Education and Science

Vol 43 (2018) No 194 61-80

Science Teachers' Motivation and Job Satisfaction in Relation to Perceived School Context *

Dekant Kıran [1], Semra Sungur [2]

Abstract

The present study aimed to examine the relationships among science teachers' motivation, job satisfaction, and perceived school environment variables. Teacher motivation was examined in terms of teacher self-efficacy, collective self-efficacy, and instructional goal orientations (i.e. mastery and performance). Perceived school environment variables included perceived discipline problems, supervisory support, relations with colleagues, relations with parents, and school goal structures (i.e. mastery and performance). A total of 134 science teachers participated in the study and they were administered self-report instruments. Data were analyzed through descriptive statistics and path analysis. Results indicated that perceived school mastery goal structure, relations with parents, and discipline problems emerged as important variables in science teachers' motivation and job satisfaction. While relationships with parents and school mastery goals predicted science teachers' motivation and job satisfaction positively, discipline problems predicted negatively. Supervisory support and relations with colleagues associated positively with job satisfaction. Perceived discipline problems and school goal structures (both mastery and performance) were influential on collective efficacy. Moreover, science teachers' performance instructional approaches were only predicted by school performance goals. Results are discussed.

Keywords

Job satisfaction
Relations with parents
School context
School goal structures
Teacher motivation

Article Info

Received: 07.11.2017
Accepted: 02.26.2018
Online Published: 04.10.2018

DOI: 10.15390/EB.2018.7409

* This article is derived from Dekant Kıran's PhD dissertation entitled "Multilevel investigations of student motivation, engagement, and achievement in science in relation to teacher related variables", conducted under the supervision of Semra Sungur and Sündüs Yerdelen.

[1] Gaziosmanpaşa University, Faculty of Education, Department of Mathematics and Science Education, Türkiye, dekant.kiran@gop.edu.tr

[2] Middle East Technical University, Faculty of Education, Department of Mathematics and Science Education, Turkey, ssungur@metu.edu.tr

Introduction

Motivation research has mainly been concentrated on students. For this reason, researchers in this field have criticized themselves concerning the little number of studies that investigate teacher motivation compared to the huge number of student motivation research (Butler, 2007, 2012; Mertler, 2016; Retelsdorf, Butler, Streblow, & Schiefele, 2010; Retelsdorf & Günther, 2011). Butler (2007) acknowledged that teacher motivation is a valuable research area on its own in addition to its relationships with student outcomes. It is fortunate that motivational researchers have transferred the knowledge base from educational theories of motivation to teacher motivation research. Thus, the number of studies of teacher motivation increased quickly (Retelsdorf & Günther, 2011). Most recent theories transferred to teacher motivation research included social-cognitive theory (i.e. self-efficacy and collective efficacy) (Goddard, 2001; Klassen, Tze, Betts, & Gordon, 2011; Tschannen-Moran, Hoy, & Hoy, 1998), expectancy-value theory (Watt & Richardson, 2007), and goal orientation theory (Butler, 2007, 2012). In the present study, social cognitive theory was used as the theoretical framework and teacher motivation was conceptualized as personal teaching efficacy, collective efficacy, and instructional goal orientations in teaching. Accordingly, constructs of teacher motivation investigated in the present study included teachers' self-efficacy (efficacy for student engagement, efficacy for instructional strategies, and efficacy for classroom management as sub dimensions), collective efficacy (group competence and task analysis as sub dimensions), and teachers' instructional goal orientations (mastery instructional goals and performance instructional goals).

In educational contexts, students are not the only ones whom are influenced by self-beliefs. Fives and Buehl (2016) stated that teachers are also under the influence of self-beliefs, especially self-efficacy beliefs which are demonstrated to play an important role in teachers' attitudes toward profession, their behaviors to students, students' academic achievement, and students' motivation (Klassen & Chiu, 2010). Teachers' self-efficacy beliefs are the beliefs teachers' possess about their skills to implement effective teaching practices (Caprara, Barbaranelli, Steca, & Malone, 2006; Klassen & Chiu, 2010). Teachers' self-efficacy beliefs were found to exert influence on students' learning and achievement in various ways. For example, research indicated that teachers with high teaching self-efficacy beliefs practice innovative teaching methods, use effective classroom management strategies, use autonomy-fostering teaching methods (Cousins & Walker, 1995; Guskey, 1988; Martin, Sass, & Schmitt, 2012), differentiate teaching strategies to address needs of individual students (Allinder, 1994; Jordan, Kircaali-Iftar, & Diamond, 1993; Thoonen, Sleegers, Oort, Peetsma, & Geijsel, 2011; Martin et al., 2012), handle discipline problems arising in the classroom (Chacón, 2005; Korevaar, 1990), and maintain student concentration on a learning task longer (Podell & Soodak, 1993). Moreover, these teachers more likely practice activity-based and student centered learning strategies (Czerniak & Schriver, 1994; Enochs, Scharmann, & Riggs, 1995), and their classroom management strategies depend more on humanistic approaches (Woolfolk & Hoy, 1990). Furthermore, Geijsel, Sleegers, Stoel, and Krüger (2009) found that teachers with high self-efficacy were eager to participating in learning activities to keep themselves up to date in the profession and practicing new teaching approaches to improve their instruction. Teachers with high self-efficacy may also positively influence students' efficacy, motivation for engagement in learning tasks, and effort regulation when confronting with low success and challenging tasks (Ross, 1998; Ross, Hogaboam-Gray, & Hannay, 2001). Moreover, research also indicated that students' of teachers with high self-efficacy were more likely to be successful (Caprara et al., 2006; Klassen & Tze, 2014; Klassen et al., 2011; Ross, 1992).

The relations between teachers and students are not only influenced by teachers' self-efficacy beliefs, but also there are other psychosocial factors including professional aspirations, teachers' job satisfaction, and collaborative relations with colleagues and students' parents (Caprara et al., 2006). Bandura (1997) stated that success of a social system, which grounds heavily on the cooperative working skills of its workers, may be influenced critically by the groups' collective efficacy beliefs. According to Bandura (1997) people generally work with other people and thus they have beliefs regarding the collective working capabilities of the people they work together. These beliefs are conceptualized as

collective efficacy beliefs and defined by Caprara, Barbaranelli, Borgogni, Petitta, and Rubinacci (2003) as the "judgments that people make about a social system (family, team, organization, or community) and about its level of competence and effectiveness in specific domains of action" (p. 821). For educational contexts, schools are social environments in which teachers have the opportunity to work collaboratively. Therefore, it is not uncommon to expect teachers to have collective efficacy beliefs regarding other teachers with whom they work together. It is acknowledged by the social cognitive theory that teachers' personal efficacy beliefs and collective efficacy beliefs have influence on their behaviors. Further, while self-efficacy beliefs are personal, collective efficacy beliefs differ from self-efficacy in that they are connected to school and are a characteristic of the school (Tschannen-Moran & Barr, 2004). Similar to teachers' personal self-efficacy beliefs, teachers' collective efficacy beliefs were found to have positive correlations with students' academic achievement (Goddard, 2001; Goddard, Goddard, Sook Kim, & Miller, 2015; Moolenaar, Sleegers, & Daly, 2012; Ross, Hogaboam-Gray, & Gray, 2004). Goddard and Goddard (2001) asserted that collective teacher efficacy may influence student academic achievement indirectly by creating school norms and sanctions that enhance students' tendency to persist on academic tasks.

Motivation literature has documented that as students' have goals for their academic achievement, teachers also have goals regarding their instruction (Ames, 1992; Anderman & Maehr, 1994) Teachers' instructional goals, shaped by their instructional practices, were conceptualized as teachers' mastery instructional approaches and teachers' performance instructional approaches (Ciani, Summers, & Easter, 2008; Deemer, 2004; Ryan, Gheen, & Midgley, 1998). Accordingly, teachers' mastery approaches to instruction impose deep understanding of the subject matter, valuing learning for its merits and personal improvement. Moreover, teachers who are mastery oriented in their instruction place much importance on students' desire to undertake challenging learning tasks and for these teachers exerting effort is more important than exam marks (Maehr & Zusho, 2009). On the other hand, teachers' performance approaches to instruction emphasize performance oriented instruction, competition and making comparisons among students. Teachers who practice performance oriented instruction generally make normative comparisons concerning students' abilities and grades. Additionally, students are encouraged to compete with each other and are recognized for their superior performances in normative graded tests (Anderman & Patrick, 2012). Previous research on teachers' instructional goals suggested that classroom goal structures were shaped by teachers' instructional approaches which influence various student outcomes such as motivation, engagement, and academic achievement (Ames, 1992; Maehr & Midgley, 1991; Meece, Anderman, & Anderman, 2006; Schiefele & Schaffner, 2015; Vedder-Weiss & Fortus, 2018).

