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*Review Article*

## **The Relationship between Teacher Self-Efficacy and Teacher Job Satisfaction: A Meta-Analysis of the Teaching and Learning International Survey (TALIS)**

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### **Abstract**

Teachers who see themselves competent in their professions might have high self-efficacy beliefs and these beliefs might reflect positively on their job satisfaction. The aim of this study was to examine the relationship between teacher self-efficacy and teacher job satisfaction. In this meta-analysis, the relationship between teacher self-efficacy and teacher job satisfaction was analyzed using the *Teaching and Learning International Survey (TALIS)*. The average effect size of teacher self-efficacy on teacher job satisfaction was determined, and the moderators that may impact average effect size were examined. Data from a total number of 102 independent data belonging to 50 countries included in the TALIS 2008, 2013, 2018 were combined, and a sample of 426.515 teachers was obtained. The results showed that there is a relationship between teacher self-efficacy and teacher job satisfaction. In addition, the year in which the survey was conducted, moderated the relationship between teacher self-efficacy and teacher job satisfaction. On the other hand, continents, countries, cultural structure of the countries and the human development indices of the countries did not moderate the relationship between teacher self-efficacy and teacher job satisfaction. For future studies, it is recommended to examine reports such as TALIS, which allow the comparison of OECD countries in terms of different variables including education.

### **Keywords**

Self-efficacy • job satisfaction • teacher self-efficacy • teacher job satisfaction • teaching and learning international survey • meta-analysis

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Education, directly takes an active role in creating healthy societies. The education process that informally starts in the family is formally continued in schools. In schools, it is the teachers who carry out the task of raising community members and when individuals are desired to be trained, the motivational beliefs of the teachers who guide the teaching-learning process gain importance (Bandura, 1997).

Motivational beliefs are defined as being aware of the importance of a task that is expected to be fulfilled or of some knowledge or skill to be acquired, having an emotional readiness and believing that one can perform the task and gain the knowledge and the skill (Pintrich & De Groot, 1990; Pintrich et al., 1991). The life of individuals is shaped by perceptions and beliefs rather than by objective realities (Bandura, 1997). In this respect, individuals' beliefs in their ability to control their behavior and important events in their lives have gained importance (Bandura, 1997). This belief is used to explain the difference between individuals' performance in a field and their actual potential (Doğan, 2016), and is referred to as self-efficacy (Bandura, 1997). Pintrich et al. (1993) also maintain that self-efficacy belief has a stronger effect than skills in successfully completing a task. Self-efficacy is the belief of individuals in their capacity to produce behaviors appropriate to the events they encounter in their lives (Pajares, 2002; Zimmerman, 1990). Self-efficacy belief is a quality expected of teachers (Tschannen-Moran & Hoy, 2001).

Self-efficacy belief consists of direct experiences of individuals, indirect experiences gained by observing social models, verbal judgments provided by people in the environment and emotional readiness levels (Pajares, 2002). Self-efficacy beliefs also affect individuals' cognitive, affective, motivational and selection processes (Bandura, 1997; Pajares, 2002). Accordingly, the successes or failures experienced by teachers in their daily and professional lives affect their self-efficacy beliefs positively or negatively. The indirect experiences they have gained by observing the experiences of the people around them or of their colleagues due to the high similarity may also have an impact on teachers' self-efficacy beliefs depending on whether the person taken as a model has experienced success or failure in a particular situation. The positive verbal support and appreciation of teachers by the people around them increase their self-efficacy beliefs. Psychological conditions also provide the affective competence that is required to fulfil a task, and factors such as teachers' satisfaction, positive attitude and love for their jobs are considered important for self-efficacy belief. The self-efficacy belief that occurs with the impact of the sources stated affects teachers' cognitive processes necessary to perform the tasks they need to do, emotional processes such as their efforts, risk-taking attitudes; and ability to manage stress, and internal motivation processes for themselves about the fact that they can fulfil their duty. In addition, it can be said that teachers who are self-competent to perform the task in all these aspects have a higher tendency not to avoid the task to be performed and to choose the task, which also positively reflects the job satisfaction of the teachers (Buluç & Demir, 2015; Soto & Rojas, 2019).

The concept of job satisfaction is defined as the positive emotional state of individuals about their job and job experience (Locke, 1976). Job satisfaction can be explained as the affective orientation of individuals towards their roles in the job they do, and their feelings and attitudes towards their jobs (Green, 2000; Turcan, 2011). Satisfaction with a job occurs when the gains and expectations of the individual are in harmony (Bingöl, 1990). When the concept of job satisfaction is examined, it can be stated that the factors that cause self-efficacy belief have similarity. Indeed, the sources that make up job satisfaction are addressed under the cognitive and affective dimensions (Scott & Judge, 1996). Individuals gain a lot of positive or negative experiences throughout their working lives or get indirect experiences based on their observations. The attitudes of the people around them also affect their attitudes towards their job, and they develop attitudes towards their job based on whether they have the emotional competence required by their job. In this sense, job satisfaction can be defined as the attitude towards the job (Greenberg & Baron, 2000). The

occupations of individuals or their jobs cover a large part of their lives that can vary between 25-30 years. Therefore, in order for healthy societies to be created, it is considered important for the members of the society to be in a good mood, to be psychologically healthy, to believe that their jobs will be profitable and to have self-efficacy beliefs in their own capacities (Rhodes et al., 2007). Satisfaction with the job also supports the development of factors regarded as necessary for creating healthy societies.

