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Research on the Teachr Sense Efficacy and Goal Orientation as Countermeasures in Physical Education Teaching

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Abstract

This meta-analysis examines the correlational relationship between Teacher Sense Efficacy (TSE) and Mastery Goal Orientation among teacher populations. Quality teachers are fundamental to effective classroom instruction, requiring high self-efficacy beliefs to navigate challenging educational environments. Achievement Goal Theory posits that individuals interpret success through mastery-task goals or performance-ego goals, with mastery goals emphasizing task improvement and competence development. Despite theoretical agreement on the correlation between TSE and mastery goals, the extent and pattern of this relationship remains unclear across studies. This study systematically reviewed 14 peer-reviewed studies published between 1997 and 2013, identified through EBSCO, ProQuest, and Sage Journals databases. Inclusion criteria required teacher populations, studies examining TSE-achievement goal relationships, use of Woolfolk's Teacher Sense Efficacy Questionnaire (1990), and Ames' Achievement Goal Performance Questionnaire (1997). Meta-analysis employed both fixed and random effects models using Comprehensive Meta-Analysis software, with correlation coefficients ranging from 0.11 to 0.63 across studies. Results revealed a standardized mean effect size of $r = 0.292$ (fixed model) and $r = 0.334$ (random model), indicating a small but significant positive correlation between TSE and mastery goal orientation. The random effects model was preferred due to significant heterogeneity ($Q = 101.450$, $p < 0.001$), acknowledging variability in sample sizes. Moderator analysis examining cultural differences (US versus non-US studies) showed significant differences in the fixed model but not in the random model, suggesting sampling variability influences cross-cultural comparisons. Despite the small effect size, findings suggest practical significance for teacher education and professional development. Teachers may benefit from emphasizing self-efficacy beliefs while cultivating mastery-oriented motivational climates in their classrooms, potentially improving teaching effectiveness and student outcome.

Keywords: Meta-analysis, Teacher Sense Efficacy, Goal Orientation, Physical Education Teaching

Introduction

Motivational factors and climates are the important determinant for teachers to enroll in the education major, as it will serve them to endure in their career. A quality teacher will evince an effective teaching in a classroom setting, which related to the use of effective instructional

approach, a moderator to maintain a good dynamic motivational climate, professional decision maker, master of its own belief, competence in related content-knowledge and inherent of desirable or quality personal character(Rink, 2013; Medley, 1979). These characteristics are pinnacle for teachers to ingrain it while they are in the teaching program. As a consequence, proper supervision and instructional teaching styles or choices can be provided to these pre-service teachers prior in their teaching preparation program (Xiang, Gao, & McBride, 2011).

A fast dynamic pace of career development from being a pre-service teacher to novice teacher and to experience or expert teacher is a daunt and overwhelming challenges for this teacher to maintain an effective teaching. For the past 40 years, researchers in education field have been puzzled to produce quality teachers who can meet a demand of dynamic teaching environment in schools. A research paradigm shift in education from process-process studies, process-product studies to cognitive-behavior paradigm studies showed that education field is dynamically evolved from time to time, due the to demand of a quality education program. Consequently, more quality teachers are needed to meet this demand from school districts and policy makers in education setting.

Teacher sense efficacy (TSE) is defined as a teacher`s belief or self-judgment about themselves to carryout responsibility to deliver an effective instruction in a classroom setting (Tschannen-moran & Woolfolk, 2001). In education setting, a high efficacious teacher most likely will perform a better performance in performing their tasks, developing student engagement and better students` achievement in a class lesson (Martin, Mccaughtry, Hodges-Kulinna, & Cothran, 2008; Martin, Oliver, & McCaughtry, 2007). Teachers` sense efficacy (TSE) belief in carrying and executing their responsibility is an essence for these teachers to endure and implement an effective classroom teaching in their profession. In a classroom setting, dynamic challenge of environment such as in dealing student miss-behaviors, students` difficulty in learning task, peer pressure and high expectations from school districts will cause a teacher to off-track or burnout in pursuing their teaching career (Parker et al., 2012). Based on previous studies, it showed a constant empirical justification that high self-efficacious teachers will probably maintain their composure to be quality teachers in delivering an effective teaching to students. As described by Rink (2013), many researchers in education have taking for granted over the complexity of teaching process, which it is involved of interaction within students, the teacher, content and contextual. This is the reason the Achievement Goal Theory (Nicholls & Maehr, 1989; Ames, 1992) came into place which, the theoretical–framework is based on the situational and motivational climate created by the teacher.

