Vatou, Anastasia; Vatou, Athina

Collective teacher efficacy and job satisfaction. Psychometric properties of the CTE scale

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Collective teacher efficacy and job satisfaction: Psychometric properties of the CTE scale

Anastasia Vatou
Aristotle University of Thessaloniki, Greece

Athina Vatou
Hellenic Open University, Greece

Abstract: Teachers' self-efficacy has widely recognized as a strong contributor to the student achievement and teachers' psychological well-being. A large body of research has focused on individual's self-efficacy beliefs. However, research on collective self-efficacy is sparse. The aim of the present study was to examine the factorial validity of the Collective Teacher Efficacy Scale (CTE) on Greek context and to examine how collective teacher efficacy was related to teacher job satisfaction. The sample consisted of 201 primary school teachers. Confirmatory factor analysis was conducted and showed that Collective Teacher Efficacy Scale had a two-factor structure. The results also indicated that collective teacher efficacy had a positive significant relationship with teacher's job satisfaction. Implications and directions for future research are suggested.

Keywords: collective teacher efficacy, job satisfaction, teachers' beliefs, self-efficacy, factorial validity

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Biographical note: Anastasia Vatou is a PhD candidate in Early Childhood Education at the Aristotle University of Thessaloniki. Her research interests focused on a) the classroom management, b) professional development of early childhood teacher and c) the development of teacher-child relationships. She has participated in international research projects funded by the EU. Athina Vatou received her Bachelor in Early Childhood Education Sciences from Democritus University of Thrace (2014). Also, she has a M.Ed in Special Education for People with Oral and Written Language Difficulties. Her research interests focused on a) special education, b) teacher education, and c) learning disabilities. Corresponding author: Anastasia Vatou (anasvato@nured.auth.gr)

1 INTRODUCTION

Over the past 40 years, greater attention has been given to teacher self-efficacy (TSE) as an important factor underlying teaching and learning. Empirical studies have shown that teacher self-efficacy links positive with students' academic performance, teacher's behavior and practices related to classroom quality, and teachers' psychological well-being, such as personal accomplishment, job satisfaction, and commitment (Aloe, Amo, & Shanahan, 2014; Collie, Shapka, & Perry, 2012; Höltge, Ehm, Hartmann & Hasselhorn, 2017; Viel-Ruma, Houchins, Jolivette, & Benson, 2010). Moreover, teachers with high levels of self-efficacy engage more the parents in the learning process and they tend to be more patient with students who face any type of difficulties (Gibson & Dembo, 1984). Thus the importance of teacher efficacy is well established.

The construct of teachers' self-efficacy is defined as "teachers' beliefs in their own abilities to plan, organize, and carry out activities required to attain given educational goals" (Skaalvik & Skaalvik, 2007: 612). The most common measure to investigate teachers' self-efficacy for general aspects of teaching is the Teacher Sense of Efficacy Scale (Tschannen-Moran & Woolfolk Hoy, 2001; Georgiadis, 2018). However, despite the "trending" of the self-efficacy construct in researchers' interest, little is known about collective teacher efficacy (Tschannen-Moran & Barr, 2004; Skaalvik & Skaalvik, 2019; Viel-Ruma et al., 2010).

Collective teacher efficacy refers to teachers "beliefs about the ability both of the team and of the faculty of teachers at the school to have positive effects on students" (Goddard

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2002: 100). Most of the studies that assessed collective teacher efficacy have focused on how collective teachers' beliefs influence teachers' motivation and well-being (Klassen, Usher, & Bong, 2010; Stephanou & Oikonomou, 2018). To date, though, we know very little about how collective teachers' efficacy impacts on other organizational outcomes such as job satisfaction (Caprara, Barbaranelli, Borgogni, & Steca, 2003; Klassen, 2010).

The purpose of this study was a) to examine the factorial validity of CTE, b) to investigate the profile and characteristics of CTE and c) to support previous findings about relations between collective teacher efficacy and job satisfaction.

2 THEORETICAL FRAMEFORK

Teachers' Collective Efficacy and Teacher Self-Efficacy are conceptually different; the first refers to beliefs about capabilities of the whole teaching faculty, whereas the second construct refers to perceptions about one's own capability as a teacher (Goddard & Goddard, 2001). However, in educational psychology research, there are empirical findings that suggest a strong connection between these two constructs (Goddard & Goddard, 2001; Skaalvik & Skaalvik, 2007). Also, drawing on the Social Cognitive theory (Bandura, 1977), scholars have conceptualized collective teacher efficacy an extension of teacher self-efficacy (Viel-Ruma et al., 2010). Within this framework teachers' collective efficacy is influenced by the same four principal sources of information: mastery experiences, vicarious experiences, verbal persuasion, and physiological and affective states (Bandura, 1977; Tschannen-Moran & Woolfolk Hoy, 2007). The core distinction between the constructs is that for collective teacher efficacy, these sources are experienced at a group level rather (Klassen, Tze, Betts, & Gordon, 2011).