Teachers' job performance is not only influenced by their motivation but also by their satisfaction from teaching profession. Job satisfaction is defined as the positive or negative sense of fulfillment about one's work (Skaalvik & Skaalvik, 2010). For teachers, job satisfaction is the negative or positive feelings they possess for teaching. According to Caprara et al. (2003) being satisfied with the job is a "decisive element". Such a decisive element is important in teachers' attitudes towards and performance on teaching. Research indicated that teachers who feel dissatisfaction with teaching demonstrate low levels of feeling of belonging to the profession and these teachers tend to have motives towards leaving the profession (Evans, 2001; Ingersoll, 2001). Moreover, Cockburn and Haydn (2004) stated that school climate, routine school day activities such as teaching, learning, and interaction with students (i.e. working in activities with children, observing students' academic progress) and supportive colleagues are among the sources of teachers' job satisfaction According to Klusmann, Kunter, Trautwein, Lüdtke, and Baumert (2008), highly satisfied teachers make every effort to motivate students and strive to create learning-supported classroom environments for the good of students. Additionally, teachers who are highly satisfied from their job are more successful in handling classroom distracters, allocating proper time for classes, organizing lesson plans to keep pace to include a wide variety of student characteristics, and encouraging students for personal improvement (Klusmann et al., 2008). Teacher job satisfaction also has close relationships with teacher motivation. According to Caprara et al. (2006) major source of self-efficacy is mastery experiences and these mastery experiences

are derived mainly from past accomplishments. These accomplishments provide internal and external rewards which may lead to high levels of teacher job satisfaction. Moreover, a strong belief regarding the capabilities of the group in which a teacher resides would help to raise teacher job satisfaction. Accordingly, previous research indicated that teachers' job satisfaction associated positively with self-regulation (Klusmann et al., 2008), self-efficacy (Caprara et al., 2006; Klassen & Chiu, 2010; Skaalvik & Skaalvik, 2010), and collective efficacy (Klassen et al., 2011). In Klusman et al. (2008) study, it was revealed that teachers possessing high levels of self-regulation had highest job satisfaction. In another study Caprara et al. (2006) found that teachers' personal self-efficacy and collective efficacy were predictors of teacher job satisfaction.

Teacher Motivation and Job Satisfaction in relation to School Environment

It is important to note that, the components of school social environment exert influence on the teacher job satisfaction and motivation. According to relevant research, supportive organizational climate and social support from the colleagues, parents of the students, and school administration are all positively associated with teachers' motivation and job satisfaction (Day, Sammons, Stobard, Kington, & Gu, 2007; Scheopner, 2010; Skaalvik & Skaalvik, 2009, 2011). In fact, related research showed that encouraging school organizational structure and support from the school principal and other teachers bolster teacher motivation and job satisfaction (Scheopner, 2010). Another prominent factor contributing to teacher job satisfaction is autonomy. Previous research provided evidence that feeling of autonomy is closely related to job satisfaction for human service workers who have high degrees in education (Koustelios, Karabatzaki, & Kouisteliou, 2004). On the other hand, there are some other factors stemming from the school social structure that causes teachers' job satisfaction to decrease. For instance, time pressure is defined as the inadequate time for rest caused by the excessive workload (Skaalvik & Skaalvik, 2011) and it is a prominent factor that causes decreases in teacher overall satisfaction from teaching profession (Scott, Stone, & Dinham, 2001).

As classrooms are characterized by goal structures which are emphasized by the teachers, schools also adopt goal structures that are created by the whole school community. These goals are emphasized by the schools and perceived by the teachers. Similar to other school environment variables, school goals are perceived by the teachers and these goals are effective in teachers' motivation. Schools possess mastery and performance goal structures and these goals are transferred to students through perception of teachers. Maehr and Midgley (1991) stated that middle schools reflect school goals via educational policies, procedures and teachers' teaching practices. Mastery or task goals refer to schools focusing on personal progress, mastering the learning material, deep understanding, and intellectual development. Performance or ability goals involve normative assessments, competitions, and social comparisons among students. Generally, while mastery or task goal emphasis in the school associates positively with achievement related outcomes, performance or ability goal emphasis in the school associates negatively with achievement related outcomes Available literature on teacher beliefs and perceptions of school environment is rare in terms of the influence of school goal structures on teachers' motivation. Therefore, in line with the previous research, it is expected in the current study that school mastery goals associate positively with teachers' mastery instructional approaches, teachers' self-efficacy, and teachers' collective efficacy. Additionally, school performance goal structures are expected to associate positively with teachers' performance instructional approaches. In the current study school goal structures (mastery and performance), teacher-parent relationships, relationships with colleagues, supervisory support, classroom discipline problems, time pressure, and autonomy were identified as school environment variables to be investigated in relation to teachers' job satisfaction and motivation. These school environment variables were all expected to correlate positively (except classroom discipline problems) with teacher job satisfaction and motivation. Due to the negative structure of classroom discipline problems, negative associations are expected for the relationships between classroom discipline problems and teachers' job satisfaction and motivation.

Recently, Skaalvik and Skaalvik (2009, 2010, 2011) consistently revealed how influential were the teachers' perceptions of school context variables on their motivation and job satisfaction. These

studies revealed that the influence of school social environment and teachers' relationships with students' parents were salient predictors of teachers' job related motivation. However, the number of studies examining school context variables in relation with teacher job satisfaction and teacher motivation are limited. Thus, there is need for more studies. Moreover, studies conducted in Turkey about teacher motivation have not yet included school context variables. For instance, Gürçay, Yılmaz, and Ekici (2009) examined predictors of Turkish teachers' collective efficacy. They included teachers' self-efficacy, self-regulation, burnout, gender, and teaching experience as the predictors of Turkish teachers' collective efficacy without focusing on a specific domain. School context variables were not the variables of interest in the study. In addition, Kurt (2009) examined the relationships among transformational and transactional leadership styles of primary school principals and self-efficacy and collective efficacy of Turkish teachers. Kurt's study, also did not include the school context variables which were aimed to be investigated in the current study. Moreover, science class necessitates laboratory applications. Science teachers may need to be in contact with school administration more than other teachers in terms of obtaining laboratory materials, use of common spaces (such as laboratory and science class), use of materials, and preparation for science activities. School goal structure may also shape these processes. Thus, science teachers' motivation and job satisfaction may be influenced by all these science-class specific needs. Thus, considering relevant literature, the present study has potential to have implications for policy makers and school administrators with regard to structuring school environments conducive to science teachers' motivation and job satisfaction. There can also be implications for science teacher education programs to improve pre-service science teachers' motivation and provide them with opportunities to develop skills to maintain their motivation in their profession. Figure 1 illustrates the conceptual model of the proposed relationships.