Teachers are expected to love their professions, to have a positive attitude towards their jobs, to be satisfied with what their professions bring to them, and to have high self-efficacy beliefs that they can do their jobs. These teacher characteristics are effective in raising the members of society by gaining the desired characteristics and thus in establishing a society with the desired criteria (Buluç & Demir, 2015). At this point, studies examining the relationships between teacher self-efficacy and job satisfaction gain importance. The positive impact of teacher self-efficacy on job satisfaction is widely supported in the literature (Arslan, 2019; Buluç & Demir, 2015; Demir, 2020; Klassen & Chiu, 2010; Saracaloğlu et al., 2017; Soto & Rojas, 2019). However, there are also a few studies showing that self-efficacy has no impact on job satisfaction (Islam et al., 2018; Reilly et al., 2014). A single independent study cannot be expected to yield definitive results in Educational Sciences (Çoğaltay et al., 2017). A meta-analysis study on the relevant subject, which combines and synthesizes different results from individual studies in the literature, was reached (Kalkan, 2020). However, in this study, it was provided to synthesize individual data related to the relationship between teacher self-efficacy and teacher job satisfaction obtained from 50 different countries from *Teaching and Learning International Survey* (TALIS) reports. In this respect, the study was considered comprehensive and important because it provides a holistic view of the explanations made worldwide to a similar problem.

### **Research Hypothesis**

There is a positive and significant relationship between teachers' self-efficacy beliefs affecting their cognitive, affective, motivational and task selection processes, and teachers' job satisfaction (Organisation for Economic Co-operation and Development [OECD], 2020a; Saracaloğlu et al., 2017; Viel-Ruma et al., 2010; Won & Chang, 2020). Based on this result obtained from the literature, it can be said that high self-efficacy beliefs of teachers increase their satisfaction with the teaching profession. In addition, there are studies in the literature stating that teachers' easy access to information and technology increases their self-efficacy perceptions (Güneş & Buluç, 2017; Yılmaz et al., 2016), and job satisfaction (Avcı & Seferoğlu, 2011; Drage, 2010). Based on this, it can be considered that there is a significant difference between the data obtained from TALIS reports prepared in 2008, 2013, and 2018 in terms of teachers' self-efficacy and teachers' job satisfaction, because between the years specified in the world, there have been improvements in the ways and speeds with which people access information and technology. The individualist culture focuses on teachers' self-development, high internal motivation, making their own decisions and increasing their autonomy. This situation can be said to improve teachers' self-efficacy and job satisfaction (OECD, 2020a; Oktuğ & Özden, 2013; Yüksel, 2016). For this reason, the hypothesis that the existing relationship between teachers' self-efficacy and job satisfaction is stronger in the countries with individualist cultures compared to countries with collectivist cultures has been developed. It is stated that the countries participating in TALIS have different levels according to the human development report, and that the countries at these levels have different conditions in terms of health, education, and income (Koçal, 2018; United Nations Development Programme [UNDP], 2020).

Therefore, the relationship between teacher self-efficacy and job satisfaction in countries with very high or high human development levels is predicted to be stronger than in countries with medium and low

human development levels. In addition, since the findings in the TALIS reports were obtained from different countries located on different continents, the possible moderating effect of these variables on the relationship between teachers' self-efficacy and job satisfaction was investigated. For this purpose, the following hypotheses were formulated. (H1) There is a positive relationship between teacher self-efficacy and teacher job satisfaction. (H2) The positive relationship between teacher self-efficacy and teacher job satisfaction increases according to the year of studies. (H3) The positive relationship existing between teacher self-efficacy and teacher job satisfaction is stronger in countries with individualist cultures compared to countries with collectivist cultures. (H4) The continent in which the countries are located is a moderating variable for the positive relationship between teacher self-efficacy and teacher job satisfaction. (H5) The positive relationship existing between teacher self-efficacy and teacher job satisfaction is stronger in countries with very high/high human development indices (HDI) compared to countries with medium/low HDI. (H6) The countries are moderating variables for the positive relationship between teacher self-efficacy and teacher job satisfaction.

## Methods

### Research Design

The present study aims to determine the level of the relationship between teachers' self-efficacy beliefs and job satisfaction. To this end, this study made use of the reports of TALIS conducted in 50 OECD countries to examine the teachers, the schools where they work, and the school administrators, their characteristics, professional development, teaching practices, beliefs and attitudes towards teaching, the role and function of the school leadership, and the multiple relationships between different variables related to the school, principal, and teacher. In the TALIS reports prepared in 2008, 2013 and 2018, the results of research conducted in different countries that revealed the relationship between teacher self-efficacy belief and teacher job satisfaction were integrated via the meta-analysis method. Meta-analysis is a literature review method that aims to bring together the results of independent but similar research on a particular topic in a consistent and harmonious way (Cohen, 1988).

