



**Utrecht University**

**Master thesis Educational Design and Consultancy**

**Does teacher commitment make sense? Teacher commitment as a mediator in the relationship between teachers' social networks and teachers' sense of self-efficacy**

**Name: Kees de Jong**

**Student number: 3535282**

**Assessors: Nienke Moolenaar & Eghe Osagie**

**Date: 12-06-2015**

## DOES TEACHER COMMITMENT MAKE SENSE?

### Summary

Dutch elementary schools are pressurized by the government to improve their results. Teachers in elementary education need tools that can help them responding to this governmental demand. Previous studies have pointed out teacher self-efficacy as an important factor contributing to student achievement. More knowledge about this concept may help teachers with finding the tools they need. Teacher self-efficacy received much attention during the last few decades and has been investigated in relation to teacher behavior, including teacher collaboration, which becomes visible in teachers' social networks. The relation between teacher collaboration and teacher self-efficacy has been researched and this relation is possibly direct. However, despite the extensive research interest in teacher commitment, the possibility of teacher commitment as a mediator has never been investigated. That is why this study is aimed at answering the following question: To what extent does teacher commitment have a mediating role in the relationship between teachers' social networks and teacher self-efficacy? Teachers' social networks are determined by calculating every individual's degree centrality and closeness centrality. Teacher commitment and teacher self-efficacy are assessed through a questionnaire. Data were collected from eight elementary schools in the Netherlands (N=114). Findings indicated positive relations between teachers' social networks and teacher self-efficacy as well as teacher commitment and teacher self-efficacy. No significant results were found for the relationship between teachers' social networks and teacher commitment. The mediating effect of teacher commitment could not be evidenced. One of the possible explanations for this result is that social relations are based on exchanging mutual support, which was not noticed in this research design. However, findings indicate relationships between teachers' social networks and teacher self-efficacy as well as teacher commitment and teacher self-efficacy.

*Keywords:* social networks, teacher commitment, teacher self-efficacy, teacher interaction, student achievement

# DOES TEACHER COMMITMENT MAKE SENSE?

## Introduction

Recently, Dutch elementary schools are experiencing a great amount of pressure from the government to improve (Rijksoverheid, 2014). According to the Dutch government, The Netherlands should be at the global forefront of education. Teachers are crucial for the quality of education, which is why the government focuses on professionalization of teachers by making money available for study grants (Rijksoverheid, 2011). However, improving student results cannot be realized by just increasing teachers' level of education. Teachers need tools to improve student learning, which is why schools have an interest in knowing the factors that affect student achievement. An important factor that contributes to student achievement significantly is teacher self-efficacy (Caprara, Barbaranelli, Steca, & Malone, 2006).

Caprara, Barbaranelli, Steca, and Malone (2006) pointed out that teacher self-efficacy is a key element for schools that want to carry out interventions with the aim to promote student's learning. Teacher self-efficacy is actually an important factor when it comes to creating an effective learning environment and keeping it effective. Various studies that have linked teacher self-efficacy to teacher collaboration found that collegial relationships are beneficial to teacher's sense of efficacy (Raudenbush, Rowan, & Cheong, 1992; Shachar & Shmuelewitz, 1997). This link between teacher collaboration and teacher self-efficacy deserves extra attention, since elementary teachers in The Netherlands are expected to collaborate more and more aiming to learn with each other (Rijksoverheid, 2013). Investigating their social networks can give us an insight into their collaboration pattern.

Teachers' social networks consist of interactions between teachers. When individuals interact with each other, learning in organizations occurs (Pritchard, 2009). Through interaction teachers learn to deal with difficulties and therefore increase their sense of efficacy (Raudenbush, Rowan, and Cheong, 1992).

Teacher interaction seems not only beneficial to teacher's sense of self-efficacy, it also has been pointed out as a factor contributing to teacher commitment (Reyes, 1990), because it breaks the isolation of teachers (Little, 1990). Moreover, previous research also indicated that teachers with a strong sense of self-efficacy seem more committed (Ross, 1998). Because teacher interaction may

DOES TEACHER COMMITMENT MAKE SENSE?

influence both commitment and self-efficacy and commitment is also related to self-efficacy, this study raises the suggestion that teacher commitment could be a mechanism that explains the relationship between teachers’ social networks and teacher self-efficacy. The importance of teacher commitment for schools has been stressed by research findings demonstrating that teacher commitment positively affects teachers’ job performance and quality of education (Tsui & Cheng, 1999), one of the key features of the Dutch governmental agenda.

The purpose of this study is to examine teacher commitment as a mechanism that explains the relationship between teachers’ social networks and teacher self-efficacy. The concepts are presented in Figure 1. This article is an important contribution to the literature base around social networks in education, because the mediating effect of teacher commitment has not been researched yet while teacher commitment is considered as a very effective route to school success (Fink in Park, 1992). The next section will describe the different concepts that have been mentioned in this introduction.

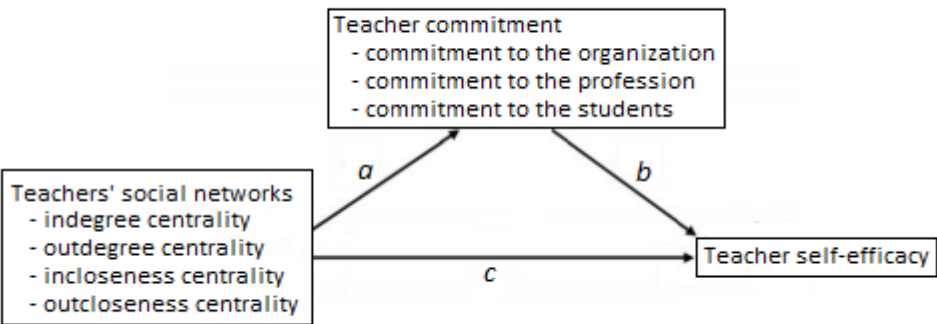


Figure 1. Path diagram of hypothesized relations

Teacher self-efficacy

Teacher self-efficacy has a significant influence on student achievement, which is why we should give more importance to the investigation of this construct. Self-efficacy was introduced by Bandura in 1977 as part of his social-cognitive theory. This theory poses that an individual’s development is characterized by reciprocal interactions between the individual’s behavior and characteristics and the individual’s environment (Magee, Zachazewski, & Quillen, 2008). For example, if a student does not understand a teacher’s explanation (behavior), the teacher may give an extra instruction (environment). These interactions are important for self-efficacy as well, which will become clear later on in this section. Self-efficacy is about someone’s judgment about one’s own capacities to act

## DOES TEACHER COMMITMENT MAKE SENSE?

successfully in a specific situation (Caprara, Alessandri, & Eisenberg, 2012). During the past few decades self-efficacy was researched in relation to very diverse subjects such as health (O'Leary, 1985), people's well-being (Magalett & Oliver, 1999) and job performance (Judge, Jackson, Shaw, Scott, & Rich, 2002). The concept of self-efficacy has been investigated in the context of education as well. Scholars use the term teacher self-efficacy when self-efficacy relates to teachers.