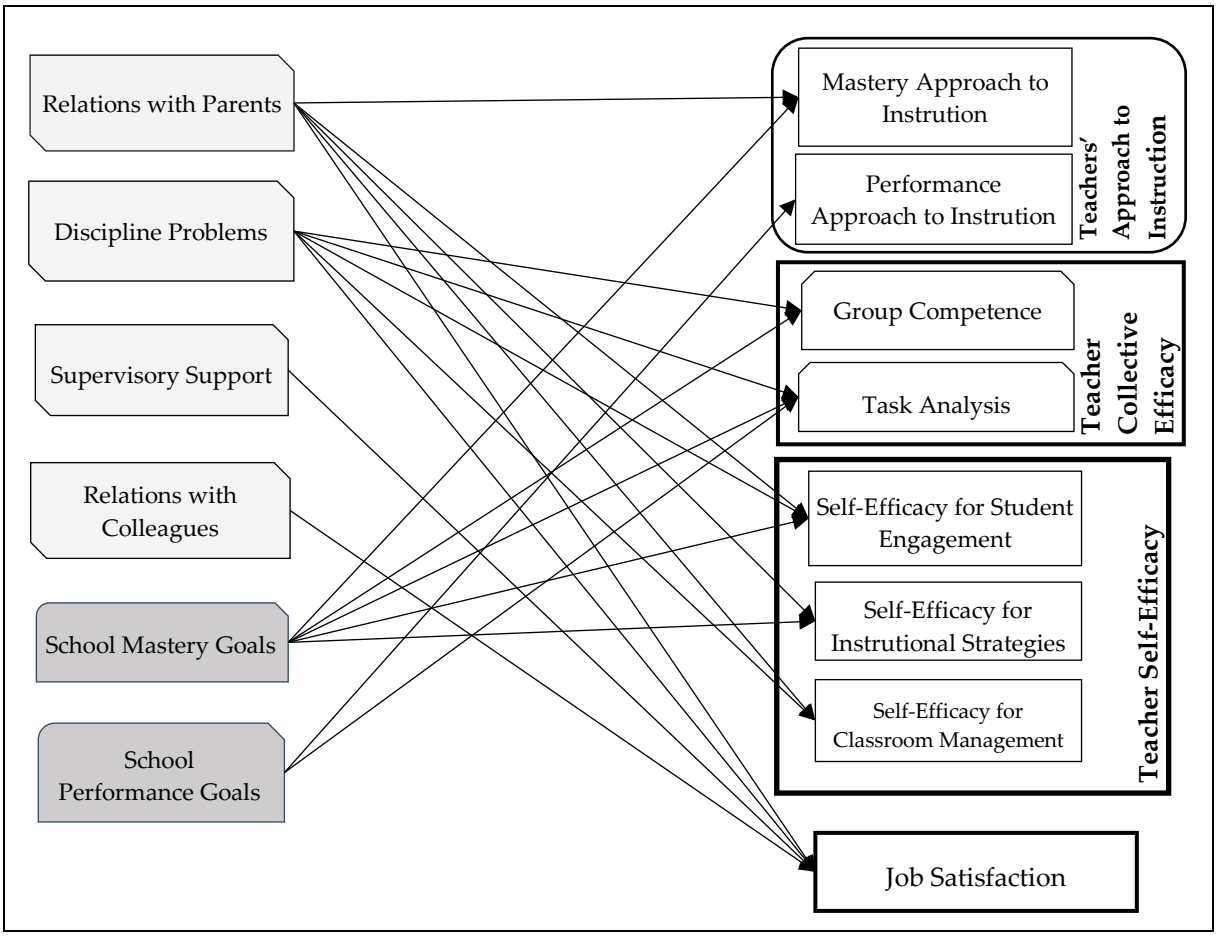

Figure 1. The Proposed Model For The Relationships Among School Context Variables and Teacher Motivation and Job Satisfaction Variables

Method

Participants and Data Collection

Data were collected in spring of 2013-2014 academic year from science teachers working in public schools of two large districts of Ankara. Fraenkel and Wallen (2006) asserted that there is no clear cut off value for a representative sample size. It depends on the budget, effort, and energy of the researcher. For the availability of the financial aid and excessive researcher effort, a potentially representative sample was selected. Cluster random sampling integrated with convenience sampling was used as the method of sample selection. Due to the limitations regarding cost, time, and travelling capabilities, the two districts of Ankara were chosen conveniently. The schools situated in two districts were considered as the clusters and were selected randomly. The central districts of Ankara has 341 and the selected two large districts has 88 public middle schools. In these two districts a total of 60 schools were visited randomly and 134 science teachers were invited randomly to participate in the study. Instruments were delivered to the teachers by the first author and teachers were asked to participate voluntarily. The participant teachers were told that the data would be kept confidential. The instruments did not include questions that might reveal participants' identification.

A total of 134 science teachers (98 female, 34 male, and 2 gender not provided) participated in the current study. All teachers were from public middle schools. They ranged in age from 24 to 59 years with a mean of M = 38.13 (SD = 10.00). Their teaching experience ranged from 1 to 40 years with a mean of M = 14.38 (SD = 9.74). The number of students in their classes was in the range of 20 to 45 (M = 31.44, SD = 4.87). The participant teachers had weekly 16 to 30 teaching class hours (M = 23.51, SD = 3.93). Approximately three-quarter of participant teachers (74.6 %) were graduates of college of education and of these teachers, 61.2 % of them were graduates of science education program. Majority of the participants hold bachelor degrees (81.3 %) and relatively a few of them had graduate degrees (11.9 %).

Instruments

Teachers' Sense of Efficacy Scale (TSES)

Science teachers' science teaching self-efficacy beliefs were measured by the 12-item Teachers' Sense of Efficacy Scale. The instrument was originally developed by Tschannen-Moran and Hoy (2001) and translated and adapted into Turkish by Çapa, Çakıroğlu, and Sarıkaya (2005). It is a 9 point Likert type scale ranging from "1 = nothing" to "9 = a great deal". The instrument consists of three sub-scales namely, self-efficacy for student engagement, self-efficacy for instructional strategies, and self-efficacy for classroom management.

In the present study, in order to validate the three-factor structure of the scale, a confirmatory factor analysis (CFA) was conducted. Results indicated a good model fit to the data (RMSEA = .07, CFI = .98, NFI = .95, SRMR = .06). For RMSEA values up to .08 represented close-to-perfect fit and values above .10 mediocre fit; for CFI and NFI values above .90 represented a good fit, and for SRMR values close to and below .08 represented acceptable fit (MacCallum, Browne, & Sugawara, 1996; Meyers, Gamst, & Guarino, 2006). The alpha coefficient for the sub scales were found as .79 for student engagement, .80 for instructional strategies, and .87 for classroom management.

Teachers' Approach to Instruction Scale (TAIS)

Science teachers' approaches to instruction were measured by the teachers' scales part of the Patterns of Adaptive Learning Survey (PALS). The PALS was developed by a group of researchers from the University of Michigan (Midgley et al., 2000) on a 5-point Likert scale ranging from 1 = "Strongly disagree" to 3 = "Somewhat agree" to 5 = "Strongly agree". The instrument was translated and adapted into Turkish by the authors. Teachers' instructional approaches were measured by a total of 9 items in two sub-scales namely, mastery approaches to instruction (n = 4 items) and performance approaches to instruction (n = 5 items). The CFA results obtained in the present study, supported 2-factor structure (RMSEA = .09, CFI = .93, SRMR = .08, and NFI = .90) (see MacCallum et al., 1996; Meyers et al., 2006). The reliability coefficients for the mastery instructional approach and performance instructional approach was .71 and .73, respectively.

Teachers' Collective Efficacy Scale (TCES)

Teacher Collective Efficacy Scale (TCES) was designed to evaluate teachers' collective efficacy beliefs in a school environment. The TCES was originally developed by Goddard, Hoy, and Hoy (2000) and translated and adapted into Turkish by the authors. It is a Likert type scale ranging from "6 = strongly agree" to "1 = strongly disagree" and consisted of 21 items which represented a single factor structure. However, the original version included two elements which are "analysis of teaching task" and "assessment of teaching competence as a group". Task analysis element has 8 items (4 of them positively worded and 4 of them negatively worded) and group competence has 13 items (7 of them positively worded and 6 of them negatively worded).

In the present study, the CFA results supported 2-factor structure of the TCES (RMSEA = .10, NFI = .90, CFI = .94, SRMR = .09) (see MacCallum et al., 1996; Meyers et al., 2006). The reliability coefficients for group competence and task analysis were .87 and .80, respectively.

Teachers' Job Satisfaction Scale (TJSS)

Teachers' job satisfaction was measured by a four-item scale, which was originally developed by Skaalvik and Skaalvik (2011) and translated and adapted into Turkish by the authors. It was on a six point Likert type ranging from "completely disagree" (1) to "completely agree" (6). In this study, CFA results yielded a reasonable model fit for the TJSS (RMSEA = .06, CFI = .99, SRMR = .04 and NFI = .98) (see MacCallum et al., 1996; Meyers et al., 2006). The reliability coefficients for the teachers' job satisfaction scale was .80.

Perceived School Context Scale (PSCS)

In this study, teachers' perceived school context was measured by Perceived School Context Scale (PSCS). This instrument was developed by Skaalvik and Skaalvik (2010, 2011) and translated and adapted into Turkish by the authors. It is a six point Likert type scale ranging from "6 = True" to "1 = False". It was developed in five dimensions containing discipline problems and inappropriate student behavior (discipline), teachers' feeling of pressure of time due to a busy schedule (time pressure), parents' trust and decent relationship with the teachers (parents), teachers' feeling of freedom in deciding teaching content and decisions about the subject matter to be taught (autonomy), and support to the teacher provided by the school administration in terms of emotional and cognitive help in educational matters (supervisory support). Each dimension was measured by three items. In addition, in the current study, Relations with Colleagues Scale (3 items) developed by Skaalvik and Skaalvik (2011) was used to assess science teachers relations with their colleagues as part of perceived school context.

In the current study, the 18 item PSCS with 6 sub-scales (discipline, time pressure, parents, autonomy, supervisory support, and relations with colleagues) was subjected to confirmatory factor analysis. The CFA results suggested an acceptable model fit to the data (RMSEA = .05, CFI = .96, SRMR = .08, and NFI = .90) (see MacCallum et al., 1996; Meyers et al., 2006).

