (Wilks' Lambda=.88; F=311.43, p<.05). The correlation value of this variable pair was found to be .33. When the square of this value was analyzed, it was concluded that the dependent and independent variables shared 11% of the variance. The Wilks' Lambda table provides significant chi-square tests for each function. Basically, these statistics represent the extent to which there are significant group differences in the independent variables after removing the effects of the prior function(s). These significance tests help determine the number of sets to be interpreted (Mertler & Reinhart, 2017).

As a result of the canonical correlation analysis, the correlation coefficients and loadings of the variables in the first and second sets are given in Table 3.

Table 3: Correlation Coefficients and Loadings of Variables

Variables	r_{c1}	
	Correlation coefficient	**Canonical loadings**
First set		
Professional cooperation	-,44	-,87
Exchange and coordination	-,65	-,94
Variance explained	,09	
Second set		
Self-efficacy in classroom management	,96	-,71
Self-efficacy in teaching	-,70	-,96
Self-efficacy in student engagement	-,45	-,89
Variance explained	,08	

When Table 3 is examined, it is seen that the variable with the highest contribution in the first set is the exchange and coordination variable (-.65) and the lowest is the professional cooperation variable (-.44). On the other hand, according to the correlation coefficients in the second set, it was concluded that the highest contribution was made by the variable of self-efficacy in classroom management (.96) and the lowest contribution was made by the variable of self-efficacy in understanding students.

Table 1 shows the variance explained by the variables, which is the mean of the squares of the canonical loadings. According to Tabachnick and Fidell (2007), values below .30 are not interpreted. In addition, a value greater than .30 indicates that it is part of the variable set. When the canonical loadings obtained from canonical correlation analysis are analyzed, it can be said that professional collaboration (-.87) and sharing and coordination (-.65) variables are part of the first set. In addition, the variables of self-efficacy in classroom management (-.71), self-efficacy in teaching (-.96) and self-efficacy in understanding students (-.89) were found to be part of the second set. These canonical loadings and correlations are given in Figure 2.

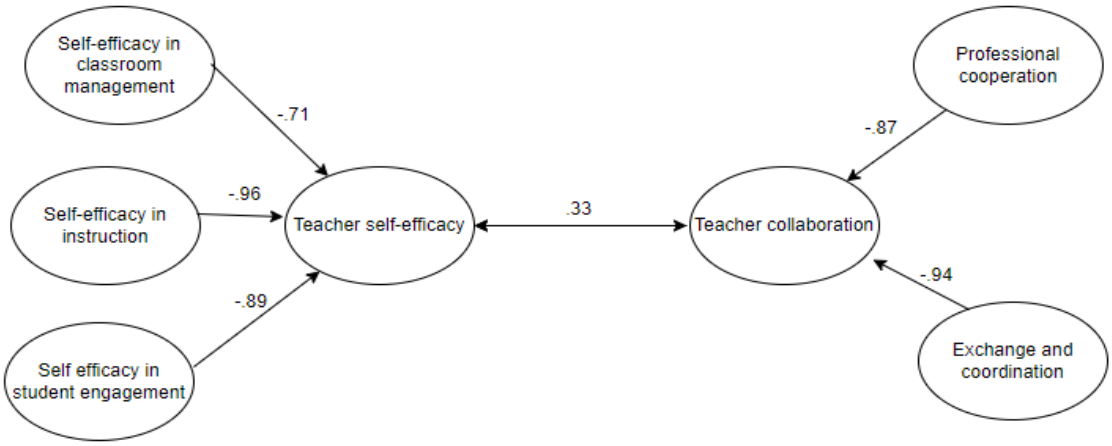

Figure 2: Canonical Loadings and Correlations of the Variable Set

CONCLUSION and DISCUSSION

This study aims to examine the relationship between teachers' self-efficacy and collaboration. For this purpose, the data obtained from the TALIS 2018 teacher survey were analyzed with canonical correlation analysis. According to the findings, it was concluded that teachers' self-efficacy was higher than the value of professional collaboration. In addition, teachers' self-efficacy explains 11% of professional collaboration. This finding is similar to other studies in the literature (Chong & Kong, 2012; Shachar & Shmuelevitz, 1997; Pan, 2023; Zee & Koomen, 2016). In addition, increasing teacher self-efficacy will increase professional collaboration by supporting interpersonal relationships (Goddard, Goddard, Tschannen-Moran, 2007). Vangreken, Dochy, Raes, and Kyndt (2015) found in a study that teachers involved in collaborative learning used more innovative pedagogies (e.g., working in small groups) and exhibited greater job satisfaction and self-efficacy. Thus, the increase in cooperation among teachers will support their self-efficacy beliefs.

Another finding of the study is that there is a high correlation between the sub-dimension of self-efficacy in teaching and the sub-dimension of sharing and coordination. Xie et al. (2023) found similar findings in their study on TALIS 2018 China and England data. Accordingly, it can be said that professional collaboration among teachers will increase the effectiveness of education by affecting teachers' self-efficacy. In addition Ryff ve Warr (2004) concluded that self-efficacy, professional cooperation and well-being are interrelated in a study and stated that their students were positively affected by this situation (Yıldırım 2014, p. 154).

RECOMMENDATIONS

This research is thought to contribute to the literature by providing practical suggestions that can benefit teacher professional development. By creating a collaborative structure that requires teachers to work together and learn from each other, principals can provide conditions to support teachers' self-efficacy beliefs (Ross & Bruce, 2007). It can be said that school principals should carry out supportive work by encouraging professional collaboration activities in schools to increase teachers' self-efficacy beliefs. It may be considered to provide trainings on the importance of professional collaboration in faculties of education that train teachers. In future studies, different countries can be compared with each other using the same variables. In addition, the study can be repeated with different data analysis methods using different variables in TALIS questionnary that teachers have.

ETHICAL TEXT

In this article, the journal's writing rules, publication principles, research and publication ethics rules, journal ethics rules has been complied with. The responsibility for any violations that may arise regarding the article belongs to the authors. The research data were taken from the TALIS 2018 dataset, which is an international study. Due to the use of an international data set ethics committee approval is not required.

Author(s) Contribution Rate Statement: In this study, the contribution rate of the first author is 50% and the contribution rate of the second author is 50%.

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