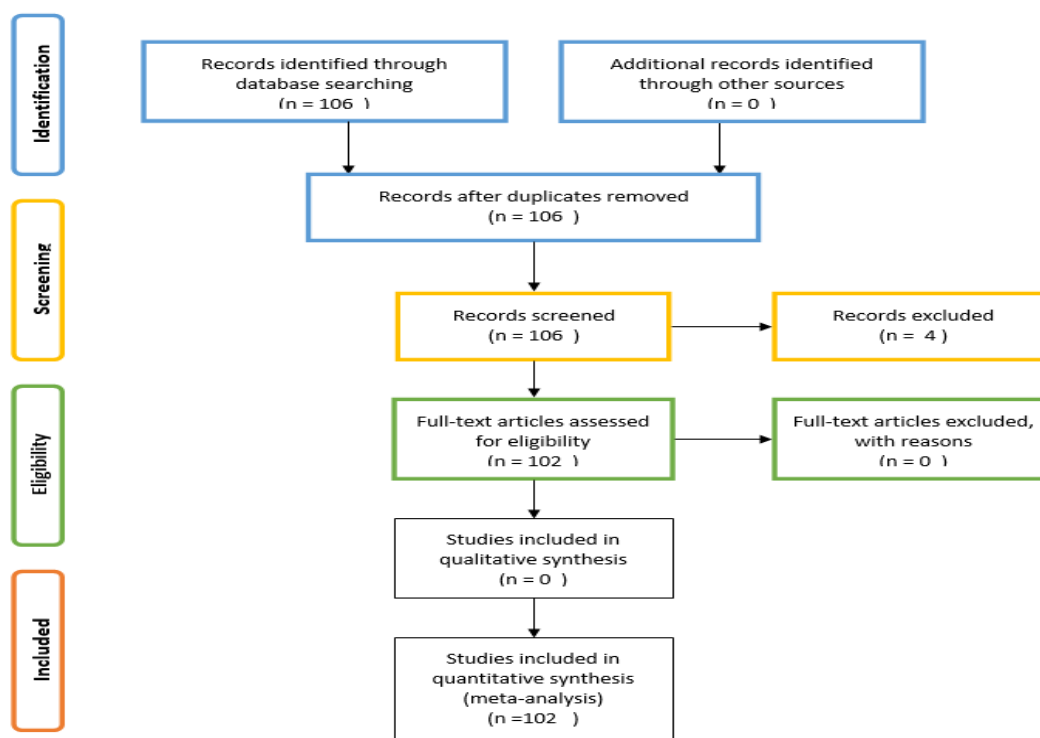
In this study, the meta-analysis method was used to determine the relationship between teacher self-efficacy and teacher job satisfaction. Meta-analysis is a statistical method that consistently and harmoniously summarizes the quantitative findings of similar research on a particular subject (Cohen et al., 2007). Thus, this study aims to combine the quantitative findings obtained from various studies on a particular subject in a consistent and harmonious way to reach a general conclusion and to reveal important moderator variables (Cohen, 1988; Dincer, 2014; Radin & Ferrari, 1991).

### Study Sample and Selection Criteria

In the research, the results obtained from the TALIS reports in 2008, 2013, and 2018 were used to determine the studies that would be included in the meta-analysis, because they presented comparative data. At this phase, the terms "job satisfaction" and "self-efficacy" terms were taken as the base, and based on the terms of "self-efficacy", "teacher self-efficacy", "job satisfaction" and "teacher job satisfaction" in the relevant research reports, the review was carried out in the related OECD TALIS database and tables. The studies were limited to those conducted in TALIS 2008, 2013, and 2018. The expression "independent data" used in the study refers to the research findings showing the relationship between teacher self-efficacy and job satisfaction obtained from the countries included in the 3 TALIS reports.

The quality of all materials that would meet the hypotheses of the research was ensured based on the technical reports and tables of the relevant years in the OECD, TALIS database. In order to determine the research studies to be included in the meta-analysis, each technical report and the tables prepared for these reports were examined. First, 106 studies (data on countries) were selected by reviewing all the research studies on teacher self-efficacy and teacher job satisfaction in line with the keywords. Research studies that did not provide statistical data in 4 of these studies were excluded from the analysis. Of these, TALIS results sent to the Netherlands in 2008, and correlational values of China and the United States in TALIS 2013 and Russia in TALIS 2018 were not presented.

The criteria (inclusion and exclusion) were determined as follows: (i) the studies include the TALIS reports released in 2008, 2013, and 2018, (ii) there is statistical information obtained from 24 countries participating in TALIS 2008, 34 countries participating in TALIS 2013, and 48 countries participating in TALIS 2018, (iii) the study sample is composed of teachers, and data from school principals are excluded, (iv) the target audience of TALIS 2008 includes teachers serving at ISCED Level 2, and the target audience of TALIS 2013, and TALIS 2018 includes teachers working at ISCED Level 1, ISCED Level 2, and ISCED Level 3, (v) the studies have statistical information required for correlational meta-analysis, and (vi) the studies measure teacher self-efficacy and teacher job satisfaction. As a result, a total of 102 studies met the all the inclusion criteria (see Figure 1).



**Figure 1.** PRISMA Flow diagram of teacher self-efficacy and teacher job satisfaction

As a result of the review, in order to determine the research suitable for meta-analysis, a study sample was obtained that included research related to the self-efficacy perceptions and job satisfaction levels of teachers working in educational institutions at all levels in all TALIS reports. Accordingly, the study

sample included 102 independent studies obtained from three TALIS reports and 50 different countries (see Table 1).