Examination of reliability coefficients, on the other hand, showed that time pressure and autonomy dimensions of PSCS had low Cronbach's alpha reliability coefficients: .50 and .48, respectively. Therefore, these two sub scales were not included in the path analysis. The reliability coefficients for the remaining sub-scales were .81 for discipline, .83 for relations with parents, .72 for supervisory support, and .79 for relations with colleagues.

School Goal Structure Scale (SGSS)

Science teachers' perceptions of the school goal structure was measured by the teachers' scales part of the Patterns of Adaptive Learning Survey (PALS) (Midgley et al., 2000). SGSS, which is one of the sub scales of PALS, was developed on a five point Likert type scale ranging from "1 = "Strongly disagree" to 3 = "Somewhat agree" to 5 = "Strongly agree". The instrument was translated and adapted into Turkish by the authors. It consists of two sub-scales namely, mastery school goal structure (n =7 items) and performance school goal structure (n =6 items).

In this study, CFA results suggested a reasonable model fit (RMSEA = .10, CFI = .93, SRMR = .07, and NFI = .90) (see MacCallum et al., 1996; Meyers et al., 2006). The reliability coefficients for the subscales were .84 for school mastery goals and .74 for school performance goals.

Results

Preliminary analysis, which were missing data analysis, normality, and linearity tests, were performed before conducting further analysis. Results posed no threat for further analyses and path analysis was conducted.

Descriptive Statistics

As shown in Table 1, participant teachers appeared to perceive moderate level of disciplinary problems (M = 3.67, SD = 1.35) in their schools. Their relations with parents (M = 4.36, SD = 1.05) and colleagues (M = 4.55, SD = 1.04) appeared to be at high levels. Similarly, they appeared to have high job satisfaction with a mean of M = 4.81(SD =1.05) on a 6-point scale. Concerning perceived school goal structures and instructional goals, the mean scores suggest that the level of mastery (M = 3.74, SD = .72) and performance goals (M = 3.56, SD = .70) emphasized by school and teacher instructional practices as reported by participant teachers seemed to be comparable. Results also revealed that science teachers have high levels of self-efficacy for student engagement (M = 6.69, SD = 1.11), instructional strategies (M = 7.34, SD = .99), and classroom management (M = 7.06, SD = 1.12). However, collective efficacy for task analysis appears to be low (M = 2.63, SD = 1.11).

Table 1. Descriptive Statistics

Variables			**M**	**SD**	**Min.**	**Max.**
School Environment	School Context	Time Pressure	3.70	1.14	1.00	6.00
		Autonomy	4.53	1.06	2.33	6.00
		Discipline Problems	3.67	1.35	1.00	6.00
		Supervisory Support	4.01	1.16	1.00	6.00
		Relations with Parents	4.36	1.05	1.00	6.00
		Relations with Colleagues	4.55	1.04	1.67	6.00
	School Goals	School Mastery Goals	3.74	.72	1.86	5.00
		School Performance Goals	3.56	.70	1.60	5.00
Teacher Motivation	Job satisfaction	Job Satisfaction	4.81	1.05	1.67	6.00
	Goals	Mastery Approaches to Instruction	3.97	.67	2.00	5.00
		Performance Approaches to Instruction	3.87	.79	1.75	5.00
	Self-Efficacy	Teacher Self-Efficacy - Student Engagement	6.69	1.11	4.25	9.00
		Teacher Self-Efficacy – Instructional Strategy	7.34	.99	5.00	9.00
		Teacher Self-Efficacy – Classroom Management	7.06	1.12	4.25	9.00
	Collective Efficacy	Teacher Collective Efficacy – Group Competence	4.74	.80	2.60	6.00
		Teacher Collective Efficacy – Task Analysis	2.63	1.11	1.00	6.00

Path Analysis

Path analysis was conducted to examine teacher motivation and job satisfaction in relation to perceived school environment. The specified path model was tested using LISREL 8.80 statistical package program and the fit indices suggested an acceptable fit to the model (RMSEA = .07, CFI = .98, SRMR = .04, and NFI = .96) (see MacCallum et al., 1996; Meyers et al., 2006). The standardized path coefficients, standard error of estimates and associated t-values are presented in Table 2.

In the path model, science teachers' relations with parents, discipline problems, supervisory support, and mastery and performance goal structure of the school variables accounted for 23 % of the variance in their mastery approaches to instruction. More specifically, results suggested that relations with parents (β=.21) and school mastery goals structure (β=.30) significantly and positively associated with teachers' mastery approaches to instruction. These results implied that science teachers having positive relationships with parents and perceiving their school's goal structure as mastery oriented were

likely adopt mastery approaches to their instruction. For performance approaches to instruction, supervisory support, school mastery goals and school performance goals explained 34 % of the variance. Only one positive and significant predictor of the teachers' performance approaches to instruction was school performance goals (β=.64) implying that when science teachers perceive their schools as emphasizing performance oriented goals, they tend to implement performance approaches in their science instruction.

For the group competence dimension of teachers' collective efficacy, results demonstrated that 39 % of the variance in group competence was explained by its relations with parents, discipline problems, supervisory support, relations with colleagues, school mastery goals, and school performance goals. In terms of significant relationships, results revealed that group competence was predicted by school mastery goals (β=.62) significantly and positively. Discipline problems, on the other hand, negatively and significantly predicted (β=-.15) teachers' belief in their abilities in teaching as a group. This finding suggested that, when schools communicate mastery goals, teachers' beliefs in their competence as a group are likely to increase. Additionally, as science teachers perceive discipline problems at lower levels, their beliefs in their teaching capability as a group tend to enhance.

Concerning the second dimension of teachers' collective efficacy, 33 % of the variance in task analysis was explained by teachers' relations with students' parents, discipline problems, supervisory support, school mastery and performance goals. While school mastery (β=.20) and performance (β=.23) goals associate with task analysis significantly and positively, discipline problems (β=-.36) associate negatively. This is to say that, while in school where mastery and performance goals are emphasized, teachers' belief in their collective efficacy to analyze teaching task increases. As expected, discipline problems appear to diminish teachers' collective belief in their ability to analyze teaching tasks.

With regard to teachers' self-efficacy beliefs dimensions, science teachers' relations with students' parents, discipline problems, supervisory support, school mastery and performance goals explained 39 % of the variance in teachers' efficacy for student engagement. While relations with parents (β=.37) and school mastery goals (β=.32) associate significantly and positively with teachers' efficacy for student engagement, discipline problems associate significantly and negatively (β=-.19). These findings suggested that teachers' beliefs in their capability to engage students in science classes are likely to be enhanced in schools emphasizing mastery goals. Likewise, stronger teacher-parent relationships appear to increase teachers' belief in their ability to engage students to science class. On the other hand, experiencing discipline problems in science classes are found to decrease teachers' belief in their ability to engage students in science classes.

Table 2. Path Coefficients For Direct Effects

Effect	**Direct Effects**	**Standard Error**	***t***	**R^2**
On Mastery Approaches to Instruction				
of Relations with Parents	.21*	.06	2.46	
of Discipline Problems	.14	.04	-1.68	
of Supervisory Support	.09	.05	1.05	.23
of School Mastery Goals	.30*	.09	2.94	
Of School Performance Goals	-.01	.10	-.06	
On Performance Approaches to Instruction				
of Supervisory Support	.04	.05	.47	
of School Mastery Goals	-.13	.10	-1.44	.34
of School Performance Goals	.64*	.10	7.07	

Table 2. Continued

Effect	Direct Effects	Standard Error	*t*	R^2
On Group Competence				
of Relations with Parents	.04	.06	.51	
of Discipline Problems	-.15*	.04	-2.00	
of Supervisory Support	.10	.05	-1.26	.39
of Relations with Colleagues	.11	.06	1.46	
of School Mastery Goals	.62*	.10	6.62	
of School Performance Goals	-.12	.10	-1.31	
On Task Analysis				
of Relations with Parents	.12	.09	1.45	
of Discipline Problems	-.36*	.06	-4.63	
of Supervisory Support	.02	.07	.25	.33
of School Mastery Goals	.20*	.15	2.16	
of School Performance Goals	.23*	.15	2.45	
On Teacher Efficacy for Student Engagement				
of Relations with Parents	.37*	.08	4.93	
of Discipline Problems	-.19*	.06	-.260	
of supervisory support	-.01	.07	-.17	.39
of School Mastery Goals	.32*	.14	3.51	
of School Performance Goals	.02	.14	.18	
On Teacher Efficacy for Instructional Strategies				
of Relations with Parents	.22*	.08	2.77	
of Discipline Problems	.12	.06	-1.53	
of Supervisory Support	.03	.07	-.35	.33
of School Mastery Goals	.44*	.13	4.60	
of School Performance Goals	.02	.13	20	
On Teacher Efficacy for Classroom Management				
of Relations with Parents	.29*	.09	.52	
of Discipline Problems	-.30*	.07	-3.82	
of Supervisory Support	.03	.08	.32	.29
of School Mastery Goals	.18	.15	1.80	
of School Performance Goals	-.02	.15	-.16	
On Job Satisfaction				
of Relations with Parents	.38*	.08	4.95	
of Discipline Problems	-.20*	.06	-2.72	
of Supervisory Support	.16*	.07	2.15	.37
of Relations with Colleagues	.21*	.08	2.71	
of School Mastery Goals	-.01	.12	-.19	