Skaalvik and Skaalvik (2010, p. 1059) conceptualized teacher self-efficacy as 'individual teachers' beliefs in their own ability to plan, organize, and carry out activities that are required to attain given educational goals'. According to Tschannen-Moran and Hoy (2007), teachers with a low sense of self-efficacy are likely to put less effort in preparation and delivery of instruction and give up more easily when difficulties arise. Tschannen-Moran and Hoy (2007) speak of self-fulfilling prophecies. Teachers who do not believe that they can be successful give up and that is how they confirm their own beliefs of incapability.

Bandura (1997) distinguished four major antecedents of self-efficacy: mastery experiences, verbal persuasion, vicarious experiences, and psychological arousal. These antecedents, which seem to cover most of the antecedents mentioned before, are defined in the next two paragraphs.

Mastery experiences is the most important antecedent. Teachers get a higher sense of efficacy when their teaching performance turns out to be a success. Their belief that they will be able to succeed again in the future will rise. Several studies showed that the relationship between teacher self-efficacy and student achievement is reciprocal, for teacher self-efficacy is especially high in schools where students perform and behave well (Raudenbush, Rowan & Cheong, 1992; Ross, 1998).

Verbal persuasion is about feedback teachers receive about their performance. The effect of verbal persuasion grows when the feedback is given by someone important in the teaching context, such as colleagues or parents. The effect of verbal persuasion can be positive as well as negative. For example, a pep talk by a colleague can be helpful to overcome a setback (Schunk, 1989), while a warning by the principal to work harder can lower a teacher's sense of efficacy (Gist & Mitchell, 1992). Vicarious experience has to do with someone else being successful. The more the observer identifies with this model, the more influence it has on the observer's self-efficacy. Finally, psychological arousal is the joy or pleasure teachers experience when they are teaching successfully.

## DOES TEACHER COMMITMENT MAKE SENSE?

This joy or pleasure positively influences their self-efficacy, while stress or anxiety affects self-efficacy negatively (Bandura, 1997).

Another antecedent of teachers' sense of efficacy is teacher collaboration. Shachar and Shmuelewitz (1997, p. 69) found that teacher collaboration 'accounts for a substantial portion of the variance in teachers' sense of efficacy'. Teacher collaboration becomes visible in their social network. Analyzing these networks makes it possible to examine teacher collaboration in all aspects. It may provide a more detailed indication of the relationship between teacher collaboration and teacher self-efficacy. Before this relation is described, I will make clear what social networks look like and what earlier research has demonstrated.

### **Teachers' social networks**

Social networks comprise social relationships that make interactions between individuals possible. Through these so-called ties team members can share information with each other (Jack, 2005). Network ties have a certain structure that can help or constrain the exchange of information in teams (Brass, 1984). Individuals in social networks are often referred to as nodes (Nadel in Balkundi & Harrison, 2006). Their social network can reveal how information flows to all team members (Haythornthwaite, 1996). However, network ties are not always equally shared between all team members. Several network characteristics give us an indication of the pattern of network ties (Borgatti, Everett, & Freeman, 2002). In this study, two characteristics of teachers' advice networks are examined: degree centrality and closeness centrality. A methodological explanation will be followed by a description of their implications.

Centrality is a network measure that gives an indication of where a node is positioned in relation to others in a network. All nodes have a certain amount of ties. If someone has a relatively higher amount of ties compared to other team members, this person is said to be central in a social network. Freeman (1979) described a measure of centrality that is based on the degree of a node. The degree of a node is the number of ties someone has. This number indicates with how many individuals this person is in direct contact. Friedkin and Slater (1994) distinguished two types of degree centrality: indegree and outdegree centrality. Indegree centrality is referred to as the number of ties incoming to a person, while outdegree centrality is the number of ties outgoing from a person. For example, in an

## DOES TEACHER COMMITMENT MAKE SENSE?

advice network all team members designate who they ask for advice which results in a score on indegree and outdegree centrality. A teacher's indegree score is the amount of people that asks him for advice. His outdegree score is the amount of people that he goes to for advice.

Another measure of a node's centrality described by Freeman (1979) is based on its closeness to other nodes. Closeness centrality indicates how far an individual is located relatively to the others. The smaller the distance to the other teachers, the higher someone's closeness centrality is. Being centrally located means that the information a teacher dispenses reaches the rest of the team more easily. Closeness centrality not only includes direct relationships, but also indirect relationships to all other team members (Moolenaar, Daly, & Slegers, 2010).

Being centrally located in a network has several implications for a teacher. According to Freeman (1979), central actors can have much influence on the team by hiding or altering information. They have greater access to information. Because of their network position they have informal power, for they can regulate the information flow (Balkundi & Harrison, 2006). In this study a distinction is made between in- and outdegree centrality as well as in- and outcloseness centrality. In other words, the direction of the information flow is also taken into account. If a team member is asked for advice by relatively many colleagues, indicating a high indegree score, this individual has much influence since he can decide which information he passes on. Yet, if a team member receives advice from many teachers it does not necessarily mean he has control over the information flow. If the same teacher does not give any advice, meaning he does not have any outgoing ties, he has not got any control over the information flow.

The same conclusion can be drawn about closeness centrality. Closeness centrality also gives an indication about opportunities for getting to and passing on information. According to Haythornthwaite (1996), acting on information is more likely when that information comes from a close colleague. Actually, team members are mostly influenced by colleagues with whom they have a direct tie. High scores on incloseness centrality could therefore imply that a teacher is influenced by others, while high scores on outcloseness centrality could indicate that a teacher has much influence on other team members. In the next paragraphs the relationship between teachers' social networks and teacher self-efficacy is argued.

## DOES TEACHER COMMITMENT MAKE SENSE?

**Teachers' social networks and teacher self-efficacy.** Several researches pointed out that teacher collaboration positively affects teacher self-efficacy (Duyar, Gumus, & Bellibas, 2013; Schachar and Schmuelewitz, 1997). Collaboration between teachers helps them to talk about theories, methods, and processes of teaching and learning and increases their sense of efficacy (Duyar, Gumus, & Bellibas, 2013). Guskey (1988) pointed out that teacher collaboration stimulates teachers to implement new teaching methods that may contribute to teachers' sense of efficacy. According to Macinko and Starfield (2001) teacher collaboration networks not only give teachers the possibility to share their knowledge and information but also to support each other socially. This social support may positively influence teacher self-efficacy, because it is considered as verbal persuasion that Bandura (1977) distinguished as one of the four antecedents of self-efficacy.