**Table 1.** *Descriptive statistics of studies included in meta-analysis of the teacher self-efficacy and teacher job satisfaction*

The year of studies	n	National culture		Continent				Human Development Index			
		Collectivist	Individualistic	Africa	America	Asia	Australia	Europe	Medium	High	Very high
2008	23	8	15	-	2	2	1	18	-	3	20
2013	32	12	20	-	4	6	1	21	-	3	29
2018	47	18	29	1	7	10	1	28	2	7	38
Total	102	38	64	1	13	18	3	67	2	13	87

### Coding Procedure and Operational Definitions

A coding form was developed by the researchers to code the research that would be included in the meta-analysis process. In the coding form (i) descriptive statistics (the country where the study was conducted, the year of the study, the sample size, and sample region, the culture of the country where the research was carried out, and the HDI of the country where the research was conducted), and (ii) statistics of the research variables (correlational values between the dependent variable job satisfaction and the independent variable self-efficacy) were coded in the Excel program. Thus, the quality of the studies included in the meta-analysis would be examined in the coding stage. When the descriptive statistics of the research included in the meta-analysis were examined, it was seen that out of 102 studies addressing the impact of teachers' self-efficacy perceptions on their job satisfaction, 23 independent studies were conducted in 2008, 32 independent studies in 2013 and 47 independent studies in 2018. The sample of the study includes 426.515 teachers from 25669 different schools.

The first moderator variable is the year of study. When the TALIS reports are analyzed from past to present, three different reports were published in 2008, 2013, and 2018 (OECD, 2020a). The second moderator variable is the national culture. In this meta-analysis study, the naming of the national culture classification is based on the individualist (culture) and collectivist (culture) dimensions proposed by Triandis and Gelfand (1998). However, in the classification of countries according to these dimensions, the comparison of cultures made in the Hofstede Insights (2020) was evaluated individualism, according to Hofstede (1980), is the idea that individuals use their preferences within the social framework in society, whereas according to Triandis (1996), collectivism means individuals' meeting the needs of their families and social frameworks before their own needs. In this context, the aim to draw a framework for the self-efficacy and job satisfaction of teachers working in countries with individualist and collectivist culture. Collectivist societies, from a traditional perspective, shape their national cultures with the rationale that individuals who will protect the integrity and order of society should be raised (Biddle, 2012). In these types of societies, a cultural structure is established, in which the service of individuals to the society is taken as a basis for social order, and the raising of individuals who can take active and protective roles in social institutions is given importance. On the other hand, in individualistic societies, individuals are placed in the center, and the individual shapes the society based on their own decisions and choices. In collectivist

societies the individual's life is regarded as belonging to the society of which they are a part, while in individualistic societies the individual's life is considered to belong only to themselves (Biddle, 2012). In this study, out of 102 independent studies 38 independent studies included in the national culture moderator analysis (19 countries) had a collectivist culture and 64 (31 countries) had an individualistic culture.

The third moderator variable is the continent. The TALIS reports contain data from studies conducted in America, Asia, Australia, and Europe (OECD, 2020a). In this study, there is 1 study from the African continent (1 country), while there are 13 studies from the American continent (7 countries), 17 studies from the Asian continent (9 countries), 3 studies from the Australian continent (1 country), and 67 studies from the European continent (31 countries). The fourth and last moderator variable is the HDI that expresses the economic, social, political, and cultural processes (UNDP, 2020) that broaden individuals' preferences. In this meta-analysis, HDI is based on classification provided by Human Development Report 2019 (UNDP, 2020). Human development reports provide information and comments aimed at eliminating overall disadvantages in all countries in the world (Koçak, 2018). In the report, countries are classified as very high human development, high human development, medium human development, and low human development (UNDP, 2020). HDI range between 0 and 1. The proximity of the index value to one is an indicator of very high human development. From 189 countries included in the 2019 report, 62 countries were at a very high level of human development, 54 countries were at a high level of human development, 37 countries were at a medium level of human development, and 36 countries were at a low level of human development (UNDP, 2020). The data of the countries whose human development levels are accepted as medium, high, and very high are included in the relevant TALIS reports. The data of the countries with low human development levels are not included (OECD, 2020a). Considering the distribution of the research based on HDI, 87 studies had very high index (41 countries), 13 studies had high index (8 countries), and 2 studies had medium index (2 countries).

### **Data Analysis**

A reliability study was performed to determine whether the studies in the coding form were properly coded. For this purpose, two field experts experienced in meta-analysis studies were asked to re-code approximately thirty studies that were chosen at random and corresponded to 30% of the studies included in the coding list by adhering to the coding list created by the researcher. Cohen's Kappa consistency coefficients, which are used to determine the reliability of the coding form in meta-analysis studies and to measure inter-rater reliability (Leary, 2012), were calculated, and the value was found to be .85 ( $p < .001$ ). According to Landis and Koch (1977), this value shows that there is almost perfect agreement between coders.

In this study, the random effects model was used in the whole meta-analysis process and the standardized mean difference was used to calculate the effect size, as it offers comparison possibilities for research based on two variables (Hedges & Olkin, 1985). The Comprehensive Meta-Analysis (CMA V 2) software was used in the meta-analysis processes. The statistical significance of the difference between the moderator variables was tested using the  $Q_b$  statistical method developed by Hedges and Olkin (1985), and homogeneity between groups (Borenstein et al., 2009; Kulinskaya et al., 2008). Thus, the statistical significance of the differences between the moderators was examined (Karadağ, 2020). In the study, the variables *country* of the study, *year* of the study, *national culture*, *continent*, and *HDI* were determined as moderator variables since they were considered to play a role in average effect size.