Results concerning the teachers' efficacy for instructional strategies showed that 33 % of the variance was explained by the predictor variables of this variable. Teachers' relations with parents (β = .22) and school mastery goal structure (β = .44) correlated significantly and positively with teachers'

efficacy for instructional strategies. These results demonstrated that positive parent-teacher relationship and mastery oriented school goal structure are likely to improve teachers' efficacy to implement instructional strategies effectively. Lastly, the same predictor school context variables explained 29 % of the variance in the third dimension of teacher self-efficacy, namely self-efficacy for classroom management. Results indicated that while parent relationships (β = .29) were significantly and positively associated with teachers' belief in their capability to manage the classroom, discipline problems (β = -.30) were significantly and negatively linked. This finding implies that teachers are more likely to feel more confident in classroom management when they have positive relationships with students' parents and when they experience less discipline problems during their teaching.

Regarding science teachers' job satisfaction, results indicated that 37 % of the variance was explained by science teachers' relations with students' parents, discipline problems, supervisory support, relations with colleagues and school mastery goals. While relations with parents (β = .38), supervisory support (β = .16), and relations with colleagues (β = .21) predicted teachers' job satisfaction significantly and positively, discipline problems (β = -.20), predicted it significantly and negatively. These results suggested that science teachers' job satisfaction is not related to goal structure of the school. Their job satisfaction appears to be enhanced when they have better relations with parents and their colleagues and when they perceive to receive support from the school administration at higher levels. On the other hand, they appear to have lower levels of job satisfaction when they experience discipline problems during their teaching.

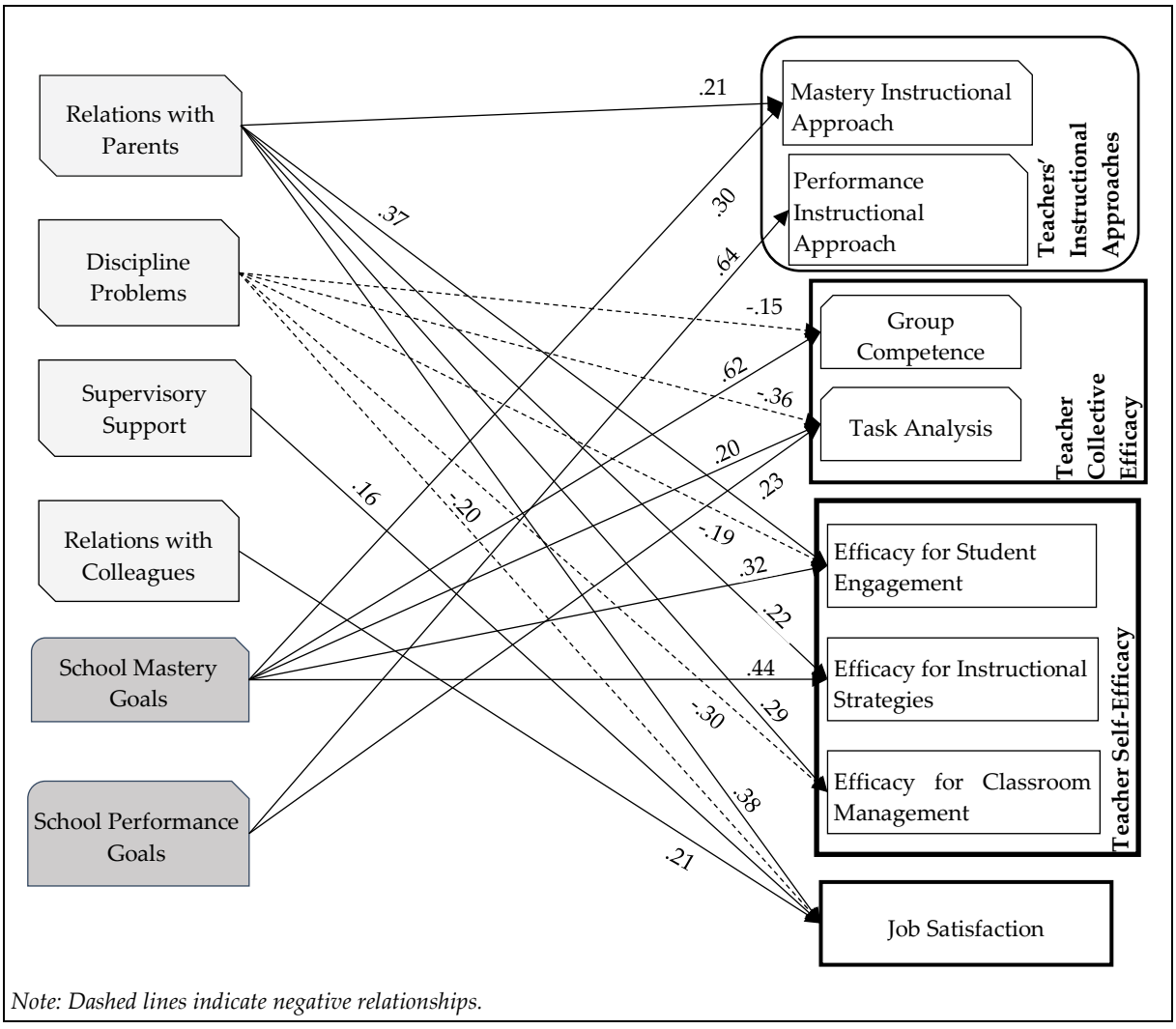

Figure 2. Structural Model with Path Coefficients

In sum, while science teachers' mastery approaches to instruction was influenced by teachers' relations with parents and school mastery goal structure, performance approaches to instruction was only influenced by school performance goal structure. For sub dimensions of teachers' collective efficacy, findings suggested that while discipline problems influenced both group competence and task analysis negatively, schools' mastery approaches to instruction influenced them positively. In addition, task analysis was also influenced positively by schools' performance goal structure. For dimensions of science teachers' self-efficacy, relations with parents, discipline problems, and school mastery goal structure emerged as the salient predictors. While relations with parents was influential for all sub dimensions of teachers' self-efficacy, discipline problems were not influential only on teachers' efficacy for instructional strategies and school mastery goals were not influential only on teachers' efficacy for classroom management. Lastly, findings indicated that teachers' job satisfaction has nothing to do with school goal structure. However, school environment variables were all influential on science teachers' satisfaction from being in the teaching profession.

Discussion, Conclusion and Suggestions

The present study investigated science teachers' job satisfaction and motivation in relation with their perceived school environment variables. Path analysis results indicated that school mastery goal structure and teachers' relationships with parents predicted teachers' mastery approaches to instruction. However, only school performance goal structure predicted participating science teachers' performance approaches to instruction. Approximately one fourth (23 %) of the variance in teachers' mastery approaches to instruction was explained by selected school environment variables. On the other hand, selected school environment variables explained 34 % of the variance in teachers' performance approaches to instruction. The only significant predictor was school performance goal structure. According to these findings, when science teachers perceive their school goal structure as mastery oriented and have good relationships with parents, their inclination to espouse mastery goals in their science instruction increases. However, teachers who are working in performance goal oriented schools tend to adopt performance instructional goals in practicing science teaching. Limited previous research on school goal structure support findings of the present study. In an early study, Deemer (2004) found that there was a positive association between teachers' perception of school performance goals and their performance approach in instruction. Likewise, Ciani et al. (2008) revealed that teachers who teach at schools imposing performance school goals transfer performance goals to students through instruction. In a recent study, Cho and Shim (2013) reported that school mastery goal structures and school performance goal structures positively predicted teachers' mastery instructional approaches and performance instructional approaches, respectively. Moreover, Skaalvik and Skaalvik (2010) stated that school organizational climate and personal relationships with the work environment is critical for teachers as much as school goal structures. Positive teacher-parent relationships orient teachers to strive for better teaching and gain respect from parents. Accordingly, negative teacher-parent relationships lead to low teaching efficacy, suffering from burnout syndrome, and having negative feelings about teaching. Indeed, findings of the current study are consistent with previous research that as the teacher-parent relationships get better, the level of mastery oriented science instruction increases.