The Achievement Goal Theory (AGT) is a theory that claimed an individual subjective interpretation meaning of success in two approaches primarily from mastery/task goal and performance/ego goal approach. The achievement goal approach posits that individuals interpret the subjective meaning of success in two main ways that correspond to two primary achievement goals—task goals and ego goals. In suffice, an individual who is adopted a task goal will define success or construe competence in terms of task mastery or improvement. On the other hand, a person who has adopted an ego goal will define his or her success or construe competence in normative terms, such as winning or outperforming others. The main construct in AG is competence, in which viewed as the core of the achievement goal

construct, and competence is differentiated in two ways: how it is defined and according to how it is valence (Elliot & McGregor, 2001). In education setting, it also been postulated as the purposes that students have for achievement-related activities and the meaning they attach to those activities (Ames, 1992: Dweck, 1986; Maehr, 1989).

Problem Statement

In recent years, many studies have been conducted to examine the relationship of teacher sense efficacy and goals structure. Despite researchers have agreed that TSE and Mastery Goal in AG are correlated, to what extent to which both constructs are correlated are still unclear. Further, the trend or pattern of relationships between both theoretical-frameworks is still unclear due there is still lack of study in reviewing the effect of relationship from one study to other study. Hence, the purpose of this meta-analysis study is to review the relationship effects between both theoretical-frameworks and, to examine the correlation effects across countries. In this research, the researcher has examined and investigated the correlation effect between TSE and Mastery goal orientation. Only studies that have met the criteria inclusion that structured by the researcher are included for the purpose of this study. The research questions are as follow:

What is the degree to which TSE correlates with Mastery Goal approach in teachers' population?

Is there any moderator effect of cultural diversity in TSE and Mastery Goal approach?

Method

All articles searches were performed using the University journal article database such as EBSCO, Pro-Quest. Sage Journals and Taylor & Francis online. The keywords for this search were based on the "Boolean" database search technique, which included keywords of, "teacher sense efficacy", "teacher self-efficacy", "teacher goal orientation" and "achievement goal theory in teacher", "Achievement Goal 2x2 Questionnaire", "Woolfolk teacher sense efficacy questionnaire". In this initial searcher, 85 studies met the keywords search criteria.

Screening Criteria and Inclusion Criteria

The inclusion criteria for the article to be included in this study are as follows:

Teachers` population article

Study of relationship between teacher sense efficacy and achievement goal structure

For teacher sense efficacy, only studies that using the Teacher sense efficacy Questionnaire (Woolfolk, 1990) were included in this study

For mastery goal approach, only studies that using the Achievement Goal Performance Questionnaire (AGPQ) (Ames, 1997) were included in this study

Only studies that were adopted both instruments in previous studies were included for the purpose of this study

Result Analysis

Coding Procedure

As shown in Table 1, this coding sheet was developed to code the variables for the purpose of this study. For each study, correlation coefficient value between TSE and Mastery Goal approach was coded. For any studies that reported more than one correlation coefficient, recalculation was done to generate a single correlation value between the TSE and Mastery Goal coefficient. Study, sample of size, correlation values and country code

(moderator; US vs non-US) were coded to extract the information that was needed for the analysis purposes. Coder reliability was performed to ensure one coder recoding a random sample of the selected studies (Lipsey & Wilson, 2001). The initial intra-judge agreement was 93% and the agreement-disagreement value was between an acceptable range of coder reliability for research purposes (Novick, 1966).

Table 1
Coding sheet

Num	StudyID	Country ID	N	*r*
1	Cho (2013)	1	221	0.39
2	Wolters (2007)	1	1024	0.38
3	Wolters (2001)	1	290	0.12
4	Ghoonsooly (2013)	2	92	0.63
5	Ciani (2008)	1	156	0.36
6	Viera (2011)	1	136	0.43
7	Ruth (2007)	2	212	0.11
8	Deemer (2004)	1	99	0.29
9	Liem (2007)	2	1057	0.15
10	Middleton(2002)	1	155	0.46
11	Middleton (1997)	1	173	0.43
12	Midgley (1995)	1	158	0.37
13	Shim (2005)	1	361	0.32
14	Grozodoz(2011)	2	290	0.07

1 = US
2=Non-US

Descriptive Statistics

In Table 1, there were 14 studies were selected for this study after all inclusion criteria was met to be included for the purpose if this study. The 14 studies were published form 1997 to 2013 in peer-reviewed journal articles in various discipline of educational research. Among of those studies, only 4 studies were coded from non-based US research study. The values of Pearson correlation coefficient between TSE and Mastery Goal approach were 0.11 to 0.63.