### The Relationship between Teacher Self-efficacy and Teacher Job Satisfaction

Meta-analysis results between *Teacher self-efficacy* and *Teacher job satisfaction* are presented in Table 2. The findings support the hypothesis 1, which states that *Teachers' self-efficacy* has a positive relationship with *Teacher job satisfaction*. While the average effect size of *Teacher self-efficacy* on job satisfaction was determined to be  $r = .28$ , the lower bound value was calculated as  $r = .26$  and the upper bound value as  $r = .29$ .

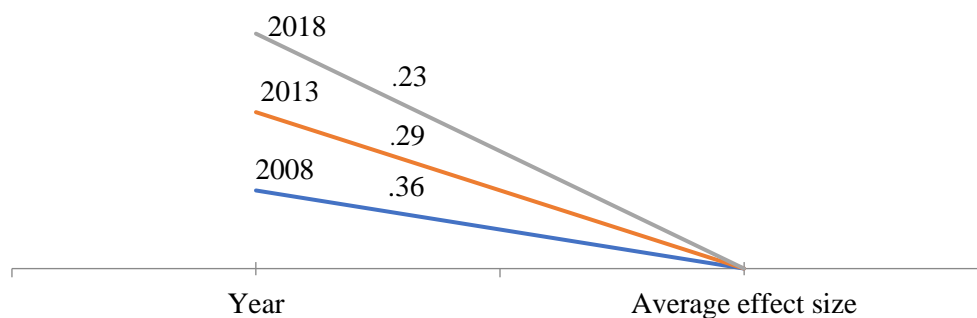
**Table 2.** Meta-analysis results related to relationship between teacher self-efficacy and teacher job satisfaction

	K	N	R	95% CI		Q	Q <sub>b</sub>
				Lower limit	Upper limit		
Teacher self-efficacy & Teacher job satisfaction	102	426515	.28	.26	.29	3097.00*	
The year of the study							91.34*
2008	23		.36	.34	.38		
2013	32		.29	.27	.31		
2018	47		.23	.21	.24		
The national culture							0.66
Collectivist	38		.29	.26	.31		
Individualistic	64		.27	.25	.29		
The continent							4.86
America	13		.27	.23	.32		
Asia	18		.25	.21	.28		
Australia	3		.25	.15	.33		
Europe	67		.29	.27	.31		
Human Development Index							5.36
High	13		.28	.24	.33		
Medium	2		.15	.03	.26		
Very high	87		.28	.26	.30		

Note. \* $p < .01$ ; CI = Confidence Interval

In the other hypothesis sentences of the research, *the year* of the study, *the national culture*, *the continent* in which the countries were located, *HDI*, and *the countries* might be moderators for the relationship between *Teacher self-efficacy* and *Teacher job satisfaction*.

Hypothesis 2 of this meta-analysis was related to decrease in the positive relationship between *Teacher self-efficacy* and *Teacher job satisfaction* over the years of the study. Moreover, the decreasing relationships between the two variables is presented in Figure 3 as 2008 ( $r = .36$ ) and 2018 ( $r = .23$ ).



**Figure 3.** Change between teachers' self-efficacy and their job satisfaction over years of study

The findings did not support hypothesis 3, which asserted that *national culture* was a mediating variable for the positive relationship between *Teacher self-efficacy* and *Teacher job satisfaction*. In the moderator analysis performed, there was no significant difference between *national culture* ( $Q_b = 0.66; p > .05$ ).

Hypothesis 4, which asserted that *the continent* in which the countries are located was the moderating variable regarding the positive relationship between *Teacher self-efficacy* and *Teacher job satisfaction*, was not supported. In the moderator analysis performed, the positive relationship between *Teacher self-efficacy* and *Teacher job satisfaction* was not statistically significant ( $Q_b = 4.86, p > .05$ ). Although the effect difference was not statistically significant, *Teacher self-efficacy* appears to have a positive relationship between *Teacher job satisfaction* in the continents of America ( $r = .27$ ), Asia ( $r = .25$ ), Australia ( $r = .25$ ) and Europe ( $r = .29$ ).

Hypothesis 5, which expresses the role of *HDI* as a moderator variable for the positive relationship between *Teacher self-efficacy* and *Teacher job satisfaction* was not supported. In the analysis of the moderator, the average effect size difference was found to be statistically insignificant ( $Q_b = 5.36, p > .05$ ). Although the effect difference was not statistically significant, the relationship between *Teacher self-efficacy* and *Teacher job satisfaction* were .15 in countries with medium HDI, .28 with high HDI, and .28 with very high HDI.