According to present findings, school goal structures and classroom discipline problems were found to predict the sub dimensions of participating science teachers' collective efficacy. As expected, discipline problems predicted group competence sub dimension of collective efficacy negatively and school mastery goals predicted it positively. This is to say that in schools where mastery goals are salient, science teachers feel themselves more competent as a group. On the other hand, as discipline problems in classrooms increase, science teachers' perceptions of group competence decrease. For another sub dimension of collective efficacy, namely analysis of teaching task, findings suggested a positive relationship between this variable and both school goal structures (mastery and performance). Consistent with the findings related to group competence, classroom discipline problems were found to have a negative relationship with analysis of teaching task as well. Research on the relationship between school goal structures and teachers' collective efficacy is rare. However, findings of the current

study have suggested plausible relationships. Additionally, research on discipline problems revealed that teachers suffering from classroom discipline problems undergo burnout and have problems related to teaching profession (Hakanen, Bakker, & Schaufeli, 2006; Kokkinos, 2007). Based on the current findings, we can say that teachers suffering from high levels of classroom discipline problems have low levels of collective efficacy, including both sub dimensions (group competence and analysis of teaching task).

Concerning findings related to teachers' self-efficacy beliefs, path analysis revealed that school mastery goal structures, classroom discipline problems and teacher-parent relationships predicted sub dimensions of self-efficacy beliefs. For teachers' efficacy for student engagement, while teacher-parent relationships and school mastery goal structure associated positively, classroom discipline problems associated negatively. This means that in schools where mastery goals are emphasized and teacher-parent relationships are in a positive manner, science teachers feel more efficacious to get students engaged in science classes. On the other hand, classroom discipline problems decrease teachers' efficacy for student engagement. Similar to teachers' efficacy for student engagement, teachers' efficacy for instructional strategies were predicted positively by school mastery goal structure and teacher-parent relationships. These results suggested that science teachers perceiving school goal structure as mastery oriented with emphasis on learning and self-improvement and having good relations with parents are likely to feel self-efficacious for implementing different instructional strategies effectively. For teachers' efficacy for classroom management, only teacher-parent relations associated positively with it. As expected, classroom discipline problems associated negatively with teachers' efficacy for classroom management. As Skaalvik and Skaalvik (2009, 2010) reported, parents' trust and support play critical roles for teachers. Indeed, the findings of the current study supports these assertions. Loosing parents' trust and lack of cooperation with them may cause serious job related stress and strain on teachers such as diminishing self-efficacy, symptoms of anxiety, and decreased morale. Additionally, the relationship between classroom discipline problems and teacher efficacy for classroom management was found negative. Accordingly, it can be inferred that when teachers have disruptive students who interrupt their classes frequently, they may have low levels of efficacy for classroom management. Overall, these findings are consistent with the available literature on school context variables and teacher self-efficacy research. Early research conducted by Marachi, Gheen, and Midgley (2000) and Midgley, Anderman, and Hicks (1995) reported that teachers feel more efficacious in mastery oriented school structure. Likewise Ciani et al. (2008) found that while teachers' efficacy for student engagement and efficacy for instructional strategies correlated positively with school mastery goal structure, efficacy for classroom management did not. Additionally, any of the sub dimensions of teachers' self-efficacy was predicted by the school performance goal structures. Past research suggested similar findings. While school mastery goals predicted teachers' self-efficacy positively, school performance goals did not (Midgley et al., 1995). However, school goal structures worked differently for beginning teachers. Devos, Dupriez, and Paquay (2012) stated that while school mastery goals associated with beginning teachers' self-efficacy positively, school performance goals associated with it negatively. In general, current findings and available literature suggest that school mastery goal structure and relations with parents play important roles in teachers' self-efficacy. On the other hand, perceived discipline problems appeared to diminish teachers' self-efficacy.

For participating science teachers' job satisfaction, path analysis results revealed that teacher-parent relationships, supervisory support, and relations with colleagues had positive associations with job satisfaction. On the other hand, classroom discipline problems had a negative relationship with teachers' job satisfaction. These findings suggested that teachers feel more satisfied from teaching as they have a positive working environment, a good relationship with other teachers and parents of the students. Additionally, suffering from classroom discipline problems decreases science teachers' satisfaction with the teaching occupation. Theoretical claims and empirical findings also support the findings of the current study regarding the relationships between teachers' job satisfaction and school environment variables. Indeed, in a social organizational climate where workers feel pleased, satisfaction with job would not be uncommon. Accordingly, Skaalvik and Skaalvik (2007) found that

when teachers have good relationships with parents in school related issues, teachers feel more satisfied in their occupation. Moreover, having good relationships with and receiving support from other teachers (colleagues) also associated positively with teachers' job satisfaction. Lastly, they found that discipline problems were indirectly and negatively related to teachers' job satisfaction. In another study, Skaalvik and Skaalvik (2009) reported that support from the school administration and good teacher-parent relationships associated positively but indirectly with job satisfaction. All in all, considering the findings of the present study regarding job satisfaction, it could be inferred that school environment variables (i.e. supervisory support, relations with colleagues, and relations with parents) and classroom discipline problems were influential on science teachers' job satisfaction. For the present study, a large amount of variance in teacher job satisfaction (approximately 37 %) was explained by these variables. Nevertheless, more research is needed for revealing the relationships between school context variables and job satisfaction. The nature of the relationships can be better understood employing qualitative research designs.

Recommendations

The findings of the current study showed that teacher-parent relationships, school mastery goal structure, and classroom discipline problems mainly predicted science teachers' satisfaction in their profession and their teaching motivation. In line with these findings, it is suggested that schools may espouse more mastery oriented goals so that their teachers may have higher motivation in teaching science and may feel more satisfied in their job. Furthermore, a mastery oriented school environment may impose value of learning and mastering the course material. Such emphasis on mastery learning may help to develop motivating contexts for science teachers and their teaching. Moreover, findings related to teacher-parent relationships pointed out that parent support and trust to teachers increase teacher motivation. Additionally, it was found that classroom discipline problems have a consistent negative relationship with teacher motivation. Considering the findings related to teacher-parent relationships and classroom discipline problems together, this study suggests that teachers may take steps into solving trouble-making students' problems by personal efforts to learn more about these students' parents. Teachers may gather detailed information about disruptive students and their parents so that they may take action more easily to suppress disruptive behaviors. Students' may have psychological and personal problems that may have them behave inappropriately in the classroom. Good teacher-parent relationships may work in such situations to find solutions for students' problems. Additionally, it is clear that school environment variables were influential on science teachers' job satisfaction and teacher-parent relationships were found as the strongest predictor. In addition to its benefit on gathering detailed information about disruptive students, a positive teacher-parent relationship increases science teachers' job satisfaction. Therefore, school administrations may take responsibility to organize more frequent teacher-parent meetings in order to keep teachers and parents in touch regarding school and student related problems. In teacher-parent meetings teachers have the opportunity to inform parents about students' academic progress and their portfolios which include entire student products produced by the students during the semester. Moreover, students may also contribute to these meeting to make little presentations about their studies in science classes.

Limitations and Assumptions

Although this study generated important findings regarding the relationships between perceived school context and teacher motivation and job satisfaction, there are some limitations to be noted: Firstly, current study utilized a data set which was collected as cross-sectional. It would not be possible to talk about causal relationships between study variables. Experimental or longitudinal studies can be conducted in the future in order to put tough claims forward about the influence of school environment variables on science teachers' job satisfaction and motivation. Secondly, self-report instruments were used to collect data for the present study. Self-report measures may fall short in terms of acquiring true teacher motivation and their perceptions regarding school environment. Therefore, qualitative research design and data collection methods (i.e. video recording and field observations) may supply complementary data for future research. Thirdly, autonomy and time pressure, which were two sub dimensions of school environment variables, were found to have low reliability values. As a

result, they were removed from the path analysis model. Both sub scales have three items. In future studies, additional items can be developed to improve the psychometric properties of these sub-scales. Lastly, Teacher Collective Efficacy Scale (TCES) was used in this study to assess participating science teachers' collective efficacy beliefs. Original version of TCES is unidimensional but in Turkish context a two factor structure was observed. Although studies exist in the literature that have used TCES in two factor structure form (McCoach & Colbert, 2010), studies conducted outside of the US used the scale in unidimensional form (i.e. Moolenaar et al., 2012; Ross et al., 2004). Thus, future researchers are advised to check for the factor structure of the scale prior to their studies.