Moolenaar, Sleegers, and Daly (2012) mentioned that giving advice allows the advice-giver to show his skills which may give his self-efficacy beliefs a boost by sharing his knowledge and guiding his colleague. An advice-giver being a model for his colleagues could be advantageous for this teacher' sense of efficacy if his observers experience the same success (Schunk, 1987). Moreover, getting observed by colleagues because of you being successful can be seen as the mastery experience which Bandura stipulated as one of the antecedents of teacher self-efficacy (Bandura, 1997). After all, the fact that team members observe a colleague with the aim to learn shows that this teacher is successful. It is therefore expected that both indegree centrality and incloseness centrality have a positive influence on teacher self-efficacy.

A positive relationship between asking for advice and teacher self-efficacy is supported by the idea that teacher interaction offers vicarious experiences and verbal persuasion which can both enhance teachers' sense of efficacy (Bandura, 1997). Teachers in an advice network exchange work-related information, like handling with unmotivated students. Asking colleagues for advice about unmotivated students may give a teacher the vicarious experience he is looking for. When a teacher sees a colleague being successful and a teacher identifies with this model it increases his sense of efficacy. Teacher interaction also provides feedback for the advice-seeker, which stimulates the advice-seeker's sense of efficacy – on condition that this feedback is positive. Also, through observing colleagues teachers acquire knowledge and strategies that they can later apply in their own classroom.



## DOES TEACHER COMMITMENT MAKE SENSE?

Watching a model shows to the observers that they can be successful as well if they handle the same as their model (Schunk & Zimmerman, 1997).

Based on the findings listed above, the first two hypotheses are:

*Hypothesis 1: In- and outdegree centrality have a positive effect on teacher self-efficacy.*

*Hypothesis 2: In- and outcloseness centrality have a positive effect on teacher self-efficacy*

### **Teacher commitment**

Organizational commitment is ‘ the relative strength of an individual’s identification with and involvement in a particular organization’ (Mowday, Porter, & Steers, 1982, p. 72). Commitment to an organization is about believing in the organization’s goals and values and having the intention to exert considerable effort for the organization (Firestone & Pennell, 1993).

In the context of education we speak of teacher commitment which has been pointed out as an important element affecting job performance and the quality of education (Tsui & Cheng, 1999). Three dimensions of teacher commitment can be distinguished: commitment to the school organization, commitment to the teaching profession, and commitment to students (Dannetta, 2002; Firestone & Rosenblum, 1988).

Teacher commitment to the organization, also referred to as organizational commitment, is about organizational goals or values and forming a staff unity (Mowday, Steers, & Porter, 1979). Organizational commitment has three components: believing and accepting the organizational goals and values, being ready to put a significant amount of effort into the organization, and willing and desiring to stay with the organization (Mowday et al., 1979). Teacher commitment to the teaching profession, the second dimension of teacher commitment, refers to someone’s devotion for his occupation (Somech & Bogler, 2002). This occupational commitment shows to what degree employees are engaged in the jobs they perform in the workplace and the importance of work in life. (Brown & Leigh, 1996). Occupational commitment results in showing interest in their teacher skills and in student achievement (Firestone & Rosenblum, 1988). According to Park (2007), this dimension is about job satisfaction and identifying oneself as a teacher. The final dimension, teacher commitment

## DOES TEACHER COMMITMENT MAKE SENSE?

to students, is about being devoted to student behavior and learning (Dannetta, 2002; Elliott & Croswell, 2002; Nias, 1981). This final dimension is like a commitment to clients and includes being ready to help students and feeling responsible for students' learning processes and school life (Park, 2007). Teachers who are committed to students do not discriminate based on academic difficulties or social background (Dannetta, 2002). The main element of teacher commitment to students is about the teacher feeling devoted and responsible for student learning and their behavior (Park, 2007). In the next paragraphs the three dimensions of teacher commitment are linked to both degree centrality and closeness centrality.

Teacher commitment to the organization may be positively influenced by both degree centrality and closeness centrality. Reyes (1990) posed that social relationships and interactions are beneficial to increasing teachers' attachment to the organization. If teachers have a large number of network ties it benefits their organizational commitment. Brookhart and Loadman (1990) endorsed this standpoint stating that relationships between colleagues have the benefit of an evolving focus on collaborative effort. Through these relationships shared goals and objectives develop. The focus on collaborative effort is therefore expected to positively change teacher commitment to the school organization.

However, this study distinguishes between giving advice and receiving advice (i.e. in- and outdegree centrality). Smith, Organ, and Near (1983) studied organizational citizenship behavior which is about employees performing behavior that surpasses job descriptions. Organizational citizenship behavior includes helping team members by giving them advice. The act of giving advice is an organizational citizenship behavior that an employee performs to help the organization to do well. This willingness to put extra effort in the organization is part of organizational commitment, which is why it is expected that advice-givers are committed to the organization. By helping other team members they actually help the organization indirectly. Having a high score on outdegree centrality may lead to committed employees as well. Zagenczyk and Murrell (2009) studied work-unit commitment, which is conceptually slightly different from commitment to the organization, but is considered as an aspect of organizational commitment. They stated that receiving advice can help employees to learn work-unit behaviors and norms which results in being more committed to the

## DOES TEACHER COMMITMENT MAKE SENSE?

work-unit. Based on this argument, it is expected that outdegree centrality positively affects organizational commitment as well.

Both in- and outcloseness centrality seem to have an influence on teacher's commitment to the organization. Teachers whose closeness centrality is high are expected to be more committed to the organization's goals, because they can reach other team members easily and they can easily reach the teacher. They are integrated in the communication network and therefore report higher levels of commitment to the organization (Scott et al., 1999). Kushman (1992) points out that teachers become more committed to specific decisions and to the organization when they participate in decision-making.

Occupational commitment, the second dimension of teacher commitment, includes feeling satisfied. According to Dinham and Scott (2000), being part of a collegial, supportive environment has a powerful influence on the satisfaction of teachers. Roberts and O'Reilly (1979) found that the more central individuals are located in the network, the higher their satisfaction is. That means that centrally located team members are more satisfied than their colleagues who are less central. Teachers who have many ties to their colleagues have access to support (Moolenaar et al., 2012) and are therefore expected to be more committed to the teaching profession. Outdegree centrality and outcloseness centrality are both about having access to other team members' information. Both network measures are therefore expected to positively affect commitment to the teaching profession. Because teachers who give advice are part of a supportive environment as well, it is expected that indegree centrality and incloseness centrality have a positive effect too. Team members who are centrally located in the network take more active part in group discussions which results in more job satisfaction and commitment (Kameda, Ohtsubo, & Takezawa, 1997; Scott-Ladd, Travaglione, & Marshall, 2006).