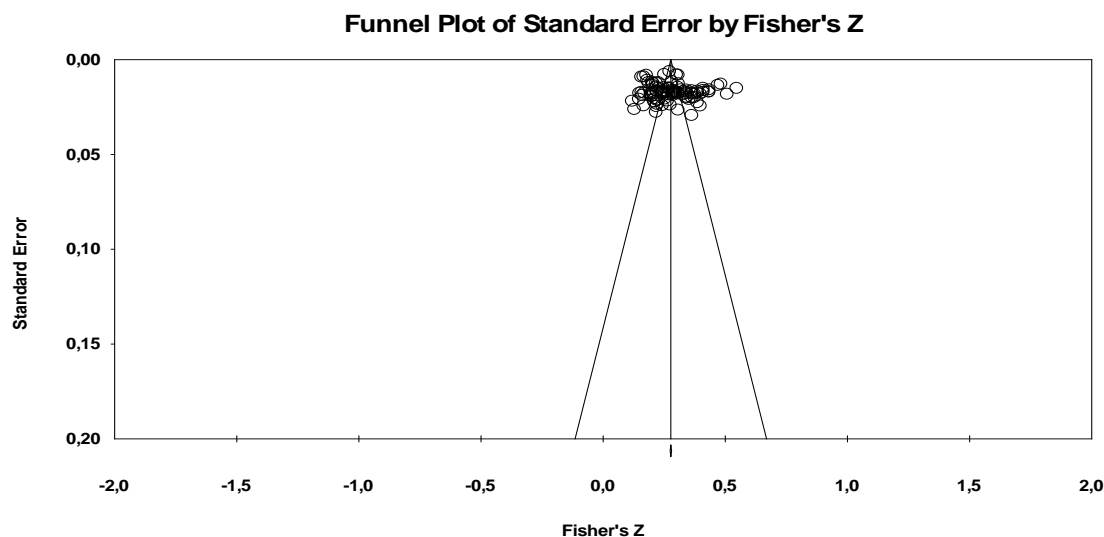
In the study, finally the role of *the countries* where the studies were conducted was examined as a moderator variable for the positive relationship between *Teacher self-efficacy* and *Teacher job satisfaction* (H6). The review of the individual average effect sizes of 37 countries included in the study revealed that *Teacher self-efficacy* had no significant relationship between *Teacher job satisfaction* in all 37 countries. In testing this hypothesis, statistical information of the countries that have participated in TALIS once are excluded (Argentina, China, Colombia, Cyprus, Georgia, Ireland, Kazakhstan, New Zealand, Saudi Arabia, Serbia, South Africa, United States, Vietnam). The effect difference was not statistically significant. The countries with the highest effect were Malaysia, Hungary, Croatia, and Spain, respectively. The effect sizes according to the countries are presented in Table 3.

**Table 3.** *The relationship between teacher self-efficacy and teacher job satisfaction according to country*

<i>Country</i>	<i>k</i>	<i>r</i>	<i>Country</i>	<i>k</i>	<i>r</i>	<i>Q<sub>b</sub></i>
Malaysia	2	.42	Mexico	3	.29	
Hungary	2	.41	Korea	3	.28	
Croatia	2	.36	Finland	2	.28	
Spain	3	.36	Turkey	2	.27	
Bulgaria	3	.35	Slovak	3	.27	
Lithuania	2	.34	Malta	2	.27	
Brazil	3	.33	Estonia	3	.26	
Portugal	3	.33	Slovenia	2	.26	
Romania	2	.33	Czech	2	.26	
Austria	2	.33	Australia	3	.25	
Italy	3	.32	Japan	2	.25	
Norway	3	.32	Belgium	3	.24	
United Arab Emirates	2	.32	Israel	2	.24	
Poland	2	.32	Sweden	2	.24	
France	2	.31	Chile	2	.23	
England	2	.31	Canada	2	.23	
Netherlands	2	.30	Iceland	3	.22	
Denmark	3	.30	Latvia	2	.22	
			Singapore	2	.16	

## Publishing Bias

In meta-analysis research, including only publications that have produced meaningful results in the research process negatively affects the analysis process (Long, 2001). Therefore, it is recommended to examine publication bias before starting meta-analysis (Kalkan, 2017). In this study, publication bias was tested using funnel scatter plots, Duval and Tweedie's trim and fill tests, Begg and Mazumdar rank correlations and classic fail-safe  $N$  analysis. The results of the funnel scatter plot showing the probability of publication bias are illustrated in Figure 4.



**Figure 4.** *Funnel scatter plot illustrating relationship between teachers' self-efficacy and their job satisfaction*

When each figure is examined, it is seen that most of the studies included in the research are at the top of the figure and very close to the combined effect size. Therefore, it can be stated that none of the research included in this study has publication bias. When the results of Duval and Tweedie's trim and fill tests is examined, it is seen that there is no difference between the observed values and the adjusted values specified to adjust the impact that may arise from publication bias. Therefore, it is stated that there are no missing data on both sides of the center line and the studies concentrated on both sides show a symmetrical distribution (Çoğaltay et al., 2014).

In addition to the previous tests to determine publication bias, Kendall's Tau  $b$  coefficient values were calculated for Begg and Mazumdar rank correlations. When Kendall's Tau  $b$  coefficient values for Begg and Mazumdar rank correlations are examined, the two-tailed  $p$  value of Kendall's Tau  $b$  coefficients is not expected to make a statistically significant difference (Dinçer, 2014). When all variables are examined, it can be put forward that there was no publication bias in the studies included in the meta-analysis since the two-tailed  $p$  value was greater than .05 (Tau = .01;  $z$  value for Tau = .23; 1-tailed  $p$  = .40; 2-tailed  $p$  = .81).

Classic fail-safe  $N$  analysis results were calculated to determine the publication bias and power of the meta-analysis. According to classic fail-safe  $N$  analysis, the fact that the  $p$  value is less than the alpha value shows that the study is powerful and reliable (Dağyar & Demirel, 2015). In addition, in order for the result of the meta-analysis to be invalid, a total of 1582 individual studies should be added to the analysis ( $Z$  value = 174.84;  $p$  < .001; alfa value = .05).