In correlational studies subject characteristics could be a potential threat to the study and this threat can apply to this study as well. Concerning possible internal validity threats with regard to instrumentation, the data were collected via self-report instruments which are objective in terms of obtaining participant responses. The first author himself collected the data providing the same explanations to participating teachers regarding data collection instruments. Thus, considering abovementioned reasons and nature of the items included in the instruments, data collector characteristics and data collector bias did not appear as a validity threat. Since the data for the study were collected at a single time, there was no time lag to cause maturity threat. It is a more critical threat for experimental studies when there is a time lag between observations. Data collection instruments were organized in a single booklet which may have caused a testing threat. Teachers may be affected by the answers of the items of previous scales while they were answering other scales. For all teachers, the environment experienced during data collection was similar. Additionally, participating science teachers were all working in public schools where materials and physical conditions are approximately the same. Thus, it was thought that location could not be an internal validity threat for the study.

References

Allinder, R. M. (1994). The relationship between efficacy and the instructional practices of special education teachers and consultants. *Teacher Education and Special Education: The Journal of the Teacher Education Division of the Council for Exceptional Children*, *17*(2), 86-95. doi:10.1177/088840649401700203

Ames, C. (1992). Classrooms: Goals, structures, and student motivation. *Journal of Educational Psychology*, *84*(3), 261-271. doi:10.1037/0022-0663.84.3.261

Anderman, E. M., & Maehr, M. L. (1994). Motivation and schooling in the middle grades. *Review of Educational Research*, *64*(2), 287-309. doi:10.3102/00346543064002287

Anderman, E. M., & Patrick, H. (2012). Achievement goal theory, conceptualization of ability/intelligence, and classroom climate. In S. L. Christenson, A. L. Reschly, & C. Wylie (Eds.), *Handbook of research on student engagement* (pp. 173-92). New York, NY: Springer. doi:10.1007/978-1-4614-2018-7_8

Bandura, A. (1997). *Self-efficacy: The exercise of control.* New York: Freeman.

Butler, R. (2007). Teachers' achievement goal orientations and associations with teachers' help seeking: Examination of a novel approach to teacher motivation. *Journal of Educational Psychology*, *99*(2), 241.

Butler, R. (2012). Striving to connect: Extending an achievement goal approach to teacher motivation to include relational goals for teaching. *Journal of Educational Psychology*, *104*(3), 726.

Caprara, G. V., Barbaranelli, C., Steca, P., & Malone, P. S. (2006). Teachers' self-efficacy beliefs as determinants of job satisfaction and students' academic achievement: A study at the school level. *Journal of School Psychology*, *44*(6), 473-490. doi:10.1016/j.jsp.2006.09.001

Caprara, G. V., Barbaranelli, C., Borgogni, L., Petitta, L., & Rubinacci, A. (2003). Teachers', school staff's and parents' efficacy beliefs as determinants of attitudes toward school. *European Journal of Psychology of Education*, *18*(1), 15-31. doi:10.1007/BF03173601

Chacón, C. T. (2005). Teachers' perceived efficacy among English as a foreign language teachers in middle schools in Venezuela. *Teaching and Teacher Education*, *21*(3), 257-272. doi:10.1016/j.tate.2005.01.001

Cho, Y., & Shim, S. S. (2013). Predicting teachers' achievement goals for teaching: The role of perceived school goal structure and teachers' sense of efficacy. *Teaching and Teacher Education*, *32*, 12-21. doi:10.1016/j.tate.2012.12.003

Ciani, K. D., Summers, J. J., & Easter, M. A. (2008). A "top-down" analysis of high school teacher motivation. *Contemporary Educational Psychology*, *33*(4), 533-560. doi:10.1016/j.cedpsych.2007.04.002

Cockburn, A. D., & Haydn, T. (2004). *Recruiting and retaining teachers: Understanding why teachers teach.* London, England: Routledge Falmer.

Cousins, J., & Walker, C. (1995). *Personal teacher efficacy as a predictor of teachers' attitudes toward applied educational research.* Paper presented at the annual meeting of the Canadian Association for the Study of Educational Administration, Montreal, Canada.

Czerniak, C. M., & Schriver, M. L. (1994). An examination of preservice science teachers' beliefs and behaviors as related to self-efficacy. *Journal of Science Teacher Education*, *5*(3), 77-86.

Çapa, Y., Çakıroğlu, J., & Sarıkaya, H. (2005). The development and validation of a Turkish version of teachers' sense of efficacy scale. *Education and Science*, *30*(137), 74-81.

Day, C., Sammons, P., Stobard, G., Kington, A., & Gu, Q. (2007). *Teachers matter: Connecting work, lives and effectiveness*. Berkshire, England: Open University Press.

Deemer, S. (2004). Classroom goal orientation in high school classrooms: Revealing links between teacher beliefs and classroom environments. *Educational Research*, *46*(1), 73-90. doi:10.1080/0013188042000178836

Devos, C., Dupriez, V., & Paquay, L. (2012). Does the social working environment predict beginning teachers' self-efficacy and feelings of depression?. *Teaching and Teacher Education*, *28*(2), 206-217.

Enochs, L. G., Scharmann, L. C., & Riggs, I. M. (1995). The relationship of pupil control to preservice elementary science teacher self–efficacy and outcome expectancy. *Science Education*, *79*(1), 63-75.

Evans, L. (2001). Delving deeper into morale, job satisfaction, and motivation among education professionals. *Educational Management and Administration*, *29*, 291-306.

Fives, H., & Buehl, M. M. (2016). Teacher motivation: Self-efficacy and goal orientation. In K.R. Wentzel, & D. B. Miele (Eds.), *Handbook of motivation at school* (pp. 340-361). New York: Routledge.

Fraenkel, J. R., & Wallen, N. E. (2006). *How to design and evaluate research in education*. New York, USA: McGrawhill, Inc.

Geijsel, F. P., Sleegers, P. J., Stoel, R. D., & Krüger, M. L. (2009). The effect of teacher psychological and school organizational and leadership factors on teachers' professional learning in Dutch schools. *The Elementary School Journal*, *109*(4), 406-427.

Goddard, R. D. (2001). Collective efficacy: A neglected construct in the study of schools and student achievement. *Journal of Educational Psychology*, *93*(3), 467-476. doi:10.1037/0022-0663.93.3.467

Goddard, R. D., & Goddard, Y. L. (2001). A multilevel analysis of the relationship between teacher and collective efficacy in urban schools. *Teaching and Teacher Education*, *17*(7), 807-818. doi:10.1016/s0742-051x(01)00032-4

Goddard, R., Goddard, Y., Sook Kim, E., & Miller, R. (2015). A theoretical and empirical analysis of the roles of instructional leadership, teacher collaboration, and collective efficacy beliefs in support of student learning. *American Journal of Education*, *121*(4), 501-530.

Goddard, R. D., Hoy, W. K., & Hoy, A. W. (2000). Collective teacher efficacy: Its meaning, measure, and impact on student achievement. *American Educational Research Journal*, *37*(2), 479-507. doi:10.3102/00028312037002479

Guskey, T. R. (1988). Teacher efficacy, self-concept, and attitudes toward the implementation of instructional innovation. *Teaching and Teacher Education*, *4*(1), 63-69. doi:10.1016/0742-051X(88)90025-X

Gürçay, D., Yılmaz, M., & Ekici, G. (2009). Öğretmen kolektif yeterlik inancını yordayan faktörler. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*, *36*, 119-128.

Hakanen, J. J., Bakker, A. B., & Schaufeli, W. B. (2006). Burnout and work engagement among teachers. *Journal of School Psychology*, *43*(6), 495-513. doi:10.1016/j.jsp.2005.11.001

Ingersoll, R. (2001). Teacher turnover and teacher shortage. *American Educational Research Journal*, *38*, 499-534.

Jordan, A., Kircaali-Iftar, G., & Diamond, C. T. P. (1993). Who has a problem, the student or the teacher? Differences in teachers' beliefs about their work with at-risk and integrated exceptional students. *International Journal of Disability, Development and Education*, *40*(1), 45-62. doi:10.1080/0156655930400104

Klassen, R. M., & Chiu, M. M. (2010). Effects on teachers' self-efficacy and job satisfaction: Teacher gender, years of experience, and job stress. *Journal of Educational Psychology*, *102*(3), 741-756. doi:10.1037/a0019237

Klassen, R. M., & Tze, V. M. (2014). Teachers' self-efficacy, personality, and teaching effectiveness: A meta-analysis. *Educational Research Review*, *12*, 59-76.

Klassen, R. M., Tze, V. C., Betts, S. M., & Gordon, K. A. (2011). Teacher efficacy research 1998–2009: Signs of progress or unfulfilled promise?. *Educational Psychology Research*, *23*, 21-43.