To date, there are various multidimensional or unidimensional instruments that assess the construct of teachers' self-efficacy (e.g., Bandura, 2006; Friedman & Kas, 2003; Ho & Hau, 2014; Skaalvik & Skaalvik, 2007; Siwatu, 2007; Tschannen-Moran & Woolfolk-Hoy, 2001; Nair & George, 2016). The belief system of self-efficacy is not a global trait but a differentiated set of self-beliefs linked to distinct spheres of functioning (Bandura, 2000). In a similar vein, researchers also have developed a variety of measures that assess collective teacher efficacy, mainly as a one-dimensional construct (Goddard & Goddard, 2001; Goddard, Hoy, Woolfolk Hoy, 2000; Skaalvik & Skaalvik, 2007, 2010). This study followed the reasoning of Tschannen-Moran and Barr (2004), in which collective teacher efficacy divided by two dimensions (instructional strategies and student discipline). CTE beliefs may vary according to different types of tasks, students, and other circumstances in schools (Eaton & Christou, 2000; Bandura, 2000; Tschannen-Moran Hoy, & Hoy, 1998; Fu & Kapiki, 2016; Kapiki & Tsakiridou, 2018).

A substantial body of research indicates the significant impact that collective teacher efficacy has on teacher motivation, job satisfaction, teacher burnout, job commitment, student achievement (Goddard et al., 2000; Lyons & Branston, 2006; Klassen et al., 2010; Stephanou & Oikonomou, 2018; Viel-Ruma et al., 2010; Ware & Kitsantis, 2007; Lalagka, 2017). Research has shown that teaching is an occupation in which received job satisfaction is a necessary component of the educational process (Christou, 1999; Viel-Ruma et al., 2010). In this vein, job satisfaction impacts on teacher's creativity, personal efficacy, well-being, school climate and student's performance (Badri, Mohaidat, Ferrandino, & El Mourad, 2013; Caprara et al., 2003; Barron & Watson, 2007; Sigala & Christou, 2006; Klassen et al., 2010; Lent, do Céu Taveira, & Lobo, 2012; Skaalvik & Skaalvik, 2009).

Thus, in this context, the research focuses on exploring the factors that influence teachers' collective efficacy, as a neglected concept.

3 METHODOLOGY AND SAMPLE

Prior to the main study, the researchers informed the school directors about the purpose of o. The teacher's participation was voluntary and anonymous. Principals suggested teachers to participate in study out of working hours. Researchers note to all teachers not to discuss the items. The CTES was administered during April and June in elementary schools.

Participants were recruited through twenty seven elementary schools (grade 1 – 6), which are located in Northern Greece. The sample consisted from two hundred and one teachers. 72 were male and 129 female. The participants' ages varied from 40 to 65 years (*M*age = 51.9, *SD* =4.14) and their experience as teachers ranged from 6 to 43 years with a mean of 16 years.

The Collective Teacher Efficacy Scale (CTES; Tschannen-Moran & Barr, 2004) was used to assess teacher's perceptions about faculty's abilities to promote and influence student achievement. The CTES includes 12 items categorized in two dimensions namely, instructional strategies (6 items e.g. "How much can teachers in your school do to produce meaningful student learning?") and student discipline (6 items e.g. "To what extent can school personnel in your school establish rules and procedures that facilitate learning?"). Responses were recorded on a 4-point Likert-type scale ranging from 1 (nothing) to 5 (a great deal). As Tschannen-Moran and Barr (2004) reported, the CTES has satisfactory internal consistency for the two dimensions (Cronbach's alpha was .96 and .94 for instructional strategies and student discipline, respectively).

Prior to the main study, the CTES was translated into Greek by one of the authors (forward translation). Then, the set of 12 items was conducted a back translation into English by a bilingual scholar. Both of authors compared the original and back-translated versions of the instruments. Finally, minor discrepancies between language versions were found and corrected.

In the next phase, a pilot study was taken to confirm or invalidate the items for the content validity (Valachis et al., 2009; DeVellis, 2017; Boza, 2019). Ten elementary teachers completed the Greek version of the CTES. The internal consistency of the Greek version of CTES was good for instructional strategies (.75) and student discipline (.79).

To measure job satisfaction, Teacher's Satisfaction Inventory (TSI; Gkolia & Koustelios, 2014) was used. The Inventory comprises 20 items regarding perceptions about their

principal (5 items e.g. "My principal understand my problems"), colleagues (5 items e.g. "I have good relationships with my colleagues"), job itself (4 items, e.g. "My job is creative"), students (3 items e.g. "My students respect me") and working conditions (3 items e.g. "The school environment is safe"). Cronbach's alpha for the whole scale was .90, while for the individual dimensions it ranged from .78 to .92 (Gkolia, 2014).

In order to examine the psychometric properties of CTES in the Greek context, Exploratory Factor Analysis was conducted. Based on the proposed structure of CTES, a two factors model was postulated and tested.