Teachers in a dense network 'voice a shared sense of responsibility between team members' (Daly, Moolenaar, Bolivar, & Burke, 2010, p. 380). This feeling of responsibility is one of the elements belonging to the third dimension of teacher commitment which is about taking responsibility for student learning and school life. Dense networks are characterized by many relationships between teachers, which indicates that teachers in dense networks have high scores on all network characteristics that this study takes into account.

## DOES TEACHER COMMITMENT MAKE SENSE?

Based on the information above it is expected that all network characteristics have a positive influence on all three commitment dimensions. That is why the third and fourth hypotheses are as follows:

*Hypothesis 3: In- and outdegree centrality and closeness centrality positively affect teacher commitment.*

*Hypothesis 4: In- and outcloseness centrality and closeness centrality positively affect teacher commitment.*

**The mediating effect of teacher commitment.** This study suggests that teacher commitment mediates the relationship between teachers' social networks and teacher self-efficacy. The influence of network measures on teacher commitment has been argued. The following paragraphs will explain how teacher commitment affects teachers' sense of efficacy.

Several aspects of commitment to the organization are positively related to teacher self-efficacy. Pajares (1997) stated that teachers with a strong sense of efficacy have more perseverance when they are confronted with obstacles and nothing seems to go smoothly. They are willing to invest more time to succeed. A strong sense of teacher self-efficacy is also related to the amount of effort teachers invest in teaching and the targets they set themselves (Allinder, 1994). Because the willingness to put considerably more effort in a job is part of teacher's organizational commitment, this first dimension of commitment seems to be positively related to teacher self-efficacy.

Previous studies also found positive correlations between the second dimension of teacher commitment, commitment to the teaching profession, and teacher self-efficacy. (Coladarci, 1992; Evans & Tribble, 1986). Positive correlations have been found between teacher self-efficacy and enthusiasm for teaching (Allinder, 1994; Hall, Burley, Villeme & Brockmeier, 1992), indicating that teachers with a strong sense of efficacy enjoy their job. Teacher self-efficacy also correlates with the likeliness that teachers keep working as teachers (Burley, Hall, Villeme, & Brockmeier, 1991; Glickman & Tamashiro, 1982). This study follows Coladarci (1992) who identified teacher attrition,

## DOES TEACHER COMMITMENT MAKE SENSE?

teachers leaving the profession, as an important aspect of teacher commitment. That is why in this study it is expected that commitment to the teaching profession positively affects teacher self-efficacy.

Commitment to students also seems positively related to teacher self-efficacy. Caprara et al. (2006) pointed out a correlation between teacher self-efficacy and teachers pursuing optimal results for students. The pursuit for optimal results can be seen as a devotion to student learning which is considered as commitment to students. Another correlation has been found between teacher self-efficacy and the openness to new ideas and the willingness to try these ideas out aiming to meet the needs of the students better (Guskey, 1988). Caring about student needs is one of the aspects of commitment to students. Because self-efficacy positively correlates with teachers caring for and feeling responsible for their students, it is expected that commitment to the student positively influences teacher self-efficacy.

Based on the findings listed above, the fifth hypothesis is:

*Hypothesis 5: All three dimensions of teacher commitment have a positive influence on teacher self-efficacy.*

This study argues that the relationship between teacher's network characteristics and teacher self-efficacy is mediated by teacher commitment. In the previous sections several hypothesized relationships were argued. Teachers' social network characteristics seem to positively influence both teacher commitment and teacher self-efficacy. Moreover, there may be a relation between teacher commitment and teacher self-efficacy. Therefore, the final hypothesis is as follows:

*Hypothesis 6: Teacher commitment has a positive mediating effect on the relationship between teachers' social networks and student achievement.*

# DOES TEACHER COMMITMENT MAKE SENSE?

## Method

### Context

This study was carried out using data from eight Dutch elementary schools. Dutch elementary schools are dealing with a huge amount of governmental pressure in a world that is rapidly changing. Elementary teachers are confronted with developments and innovations constantly. According to the Dutch government, education should be directed at the future, because we are living in a changing society and children must be prepared for their future (Rijksoverheid, 2014). There is a chance that teachers do not feel comfortable with these (technological) developments, which can have its repercussions on their sense of efficacy. Through teacher interaction colleagues can help each other out when they face problems because of these rapid changes.

### Sample

The participating schools were selected using a convenience sample. From January till March 2015 schools were asked if they were willing to participate in this study. Twenty Dutch elementary schools had been approached with a total number of more than 400 teachers. Eight schools wanted to participate. Three elementary schools were located in the Veluwe and belonged to the same school organization. The other five schools were located in the Groene Hart region. These schools were not all part of an organization. Only two of them belonged to a larger school organization. The other three schools were independent organizations. All eight school had a Protestant signature.

Questionnaires which assessed teachers' social networks, teacher commitment, and student achievement were distributed online to all 131 teachers. Data collection took place from January to April 2015 and eventually 114 teachers filled out the questionnaire, which gives a response rate of 87 %. Descriptive statistics of the sample are shown in Table 1.

DOES TEACHER COMMITMENT MAKE SENSE?

Table 1.

*Sample demographics*

Variable	Frequency
Sex	
Male	19
Female	95
Years of employment	
Less than 1 year	11
1 year	4
2 years	3
3 years	4
4 years	5
5 years	11
6 years	4
7 years	3
8 years	9
9 years	2
More than 9 years	56
Years of experience	
0 to 2 years	7
2 to 5 years	17
5 to 10 years	10
10 to 15 years	20
More than 15 years	58

## DOES TEACHER COMMITMENT MAKE SENSE?

### **Procedure**

Schools were approached over the phone. If schools were willing to participate an arrangement was made to talk in person. The goal of this conversation was to get acquainted and to give the principal some extra information about learning in social networks. Data were collected from January till April 2015 and eventually eight schools participated. The questionnaire was filled out online.

Two schools participated in a pilot study. This pilot group consisted of 25 elementary school teachers. A reliability analysis showed that the reliability of the questionnaire was sufficient and no changes were made in the questionnaire.

When collecting social network data researchers face the problem that these data cannot be collected anonymously, because researchers need all names of the team members to provide a network (Daly, 2010). In this study, data were anonymized directly after data collection by taking out all personal information. Team members were represented by characters and the participating schools were referred to as 'school A', 'school B', and so on.

### **Instruments**

**Characteristics of teachers' networks.** One network question was aimed at examining teachers' social networks. To assess the advice network ties respondents were asked to answer the following question: 'Whom do you approach for advice on a work-related problem?' This question was used to establish the teachers' advice networks of the schools that participated in this study (Ibarra, 1993).

**Teacher commitment.** Three dimensions of teacher commitment were assessed. For organizational commitment the Organizational Commitment Questionnaire was used (Mowday et al., 1979). Occupational commitment was assessed using an instrument developed by Park (2007). Finally, commitment to students was measured using an instrument from Lee, Zhang, and Yin (2011). All items were measured on a 5-point Likert scale ranging from strongly disagree to strongly agree.