Fixed versus Random Effects Model

For the purpose of this study, a fixed and random effect model analysis was performed by the researcher to determine the heterogeneity of samples due to sampling error within the studies. According to Rothstein (2010), the fixed effect model is based on the null hypothesis that only one true effect size across studies and the effect sizes of individual study differ due to subject-level sampling error. In contrast, the random effect model is based on the null hypothesis that taking into consideration in both subject-level and study-level sampling error (variability) due to different in sample size.

In this study, both models were presented to determine the common effect size across studies. After identifying the heterogeneity of the data, a random effects model was a preferred model due to this model acknowledged the variability of sample size within those studies. Both fixed and random effect model were performed in the analyses due to ensure the sensitivity of analyses (Cooper, 2009). All analyses were performed using the Comprehensive Meta-Analysis (CMA) version 2.0 software for the purpose of this study.

Mean Effect Size

Table 2

Mean effect size of correlation study between TSE and Mastery Goal Orientation

Model	Study ID	Statistics for each study							
		r	Fisher`s Z	SE	Variance	Lower Limit	Upper Limit	Z-value	p-value
	1	0.39	0.412	0.068	0.005	0.279	0.545	6.08	0.000
	2	0.38	0.400	0.031	0.001	0.339	0.461	12.783	0.000
	3	0.12	0.121	0.059	0.003	0.005	0.236	2.043	0.041
	4	0.63	0.741	0.106	0.011	0.534	0.949	6.995	0.000
	5	0.36	0.377	0.081	0.007	0.218	0.535	4.662	0.000
	6	0.43	0.460	0.087	0.008	0.29	0.630	5.304	0.000
	7	0.11	0.110	0.069	0.005	-0.025	0.246	1.597	0.110
	8	0.29	0.299	0.102	0.010	0.099	0.499	2.925	0.003
	9	0.15	0.151	0.031	0.001	0.091	0.212	4.907	0.000
	10	0.46	0.497	0.081	0.007	0.338	0.656	6.131	0.000
	11	0.43	0.460	0.077	0.006	0.31	0.610	5.996	0.000
	12	0.37	0.388	0.080	0.006	0.231	0.546	4.836	0.000
	13	0.32	0.332	0.053	0.003	0.228	0.435	6.275	0.000
	14	0.07	0.070	0.059	0.003	-0.046	0.186	1.188	0.235
Fixed		0.284	0.292	0.015	0.000	0.263	0.322	19.36	0.000
Random		0.322	0.334	0.045	0.002	0.245	0.423	7.395	0.000

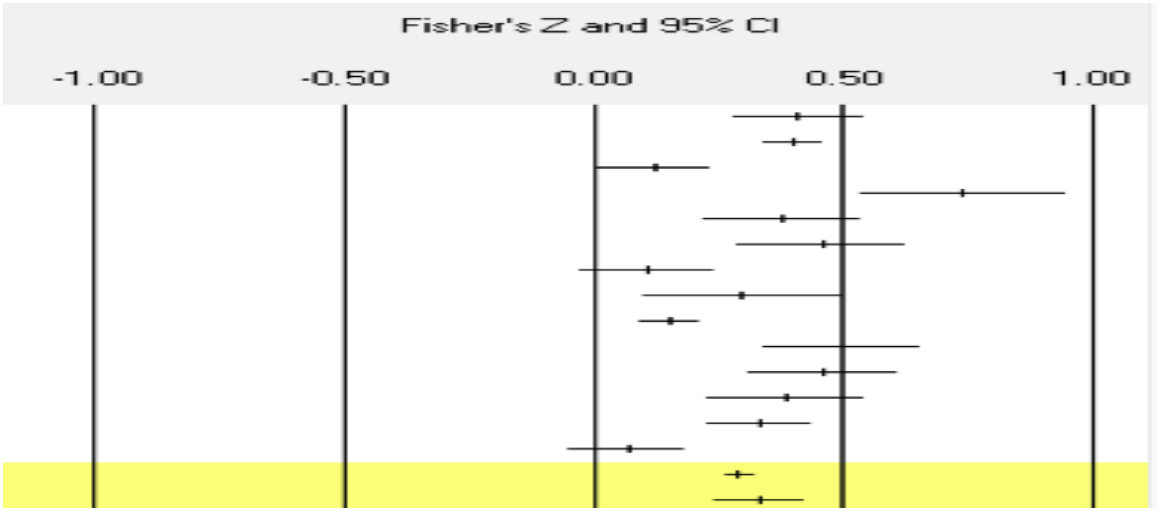

Fig.1 Forest Plot of the Mean effect size of correlation study between TSE and Mastery Goal Orientation