Klusmann, U., Kunter, M., Trautwein, U., Lüdtke, O., & Baumert, J. (2008). Engagement and emotional exhaustion in teachers: Does the school context make a difference?. *Applied Psychology*, *57*(1), 127-151. doi:10.1111/j.1464-0597.2008.00358.x

Kokkinos, C. M. (2007). Job stressors, personality and burnout in primary school teachers. *The British Journal of Educational Psychology*, *77*(1), 229-243. doi:10.1348/000709905X90344

Korevaar, G. (1990). *Secondary school teachers' courses of action in relation to experience and sense of self-efficacy.* Paper presented at the annual meeting of the American Educational Research Association, Boston, MA.

Koustelios, A., Karabatzaki, D., & Kouisteliou, I. (2004). Autonomy and job satisfaction for a sample of Greek teachers. *Psychological Reports*, *95*, 883-886.

Kurt, T. (2009). *Okul müdürlerinin dönüşümcü ve işlemci liderlik stilleri ile öğretmenlerin kolektif yeterliği ve öz yeterliği arasındaki ilişkilerin incelenmesi* (Unpublished doctoral dissertation). Gazi University, Institute of Educational Sciences, Ankara.

MacCallum, R. C., Browne, M. W., & Sugawara, H. M. (1996). Power analysis and determination of sample size for covariance structure modeling. *Psychological Methods*, *1*(2), 130-49.

Maehr, M., & Midgley, C. (1991). Enhancing student motivation: A schoolwide approach. *Educational Psychologist*, *26*(3-4), 399-427. doi:10.1080/00461520.1991.9653140

Maehr, M. L., & Zusho, A. (2009). Achievement goal theory: The past, present, and future. In K. R. Wentzel, & A. Wigfield (Eds.), *Handbook of motivation at school* (pp. 77-104). New York: Routledge.

Marachi, R., Gheen, M., & Midgley, C. (2000). *Comparisons of elementary, middle, and high school teachers' beliefs and approaches to instruction using a goal orientation framework.* Paper presented at the annual meeting of the American Educational Research Association, New Orleans, LA.

Martin, N. K., Sass, D. A., & Schmitt, T. A. (2012). Teacher efficacy in student engagement, instructional management, student stressors, and burnout: A theoretical model using in-class variables to predict teachers' intent-to-leave. *Teaching and Teacher Education*, *28*(4), 546-559.

McCoach, D. B., & Colbert, R. D. (2010). Factors underlying the collective teacher efficacy scale and their mediating role in the effect of socioeconomic status on academic achievement at the school level. *Measurement and Evaluation in Counseling and Development*, *43*(1), 31-47. doi:10.1177/0748175610362368

Meece, J. L., Anderman, E. M., & Anderman, L. H. (2006). Classroom goal structure, student motivation, and academic achievement. *Annual Review of Psychology*, *57*, 487-503. doi:10.1146/annurev.psych.56.091103.070258

Mertler, C. A. (2016). Should I stay or should I go? Understanding teacher motivation, job satisfaction, and perceptions of retention among Arizona teachers. *International Research in Higher Education*, *1*(2), 34-45.

Meyers, L. S., Gamst, G., & Guarino, A. J. (2006). *Applied multivariate research: Design and interpretation*. California: Sage.

Midgley, C., Anderman, E., & Hicks, L. (1995). Differences between elementary and middle school teachers and students: A goal theory approach. *The Journal of Early Adolescence*, *15*(1), 90-113. doi:10.1177/0272431695015001006

Midgley, C., Maehr, M. L., Hruda, L. Z., Anderman, E. M., Anderman, L. H., Freeman, K. E., … Urdan, T. (2000). *Manual for the Patterns of Adaptive Learning Scales (PALS).* Ann Arbor: University of Michigan.

Moolenaar, N. M., Sleegers, P. J. C., & Daly, A. J. (2012). Teaming up: Linking collaboration networks, collective efficacy, and student achievement. *Teaching and Teacher Education*, *28*(2), 251-262. doi:10.1016/j.tate.2011.10.001

Podell, D. M., & Soodak, L. C. (1993). Teacher efficacy and bias in special education referrals. *The Journal of Educational Research*, *86*(4), 247-253. doi:10.1080/00220671.1993.9941836

Retelsdorf, J., & Günther, C. (2011). Achievement goals for teaching and teachers' reference norms: Relations with instructional practices. *Teaching and Teacher Education*, *27*(7), 1111-1119. doi:10.1016/j.tate.2011.05.007

Retelsdorf, J., Butler, R., Streblow, L., & Schiefele, U. (2010). Teachers' goal orientations for teaching: Associations with instructional practices, interest in teaching, and burnout. *Learning and Instruction*, *20*(1), 30-46. doi:10.1016/j.learninstruc.2009.01.001

Ross, J. A. (1992). Teacher efficacy and the effects of coaching on student achievement. *Canadian Journal of Education / Revue Canadienne de L'éducation*, *17*(1), 51. doi:10.2307/1495395

Ross, J. A. (1998). The antecedents and consequences of teacher efficacy. *Advances in Research on Teaching*, *7*, 49-74.

Ross, J. A., Hogaboam-Gray, A., & Gray, P. (2004). Prior student achievement, collaborative school processes, and collective teacher efficacy. *Leadership and Policy in Schools*, *3*(3), 163-188. doi:10.1080/15700760490503689

Ross, J. A., Hogaboam-Gray, A., & Hannay, L. (2001). Effects of teacher efficacy on computer skills and computer cognitions of Canadian students in grades k-3. *The Elementary School Journal*, *102*(2), 141. doi:10.1086/499697

Ryan, A. M., Gheen, M. H., & Midgley, C. (1998). Why do some students avoid asking for help? An examination of the interplay among students' academic efficacy, teachers' social–emotional role, and the classroom goal structure. *Journal of Educational Psychology*, *90*(3), 528-535. doi:10.1037/0022-0663.90.3.528

Scheopner, A. (2010). Irreconcilable differences: Teacher attrition in public and catholic schools. *Educational Research Review*, *5*, 261-277.

Schiefele, U., & Schaffner, E. (2015). Teacher interests, mastery goals, and self-efficacy as predictors of instructional practices and student motivation. *Contemporary Educational Psychology*, *42*, 159-171.

Scott, C., Stone, B., & Dinham, S. (2001). "I love teaching but." International patterns of teaching discontent. *Education Policy Analysis Archives*, *9*(28), 1-18.

Skaalvik, E. M., & Skaalvik, S. (2007). Dimensions of teacher self-efficacy and relations with strain factors, perceived collective teacher efficacy, and teacher burnout. *Journal of Educational Psychology*, *99*(3), 611-625. doi:10.1037/0022-0663.99.3.611

Skaalvik, E. M., & Skaalvik, S. (2009). Does school context matter? Relations with teacher burnout and job satisfaction. *Teaching and Teacher Education*, *25*(3), 518-524. doi:10.1016/j.tate.2008.12.006

Skaalvik, E. M., & Skaalvik, S. (2010). Teacher self-efficacy and teacher burnout: A study of relations. *Teaching and Teacher Education*, *26*(4), 1059-1069. doi:10.1016/j.tate.2009.11.001

Skaalvik, E. M., & Skaalvik, S. (2011). Teachers' feeling of belonging, exhaustion, and job satisfaction: The role of school goal structure and value consonance. *Anxiety, Stress, and Coping*, *24*(4), 369-385. doi:10.1080/10615806.2010.544300

Thoonen, E. E., Sleegers, P. J., Oort, F. J., Peetsma, T. T., & Geijsel, F. P. (2011). How to improve teaching practices: The role of teacher motivation, organizational factors, and leadership practices. *Educational Administration Quarterly*, *47*(3), 496-536.

Tschannen-Moran, M., & Barr, M. (2004). Fostering student learning: The relationship of collective teacher efficacy and student achievement. *Leadership and Policy in Schools*, *3*(3), 189-209.

Tschannen-Moran, M., & Hoy, A. W. (2001). Teacher efficacy: Capturing an elusive construct. *Teaching and Teacher Education*, *17*(7), 783-805. doi:10.1016/S0742-051X(01)00036-1

Tschannen-Moran, M., Hoy, A. W., & Hoy, W. K. (1998). Teacher efficacy: Its meaning and measure. *Review of Educational Research*, *68*(2), 202-248.

Vedder-Weiss, D., & Fortus, D. (2018). Teachers' mastery goals: Using a self-report survey to study the relations between teaching practices and students' motivation for science learning. *Research in Science Education*, *48*(1), 181-206.

Watt, H. M., & Richardson, P. W. (2007). Motivational factors influencing teaching as a career choice: Development and validation of the FIT-Choice Scale. *The Journal of Experimental Education*, *75*(3), 167-202.

Woolfolk, A. E., & Hoy, W. K. (1990). Prospective teachers' sense of efficacy and beliefs about control. *Journal of Educational Psychology*, *82*(1), 81-91. doi:10.1037/0022-0663.82.1.81