All items were submitted to a factor analysis using principal component method with varimax rotation. Items 5 (I could just as well be working for a different organization as long as the type of work was similar) and 10 (Often I find it difficult to agree with this organization's policies on important matters relating to its employees) had high loadings on more than one factor. After these



DOES TEACHER COMMITMENT MAKE SENSE?

items were removed the same analysis was executed and the results showed that three components had an eigenvalue higher than 1.00. Item 6 (It is my responsibility to advance all my students for high academic achievements) was also removed to improve the scale’s reliability. Factor loadings of the remaining eleven items are shown in Table 2.

Table 2.

*Factor Loadings for Principal Component Analysis With Varimax Rotation of Commitment Scales*

	Component Factor Loading		
	I	II	III
1. I am willing to put in a great deal of effort beyond that normally expected in order to help this organization be successful.	.55		
2. I feel very little loyalty to this organization. (R)	.64		
3. I would accept almost any type of job assignment in order to keep working for this organization.	.79		
4. I find that my values and the organization’s values are very similar.	.71		
7. I usually look forward to each working day at this school.		.59	.34
8. I often feel satisfied with my teaching job.		.79	
9. If I could go back to college and start over again, I would still choose to become a teacher.		.86	
11. All students can succeed and it is my mission to ensure their success			.56
12. It is my responsibility to ensure good social relations among my students			.77
13. I believe that being an educator makes me responsible for my students’ integration in the classroom			.70

DOES TEACHER COMMITMENT MAKE SENSE?

14. I have to be aware of the social relations among students in my	.68
class and assist whenever needed to	
improve them	

*Note.* Only factor loadings higher than .3 are included.

Cronbach’s alpha was calculated for these three factors. Tabel 3 shows the values which are all lower than .70. This could be a consequence of the fact that each factor only consisted of a small amount of items. The 14 remaining items seemed to cover the three dimensions of teacher commitment very well. For example, commitment to the organization has three components: believing in organizational goals and values, putting effort into the organization, and wanting to stay with the organization. The four items from the questionnaire that measure organizational commitment covered all three components. For that reason this study stuck to the three factors that the factor analysis distinguished.

Table 3  
*Cronbach’s alphas*

Factors	Cronbach’s alpha
Commitment to the school organization	.63
Commitment to the teaching profession	.67
Commitment to students	.62

**Teacher Self-efficacy.** The Teacher Self-Efficacy Scale (Schwarzer, Schmitz, & Daytner, 1999) was used to assess teacher self-efficacy. All items of this questionnaire were measured on a 5-point Likert scale ranging from strongly disagree to strongly agree. The items are listed in Table 4. Cronbach’s alpha of this scale was .77.

DOES TEACHER COMMITMENT MAKE SENSE?

Table 4

*Teacher Self-Efficacy Scale*

---

1.	I am convinced that I am able to teach successfully all relevant subject content to even the most difficult students.
2.	I know that I can maintain a positive relationship with parents, even when tensions arise.
3.	When I try really hard, I am able to reach even the most difficult students.
4.	I am convinced that, as time goes by, I will continue to become more and more capable of helping to address my students' needs.
5.	Even if I am disrupted while teaching, I am confident that I can maintain my composure and continue to teach well.
6.	I am confident in my ability to be responsive to my students' needs, even if I am having a bad day.
7.	If I try hard enough, I know that I can exert a positive influence on both the personal and academic development of my students.
8.	I know that I can motivate my students to participate in innovative projects.
9.	I know that I can carry out innovative projects, even when I am opposed by skeptical colleagues.

---

All scales had been translated to Dutch and back-translation was done by an English teacher. The purpose of this back-translation was to make sure the translations were done correctly. Back-translation did not lead to any changes in the questionnaire.

**Analysis**

Teachers' advice networks were studied using social network analysis. Teachers' degree centrality and closeness centrality were calculated using UCINET. A distinction is made between indegree and outdegree centrality to distinguish between giving advice and receiving advice. For both types of

## DOES TEACHER COMMITMENT MAKE SENSE?

degree centrality normalized scores were used, because normalized scores can be compared to each other. Normalized indegree centrality is calculated as the amount of incoming ties divided by the maximum number of ties. Normalized outdegree centrality is calculated as the number of outgoing ties divided by the maximum amount of ties. Both normalized scores vary from 0 to 1 where 0 means a teacher does not have any ties while 1 means a teacher has all the possible ties. The higher this number, the more a teacher is asked for advice or asks a colleague for advice. Indegree and outdegree centrality were put together in one hypothesis, since the expectations for both measures were equal.

This study also distinguishes between outcloseness and incloseness centrality. Both centrality measures are about how far a teacher is positioned from other team members in the network. The higher a team member's outcloseness the faster the teacher can get in contact with other teachers. A high score on incloseness means that other team members can get in contact with this teacher easily. Closeness centrality is calculated as 1 minus the sum of the shortest paths between a teacher and his colleagues (Moolenaar et al., 2010). Closeness centrality measures were normalized resulting in scores between 0 and 1. Incloseness and outcloseness centrality were combined in one hypothesis, because the predictions for both measures were the same.

To test the hypotheses the following steps were followed. First, descriptive statistics were calculated. Second, correlation analyses were executed to examine the relationships between teachers' social networks, teacher commitment, and student achievement. Third, a factor analysis determined if underlying factors explained the data. Then, multiple regression analyses were conducted to examine the relationship between teachers' social networks and student achievement and the relationship between teacher commitment and student achievement. Lastly, the mediating role of teacher commitment was tested.

## Results

A total of 114 elementary school teachers completed the survey. Descriptive statistics were calculated for teacher commitment, teacher self-efficacy and social network characteristics (see Table 5).

DOES TEACHER COMMITMENT MAKE SENSE?

Table 5  
*Descriptive Statistics*

	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
Network characteristics				
Indegree centrality	.21	.20	.00	.83
Outdegree centrality	.22	.12	.04	.67
Incloseness centrality	.32	.14	.11	.86
Outcloseness centrality	.33	.08	.19	.58
Teacher commitment				
Commitment to the organization	4.39	.41	3.33	5.00
Commitment to the teaching profession	4.08	.62	2.33	5.00
Commitment to students	4.57	.36	3.80	5.00
Teacher self-efficacy	4.15	.37	3.11	5.00

Descriptive statistics show that there is some variation between the three dimensions of teacher commitment. Teachers are mostly committed to students (M=.457, SD=.36), followed by commitment to the organization (M=4.39, SD=.41) and commitment to the teaching profession (M=4.08, SD=.62). The average score on occupational commitment is the lowest of all dimensions of commitment, but with scores ranging from 2.33 to 5.00 this dimension has the largest range. Keeping in mind that teacher commitment was measured on a 5-point Likert scale there can be stated that teachers have relatively high scores on all dimensions of teacher commitment.