The fact that the funnel plots are symmetrical, that there are no adjusted values in Duval and Tweedie's trim and fill tests, that the Kendall Tau  $b$  values are not significant, and that the  $p$  values are smaller than the alpha values in the classic fail-safe  $N$  analysis show that there is no publication bias in this meta-analysis study.

## Discussion

The findings obtained from 102 independent studies included in TALIS reports were used. Based on the data obtained from 50 different countries, the relationship between teacher self-efficacy and teacher job satisfaction was investigated. The results obtained from the study shows that teacher self-efficacy has a significant and positive relationship with job satisfaction. Therefore, it can be suggested that as teachers' perceptions of self-efficacy increase, their job satisfaction will increase. This finding is supported by the literature (Arslan, 2019; Buluç & Demir, 2015; Caprara et al., 2006; Demir, 2020; Ross, 1998; Won & Chang, 2020). It was stated that high self-efficacy belief protects teachers from stress and burnout, and increases job satisfaction (OECD, 2020a). When it is considered that the teachers' job is so effective to shape the future of the countries, it is necessary for them to have job satisfaction. It is not possible to obtain efficiency from a teacher who is dissatisfied with their job and who is unhappy to be working in a job that does not meet their expectations (Erden, 2007). Since teachers play an essential role in the education system, which is one of the basic institutions of society, it is important for them to be happy, productive, and efficient for the development of the country. In this respect, it can be argued that it is of great importance to strengthen teachers' cognitive and affective self-efficacy perceptions since it has been determined that self-efficacy increases job satisfaction.

In the study, although the purpose of the studies included in the meta-analysis is common, the studies differ in some respects. These differences were assigned to the study as independent variables. Accordingly, the study investigated whether there was a significant difference between the effect levels of teachers' self-efficacy and their job satisfaction according to the year of the TALIS reports in which the studies included in the meta-analysis were published, the countries where the studies were conducted, the national culture of these countries, the continent in which the counties were located and the HDI of the countries.

Studies included in the meta-analysis were taken from TALIS 2008, 2013, and 2018 reports. According to the findings of the study, the relationship between teacher self-efficacy and their job satisfaction was found to be significantly higher in of 2008 than in the findings for 2018. Considering that all the findings were obtained from 21st century teachers, it can be predicted that access to information and technology from 2008 to 2018 was facilitated over the years, contributing to the development of teachers' self and professional skills and increasing their self-efficacy perceptions. The fact that teacher self-efficacy is perceived higher at a time when access to information has become easier increases the importance of self-efficacy on job satisfaction. There are studies in the literature indicating that teachers' easy access to information and technology increases their perceptions of teacher self-efficacy (Yılmaz et al., 2016) and teacher job satisfaction (Drage, 2010; Yu et al., 2018; Kumaş & Deniz, 2010). However, in the study, the hypothesis that the positive relationship between teacher self-efficacy and job satisfaction increased according to the years of TALIS reports has been rejected. In the meta-analysis study, which examined the relationship between teacher self-efficacy and job satisfaction by including 35 individual studies, Kalkan (2020) obtained the highest effect size in 2016 and determined that the effect size was lower before 2016 and in 2017 and 2018. The researcher stated that this might be due to the difference of the scales used in the

studies. In this study, the findings of different countries in the TALIS reports and the use of different scales may have affected the result.

In the study, the variables of the continents and the countries where the teachers lived, the cultural structure of the countries and the HDI of the countries did not have a statistically significant relationship between teacher self-efficacy and teacher job satisfaction. Therefore, it can be claimed that the variables specified have no roles in the relationship between teacher self-efficacy and teacher job satisfaction. The fact that a society is in an individualist or collectivist culture gives information about the individuals, institutions, and behaviors of the society, and the functioning of their institutions (Çarıkçı & Koyuncu, 2010). Individualism emphasizes a cultural structure in which each individual who forms the society is perceived independently of the society they form, and the important thing is individual goals. Collectivism, on the other hand, explains a cultural structure in which the goals of the individual and society, which are interconnected and compatible, gain importance (O'Neill et al., 2016). In societies with collectivist cultural structures, since individuals tend to understand and communicate with each other for the integrity of the society, interpersonal cooperation is expected to be higher than in individualist societies (Goncalo & Staw, 2006). Accordingly, it was stated that the teachers who reported that they collaborate regularly with their colleagues have higher self-efficacy beliefs and higher job satisfaction (OECD, 2020a).

On the other hand, in societies with individualist cultural structures, although communication between individuals is less, more importance is given to freedom, independence and individual effort of individuals, which encourage individuals to be open to innovations and to improve themselves (Černe et al., 2013). It is stated in the literature that teacher autonomy (Ingersoll, 2007), which is described as teachers' having a certain freedom area while pursuing their professions and making important decisions about their jobs, increases teachers' perceptions of professional self-efficacy and job satisfaction (Pearson & Hall, 1993; Skinner, 2008). It is emphasized that teachers who think about quitting their profession have low job satisfaction and less autonomy (Hall et al., 1992). When teachers' job satisfaction, school support, autonomy, motivation, and self-efficacy levels are high, it is reported that their intention to leave their profession in front of them is low (OECD, 2020a). It can be said that both cultural structures can affect teachers' self-efficacy and job satisfaction positively or negatively from different perspectives. Therefore, it was found that the relationship between teacher self-efficacy and teacher job satisfaction does not differ according to the countries that have collectivist and individualist social structure.