EFA was employed to examine the number of reliable factors that should be retained (Christou, 2006; Lance, Butts, & Michels, 2006; Christou et al., 2008). To obtain the number of components there are several existing criteria such as Kaiser's rule, scree-plot, Minimum-Average-Partial-test (Map-test), there is no consensus on the appropriate criteria to use (Hayton, Allen, & Scarpello, 2004). However, Bartlett's Test of Sphericity and the Kaiser-Meyer-Olkin (KMO) were used to evaluate the strength of the relationships among the 12 items. Moreover, Principal axis factor analysis was employed. Remaining factors are those whose eigenvalues are greater than the mean eigenvalues from the random parallel datasets (Baglin, 2014).

On a further level, descriptive statistics were analyzed to assess the characteristics of CTES in the Greek context. Mean scores were used to estimate the degree of collective teacher's efficacy. Additionally, correlations between collective teacher efficacy and job satisfaction were calculated with Pearson r. All the statistical analyses were performed with the IBM SPSS v.25 statistical software (IBM Corp, 2017).

4 RESULTS AND DISCUSSION

Exploratory factor analysis (EFA) was employed for assessing the psychometric properties of the CTES when it is applied to the Greek educational setting Results of the initial exploratory factor analysis in the 12 items showed two primary factors (*KMO* = .703, *Bartlett's test* = 802.56, *df* = 55, $p < .000$). However, item 11 "Our school can enhance student's creativity" has low loading (below .35) and was removed. EFA was performed again and results showed that all items displayed statistically significant loadings, ranging from .51 to .79. The first factor (Instructional Strategies) consist of 6 items and second factor (Student Discipline) involves 5 items. The two factors corresponded fully to the dimensions that were previously found for the CTES (Tschannen-Moran & Barr, 2004). (Table 1).

This study was designed to examine the applicability of the CTES in a cultural context different from that Western Countries. Results have shown that the underlying structure of the CTES was replicated in a sample of Greek elementary teachers and that a 11-item version can be considered as a valid and reliable instrument to measure two dimensions of collective teacher efficacy in the Greek context.

Table 1. Factor Analysis Results on the Greek Version of the CTESS

Items	Factor 1 Instructional Strategies	Factor 2 Student Discipline
ED_8	,79	
ED_4	,73	
ED_7	,72	
ED_3	,71	
ED_10	,69	
ED_12	,51	
EI_6		,79
EI_5		,77
EI_9		,66
EI_2		,63
EI_1		,59
ED_8	,79	

Note: Loadings below .35 are not presented.

In order to investigate the profile and characteristics of CTE in Greek context descriptive statistics were analyzed. The results showed (Table 2) that teachers sense of collective efficacy rated higher for Instructional Strategies (M. = 4, *S.D.* = .44) than Student Discipline Strategies (M. = 3.7, *S.D.* = .44). Correlational analysis revealed a moderate significant positive relationship between the collective teacher efficacy instruction subscale and student discipline subscale (r =.30, p< .00). Similar pattern of associations based on collective teacher efficacy was reported in previous studies (Tschannen-Moran & Barr, 2004; Klassen et al., 2010). Even more, few empirical investigations have been conducted to examine the teachers' level of collective efficacy (Arslan, 2017; Stephanou & Oikonomou, 2018). One the other hand, there are several studies that investigate the outcomes of CTE to student achievement (Berebitsky & Salloum, 2017; Eells, 2011).

Table 2. Descriptive Statistics and Intercorrelation Matrix of the Two CTES Subscales

	M (SD)	1 Instructional Strategies	2 Student Discipline
1. Instructional Strategies	4 (.44)	1	
2. Student Discipline	3.7 (.44)	.30*	1

Note: *p<.00

In addition, significant relationships were found between the collective teacher efficacy instruction subscale and all dimensions of job satisfaction. Table 3 presented the bivariate correlations among the seven variables of the study. Correlational analysis showed only one moderate significant positive relationship between the instructional strategies subscale of collective teacher efficacy and principal subscale of job satisfaction (r =.29, p< .00). On the other hand, the student discipline strategies subscale had moderate significant positive relationship with all the dimensions of job satisfaction.

Table 3. Intercorrelation Matrix of the CTES Subscales and Job Satisfaction Subscales

	IS	SD	P	C	JI	S	WC
IS	1						
SD	,29**	1					
P	-,01	,35**	1				
C	,42**	,25**	,42**	1			
JI	,02	,27**	,46**	,35**	1		
S	,03	,20**	,37**	,21**	,61**		
WC	,04	,22**	,42**	,20**	,40**	,37**	1

Note: Instructional Strategies (IS), Student Discipline (SD), Principal (P), Colleagues (C), Job itself (JI), Students (S), Working Conditions (WC).

Finally, the results from the study clarify the relation between collective teacher efficacy and job satisfaction in Greek educational setting. Studies of collective teacher efficacy conducted by Klassen et al. (2010) and Viel-Ruma et al. (2010) showed similar patterns.

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