Another variable of which descriptive statistics are shown in Table 5 is teacher self-efficacy. Descriptive statistics show that teachers have a strong sense of efficacy (M=4.15, SD=.37), indicating that they believe in their ability to carry out the actions that are needed to reach educational goals (Skaalvik & Skaalvik, 2010). The minimum score is 3.11 which means that even teachers with the lowest scores of the sample have a moderate sense of efficacy.

DOES TEACHER COMMITMENT MAKE SENSE?

Descriptive statistics of social network characteristics are also presented in Table 5. Only small differences exist between indegree (M=.21, SD=.20) and outdegree centrality (M=.22, SD=.12). This is also the case for incloseness (M=.32, SD=.14) and outcloseness centrality (M=.33, SD=.08).

Correlation analyses

Correlation analyses were executed to determine the interrelationships of all variables. Because data were not normally distributed Spearman’s correlation was used. All correlations are shown in Table 6.

Table 6.  
*Correlation Analysis*

	1a	1b	1c	1d	2a	2b	2c	3
1. Network characteristics								
a. Indegree centrality	1.00	-.14	.87**	-.25**	.05	.18	.16	.23*
b. Outdegree centrality		1.00	-.15	.71**	.14	.12	.15	.07
c. Incloseness centrality			1.00	-.23*	.04	.13	.16	.24*
d. Outcloseness centrality				1.00	.11	.04	.17	.07
2. Teacher commitment								
a. Commitment to organization					1.00	.30**	.21*	.13
b. Commitment to profession						1.00	.30**	.20*
c. Commitment to students							1.00	.49**
3. Teacher self-efficacy								1.00

Note. \*\* p<.01, \* p<.05

Correlations were found between several network measures. Indegree centrality is related to both measures of closeness centrality. Indegree centrality strongly correlates with incloseness centrality ( $r_s=.87, p<.01$ ), indicating that teachers who are asked for advice by many colleagues are also relatively easy to reach. A weak, negative correlation is found between indegree centrality and outcloseness centrality ( $r_s=-.25, p<.01$ ). This correlation points out that giving advice does not imply

## DOES TEACHER COMMITMENT MAKE SENSE?

that other team members are easy to reach. Another negative correlation is found between incloseness centrality and outcloseness centrality ( $r_s = -.23, p < .05$ ).

Correlation analyses indicate that some dimensions of teacher commitment have a weak interrelationship. Commitment to the organization correlates with teacher's commitment to the profession ( $r_s = .30, p < .01$ ), indicating that teachers who like to keep working at the same school also want to stay being a teacher. Commitment to the organization also correlates with teacher's commitment to the students ( $r_s = .21, p < .05$ ), which indicates that teachers who believe in the goals and values of the school feel responsible for student learning as well. Finally, correlation between commitment to the profession and commitment to students ( $r_s = .30, p < .01$ ) shows that teachers who are satisfied with their job feel devoted to student learning too. Because all three dimensions of teacher commitment only show weak correlations, the dimensions are considered as three different factors.

Correlations also indicate that social network characteristics are related to teacher self-efficacy. Incloseness centrality appears to be positively related to teacher self-efficacy ( $r_s = .27, p < .01$ ). This means that teachers have a higher sense of self-efficacy if they are easy to reach by their colleagues. The results also point out a weak, positive relation between indegree centrality and teacher self-efficacy ( $r_s = .23, p < .05$ ). The more a teacher is asked for advice, the stronger his sense of efficacy is.

Other findings indicate weak correlations between social network characteristics and teacher commitment. Teacher commitment to the organization is positively related to outcloseness centrality ( $r_s = .19, p < .05$ ). In other words, teachers who can easily reach other team members tend to be more committed to the school organization. Another positive relation exists between commitment to the students and incloseness centrality ( $r_s = .23, p < .05$ ). This means that teachers who are easily reachable by other team members seem to be more committed to their students.

Finally, correlation analyses pointed out a relation between teacher commitment and teacher self-efficacy. Teacher commitment to the profession appears to be positively related to teacher self-efficacy ( $r_s = .22, p < .05$ ). A stronger correlation could be found between teacher commitment to the students and teacher self-efficacy ( $r_s = .49, p < .01$ ).

DOES TEACHER COMMITMENT MAKE SENSE?

Regression analyses

Correlations that were found earlier were tested conducting multiple regression analyses. First, the influence of incloseness centrality and indegree centrality on teacher self-efficacy was tested. These analyses gave significant results for both incloseness centrality ( $\beta=.24, p<.05$ ) and indegree centrality ( $\beta=.23, p<.05$ ). Teachers who are asked for advice by many colleagues and teachers who are easily reachable have a stronger sense of efficacy. Effect sizes of these results are shown in Table 6. A second multiple regression analysis examined the influence of social network characteristics on teacher commitment, but these results were insignificant for both incloseness centrality ( $\beta=.16, p>.05$ ) and outcloseness centrality ( $\beta=.11, p>.05$ ). Finally, the influence of teacher commitment on teacher self-efficacy was tested and this analysis generated two significant results. A positive effect was found for the influence of commitment to students on teacher self-efficacy ( $\beta=.49, p<.01$ ). Teachers who are more committed to their students have a stronger sense of efficacy. Another positive effect was found for the influence of teacher’s commitment to the profession on teacher self-efficacy ( $\beta=.20, p<.05$ ). All results are presented in Table 7 and Table 8.

Table 7  
*Regression analyses for variables predicting teacher self-efficacy*

	B	SE B	R <sup>2</sup>	β
Network characteristics	.67	.26	.06	.24*
Incloseness				
Indegree	.46	.18	.05	.23*
Teacher commitment				
Commitment to the profession	.12	.05	.04	.20*
Commitment to students	.51	.09	.24	.49**

Note: \* $p<.05$ , \*\* $p<.01$



DOES TEACHER COMMITMENT MAKE SENSE?

Table 8

Regression analyses for variables predicting teacher commitment

	B	SE B	R <sup>2</sup>	β
Network characteristics				
Outcloseness	.56	.48	.01	.11
Incloseness	.43	.26	.03	.16

Mediating role of teacher commitment

Three hypothesized relationships could be evidenced by regression analyses partially. Hypothesis 1 stated that in- and outdegree centrality affect teacher self-efficacy directly. However, regression analyses could only prove the influence of indegree centrality on teacher self-efficacy. Hypothesis 2 was about the impact of in- and outcloseness centrality on teacher self-efficacy, but regression analyses only showed significant results for the effect of incloseness centrality. Hypotheses 3 and 4 suggested relationships between teachers’ social networks and teacher commitment. Both hypotheses could not be evidenced by regression analyses. Finally, hypothesis 5 could be evidenced partially. Commitment to the profession and commitment to the students affect teacher self-efficacy.