The TALIS reports contain data from studies conducted in America, Asia, Australia, and Europe. No significant difference was observed between the effect sizes of the self-efficacy perceptions of teachers working on any of the four continents and their job satisfaction. This finding shows parallelism when the countries where the studies included in the meta-analysis and the HDI of these countries are taken into consideration. Countries and their continents differ in social, economic, and cultural aspects (OECD, 2020a; Türkoğlu, 2015). On the other hand, in the countries included in the TALIS reports, the teaching profession is generally considered to be among the professions that are in the middle income level of the society and that are socially accepted despite not having a very high place in the society in terms of respectability (Erden, 2007; OECD, 2020a; Türkoğlu, 2015). The proportion of teachers who stated that the teaching profession was valued in society between 2013 and 2018 increased by 50% compared to previous TALIS reports. It has been reported that 67% of teachers in OECD countries participating in TALIS stated the profession of teaching, as their first-choice career and that 90% are satisfied with their jobs. However, the percentage of those who were satisfied with the terms of the teaching contract other than salary was 66%, while the percentage of those who were satisfied with their salary was 39% (OECD, 2020b). Since teaching as a profession is not such a privileged or insignificant one among these countries, it can be suggested that the

effect of teachers' perceptions of self-efficacy and their job satisfaction does not change depending on the country or the continent where teachers live.

Human development reports go beyond per capita income accounts and evaluate the development of human resources, elements such as human freedom, and personality, and the level of attaining basic human needs. As a matter of fact, HDI is higher in developed countries, where technology is widely used and where people live above the world average (Kumaş & Deniz, 2010). In the calculation of HDI, education, income, and health aspects come to the fore (Koçal, 2018). Education in these three dimensions is important both in terms of ensuring individual development and ensuring social, economic, and social development (Hoşgörür & Gezgin, 2007). One of the indicators of the education and income dimensions of the human development of countries can be shown as the fact that people living in the country can access information and improve themselves and are satisfied with their profession and salaries (Koçal, 2018). However, it is also stated in the literature that the job dissatisfaction that over-education can create in individuals can have negative results on the organizations they work for (Ünal, 1996).

According to the 2019 Human Development Report (UNDP, 2020), teaching was reported as the first career of choice for 61% of teachers in Norway, which has the highest score among 189 countries in the world in terms of HDI. 79% of teachers in Norway stated that they chose the teaching profession to contribute to the development of children and society and stated that the teaching profession provided great motivation for the development of society. While 93% of teachers in Norway were satisfied with their job, the percentage of those who were satisfied with their salary (48%) was above the average of OECD countries (OECD, 2020b). On the other hand, Vietnam is the country where teachers work with the highest percentage, stating that the teaching profession has value in society. Vietnam is among the countries that are found at the middle human development level in the ranking of the human value index (OECD, 2020b). Among countries that are not satisfied with their salaries, the lowest rate belongs to Iceland. In HDI, Iceland ranks sixth among countries with very high levels of human development (UNDP, 2020). Of the countries included in the TALIS report, the average of participating in in-service trainings was 82%. In Norway, Iceland and Vietnam, the participation rates of teachers in in-service trainings were also above average. It has been reported that the participation of teachers in these trainings provides a higher level of self-efficacy and job satisfaction (TALIS, 2018). It can be said that among the countries included in the TALIS report, teachers working in different countries in terms of human development level find the teaching profession valuable, they were satisfied with their work and their self-efficacy was high. Therefore, it can be accepted that there is no significant difference in the level of effect of teachers' self-efficacy and job satisfaction according to the level of human development.

The present study was conducted by using the published database of three TALIS reports. The major limitation of this research is that data used in the study were derived only from difference studies. The results cannot be claimed to thoroughly explain the causal effects if the research conducted is based on mean differences. Moreover, the data that were included in the meta-analysis were obtained from cross-sectional studies. There may potentially be a method bias because the data included in the meta-analysis derived data only from TALIS and from the participating countries. Therefore, similar individual data that might contain appropriate data for the present research were not included in the meta-analysis owing to this limitation. Another limitation of the study is that countries where three relevant TALIS reports were not available, were not included in the meta-analysis. In this case, the limitation of the sample to three TALIS reports is another limitation of the research. Therefore, these limitations should be taken into account when generalizing the results obtained.

Due to the positive relationship between teacher self-efficacy and teacher job satisfaction, it may be recommended to take necessary measures within the organization to increase teachers' professional self-efficacy. In addition, teachers can be provided with in-service training to improve their professional self-efficacy. In the TALIS report, it was observed that the relevant data especially for the countries with a low development index were missing. In order to see the differences between countries in terms of education and to take necessary measures, it can be suggested that participation in such international studies should be higher. In order for individual studies to be included in meta-analysis, it is recommended that all findings that allow meta-analysis are reported by researchers. For future studies, it is recommended to examine reports such as TALIS and PISA, which allow the comparison of OECD countries in terms of education, in terms of different variables. In order to synthesize the findings obtained in these reports, meta-analysis studies based on different variables are recommended. Taking into consideration that the variables that examine the behavior of teachers, students and school principals in the OECD reports reflect the current literature, individual studies in different cultures are recommended.

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