Table 2 showed that calculated result of the mean effect size after all Pearson correlation coefficient values were transformed to Fisher`s Z score under both fixed and random effects models. Standardized mean effect size $r_z = 0.292$ ($r = 284$) and in the random model, $r_z = 0.334$ ($r = 0.322$). This result showed that sampling error only was unable to explain away the variability of the data. Based on this finding, the researcher decided to adopt the random effect model with the test homogeneity resulted in $Q_{(13)} = 101.450$ ($p < 0.001$). Further in Fig.1, despite the mean effect size in both model were almost similar, the "whiskers" of 95% of confidence interval of random model were extended, which showed that this model acknowledged the variability within studies.

Moderator Analysis

Table 3

Moderator analysis of cultural differences US versus non-US studies

Moderator (Country)										
	Effect size and 95% confidence interval							Heterogeneity		
Group	Number std	Point estimate	SE	Variance	Lower Limit	Upper Limit		Q-value	df(Q)	p-value
Fixed effect analysis										
Non-US	4	0.164	0.025	0.001	0.115	0.212		32.977	3	0.000
US	10	0.369	0.019	0.000	0.332	0.407		25.145	9	0.003
							Total within	58.122	12	0.000
							Total between	43.328	1	0.000
Overall	14	0.292	0.015	0.000	0.263	0.322	Overall	101.450	13	0.000
Random effect analysis										
Non-US	4	0.247	0.099	0.010	0.053	0.440				
US	10	0.370	0.035	0.001	0.301	0.439				
							Total between	1.396	1	0.237
Overall	14	0.356	0.033	0.001	0.292	0.421				

As showed in Table 3, 2 different cultural groups were compared (US vs non-US). Under fixed model, $Q_B = 43.328$, $p = 0.0001$ and under the random model, $Q_B = 1.396$, $p = 0.237$. Based on both models, under the fixed model there was a significant difference of cultural difference between both groups. However in the random effect model, there was no significant difference between both groups of cultural differences. This might due to the sampling error and variability within sample size studies that been acknowledged by the random effect model.

Discussion

Based on this study, the correlation between TSE and Mastery Goal approach, under the fixed effect model size $r_z = 0.292$ ($r = 284$) was smaller compare to the random effect model, $r_z = 0.334$ ($r = 0.322$). This might due to the random effect model is based on the null hypothesis that taking into consideration in both subject-level and study-level sampling error (variability) due to different in sample size. In other words, the random effect model acknowledges the variability of weighted the sample size in each study. The finding in the moderator analysis also showed that both models were showed a different significant value of Q and p values. Based on Cohen (1988), any correlation effect size larger that 0.40 is considered as large. In this study it showed that the correlation ranges were 0.284 to 0.322, which it was small effect size correlated between both TSE and Mastery goal approach. Despite the small effect size correlated between both construct, practically the shifted distributions in both construct. It might be useful for the teachers to consider the benefit of emphasizing their self-efficacy belief and creating the mastery approach motivational climate in their classroom lesson.

Second, the finding in this study also showed that there was a significant difference of cultural differences between TSE and Mastery goal approach under the fixed effect model. By considering the small number of studies that have been included in this study, the fixed effect

model was preferred use as the interpretation value due to inaccurate estimation between – study differences (Borenstein et.al, 2010). However, further study is needed to compare the cross-cultural differences in a study due to little is known about the cross-cultural differences between TSE and AG currently.

Conclusions and Recommendations

In conclusion, despite this study is a preliminary study to examine the correlation effect across countries in the meta-analysis research design, the small effect of correlation between construct might be beneficial for teachers to adopt in their teaching style and self-belief. Further research in obtaining more studies to be included is needed to explain the pattern or trend of correlation effect between both constructs. A broader search of article either it is published or unpublished article need to be performed to observe the trend of correlation effect.

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