The lack of significant relations between teachers’ social networks and teacher commitment (H3 and H4) has its consequences for a possible mediating effect of teacher commitment. Because no indirect relationship between teachers’ social network exists, there is a direct-only nonmediation pattern. This pattern indicates that there is a direct effect but no indirect effect (Zhao, Lynch, & Chen, 2010). The sixth hypothesis about the mediating effect of teacher commitment could therefore not be evidenced.

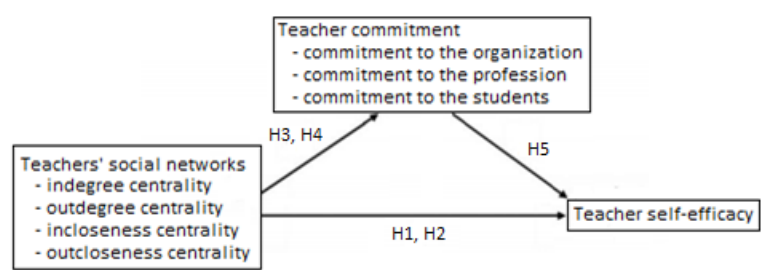


Figure 2. Path diagram of hypothesized relations

DOES TEACHER COMMITMENT MAKE SENSE?

Findings can also be presented graphically. Figures 3 and 4 illustrate the advice network of one of the participating schools. Team members are represented by squares. Lines that connect these squares represent teachers’ network ties. In Figure 3 three shades of blue represent teachers’ sense of efficacy. The darker the shade of blue, the stronger the teacher’s sense of efficacy is (light blue: <4.00, blue: 4.00-4.50, dark blue: >4.50). For instance, teacher G has zero incoming ties which indicates that this teacher is never asked for advice. The light shade of blue of the square indicates that this teacher has a relatively low sense of efficacy. This combination of low indegree centrality and low sense of efficacy correspond to the results of the regression analyses which pointed out a relation between indegree centrality and teacher self-efficacy. The same relation goes for teacher F, who also has zero incoming ties plus a relatively low sense of efficacy. However, this tendency is not shown by all team members. Teacher J, for instance, has zero incoming ties as well but still has a relatively strong sense of efficacy.

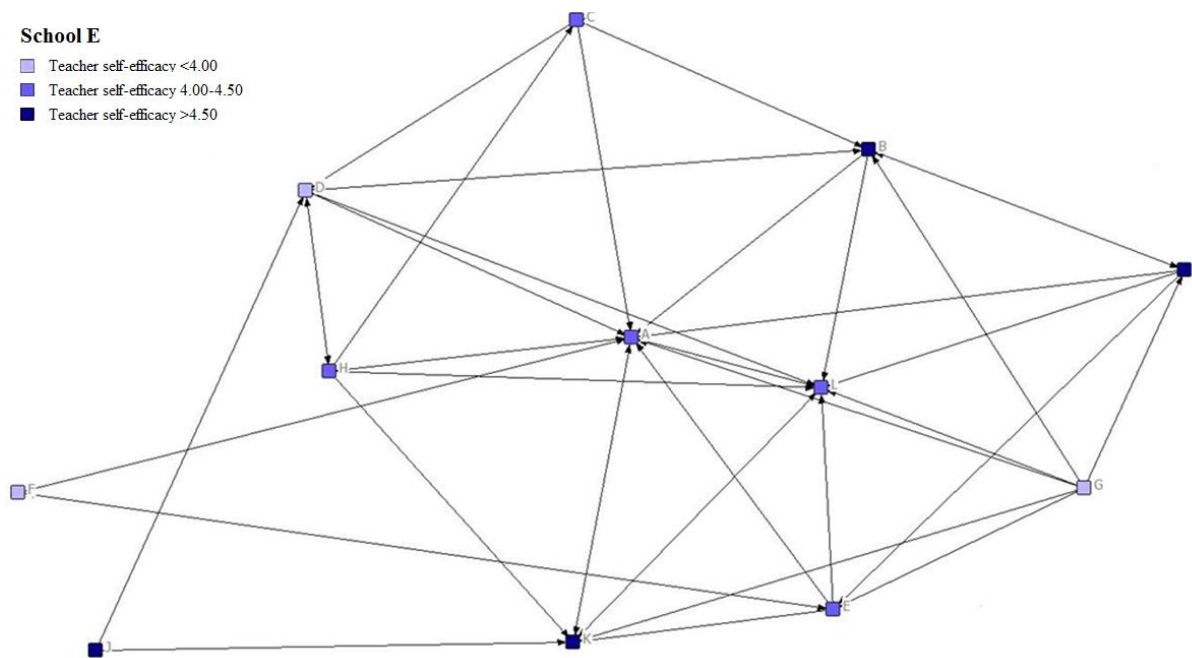
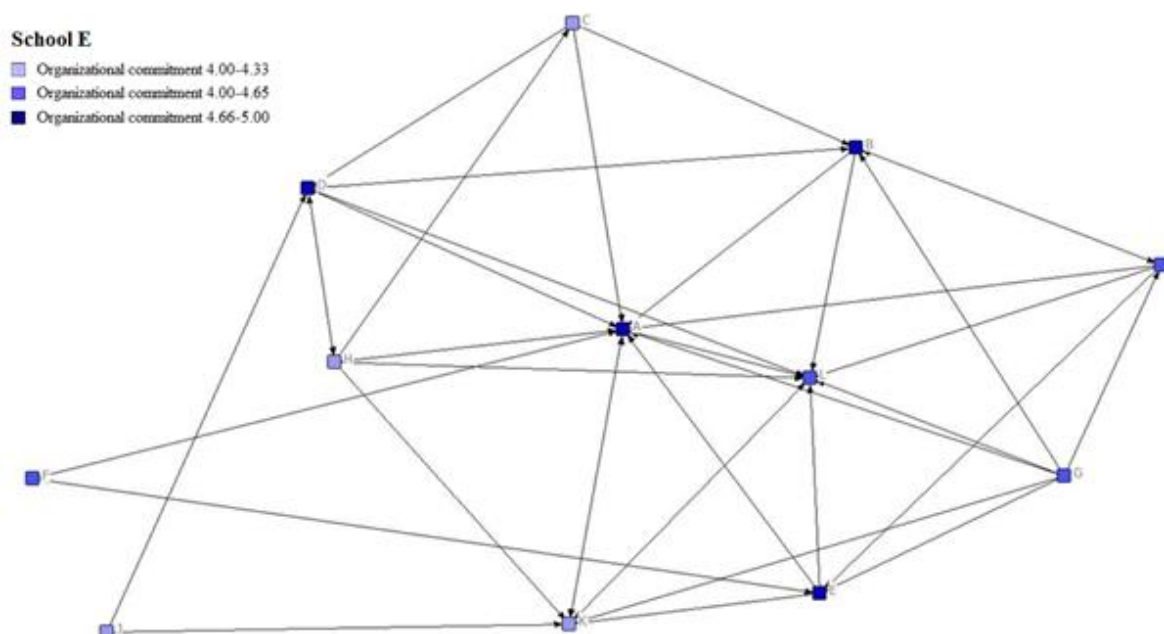


Figure 3. Example of teacher self-efficacy in a school’s advice network

Figure 4 indicates team member’s commitment to the organization. In this figure, three shades of blue represent the extent to which team members are committed to the organization. The darker the shade of blue, the more committed to the organization a team member is (light blue: 4.00-4.33, blue: 4.33-4.67, dark blue: >4.67).

## DOES TEACHER COMMITMENT MAKE SENSE?

4.33-4.65, dark blue: 4.66-5.00). The most central actor, teacher A, is very committed to the organization. Actors who are not centrally located, like teacher J, are less committed compared to other team members. However, no correlations were found between in- and outdegree centrality and teachers' commitment to the organization.



*Figure 4.* Example of teacher commitment in a school's advice network

## Discussion

Based on literature about teacher self-efficacy this study argued that social networks can affect teacher commitment, which in turn enhances teacher self-efficacy. Studying the antecedents of teachers' sense of efficacy can expand our understanding of this construct which may help us to strengthen teachers' sense of efficacy. A stronger sense of efficacy has multiple benefits including greater teacher motivation and greater student achievement (Tschannen-Moran & Hoy, 2007).

Several hypotheses were posited about the relations between teachers' social networks, teacher commitment and teacher self-efficacy. These hypotheses were tested conducting a survey study in 8 Dutch elementary schools. Findings could not confirm all hypotheses. No significant effects were found between teachers' social networks and teacher commitment. Both degree centrality and closeness centrality – in and out – were not found to affect either dimension of teacher commitment.

## DOES TEACHER COMMITMENT MAKE SENSE?

However, the results of this study could evidence some of the other hypothesized relationships. Two dimensions of teacher commitment appeared to influence teacher self-efficacy. Two network characteristics, indegree centrality and incloseness centrality also affect teacher self-efficacy. In the next paragraphs three themes that arise from the findings of this study will be discussed. Practical implications for elementary schools and suggestions for future research are done as well.

### **Social networks and teacher self-efficacy**

Scholars have pointed out the relationship between teachers' social networks and teacher self-efficacy (Shachar & Shmuelewitz, 1997). Findings of this study endorse this relationship. Incloseness centrality positively influences teacher self-efficacy, meaning that teachers who can be reached by their team members easily have a stronger sense of efficacy. Indegree centrality also has a positive effect on teacher self-efficacy. This relationship implies that teachers who are asked for advice by many team members have a strong sense of efficacy. These findings are a contribution to the existing literature base about antecedents of teacher self-efficacy, because the influence of social network characteristics has been researched in more detail. While previous studies found teacher collaboration as an antecedent of teacher self-efficacy (Shachar & Shmuelewitz, 1997; Lee, Dedrick, & Smith, 1991), the results of this study indicate that in an advice network only advice-givers strengthen their sense of efficacy. No significant relation was found between advice-receiving and self-efficacy. Asking many colleagues for advice may indicate that an advice-receiver is insecure about his capabilities as a teacher and is constantly looking for confirmation from his team members.

Findings showed that advice-givers have a stronger sense of efficacy. This result supports the statement of Moolenaar et al. (2012) that advice-givers increase their sense of efficacy when they demonstrate their skills to other team members. Advice-givers share their skills and knowledge and give personal guidance. Knowledge sharing contributes to teachers' sense of efficacy because it shows that they are able to provide useful information to their team members (Lin, 2007). However, Lin (2007) suggests that this relation is reciprocal, because feeling competent and having a strong sense of efficacy can motivate teachers to share knowledge with their colleagues. The reciprocity of this relationship was not considered in this research and should be taken into account in further research. This study emphasized the benefits of teacher collaboration, but Johnson (2003) also pointed out the

## DOES TEACHER COMMITMENT MAKE SENSE?

disadvantages it may have for teachers. Negative effects of teacher collaboration include loss of autonomy and interpersonal conflict. Future studies must pay attention to these disadvantages by investigating their impact on teacher self-efficacy.

### **Teacher commitment and teacher self-efficacy**

Findings indicated several relations between teacher commitment and teacher self-efficacy. Teachers who are devoted to their job believe in their own ability to reach educational goals. These findings contradict the results of Coladarci's (1992) study a little, because his results indicated that the relationship between these constructs is the other way around. He found teacher self-efficacy as a strong predictor of occupational commitment. Further research should indicate if this relationship is indeed reciprocal.

Teachers who are committed to their students and feel responsible for student learning show a strong sense of efficacy. This result matches earlier findings from previous researches. Ramey-Gassert, Shroyer, and Staver (1996) pointed out that a teacher's desire to help his students and work for the benefit of his students is essential for developing a strong sense of efficacy.

### **Teacher commitment as a mediator**

Findings could not indicate the mediating effect of teacher commitment. No significant relations were found between teachers' social networks and teacher commitment. The literature base can give several explanations why this relation could not be evidenced. First of all, some scholars emphasize the disadvantages of giving advice. Cross and Prusak (2002) point out that giving advice is quite a time-consuming activity. They argue that teachers who are centrally located in the advice network are too busy giving advice that they do not have time to finish their own work. According to Bolino and Turnley (2005), this may result in work stress. Zagenczyk and Murrell (2009) pose that there must be some sort of balance between giving and receiving. They state that commitment will decrease if a teacher gives his time to an organization without getting something in return. This brings us to the second possible reason why no significant relations were found between social networks and teacher commitment.

According to Gouldner (1960), mutual support is an important aspect of relationships. Team members often help those colleagues who help them. He emphasizes the value of reciprocated

## DOES TEACHER COMMITMENT MAKE SENSE?

relationships. In advice networks that implies that teachers give advice to those team members who gave advice in the past. Perhaps degree centrality and closeness centrality only affect teacher commitment if in- and outdegrees are the same. Based on this reasoning future studies should also consider including reciprocity as a network measure.

### **Limitations**

Several limitations of this study should be mentioned. Because the context of Dutch elementary schools may not be like other countries, it is questionable if the results of this study are generalizable. Dutch elementary schools are characterized by relatively small class sizes in comparison to other countries around the world like France or the United Kingdom (World Bank, 2015). Research has pointed out the relationship between class size and teacher self-efficacy (Klassen & Chiu, 2010). Future studies must indicate if the same results can be found in other countries.

Another limitation of this study is the relatively low reliability of the used measurement scales. While Cronbach's alpha was sufficient for the Teacher Self-efficacy Scale, the values of the three factors from the commitment scales were insufficient. This could be the reason why no significant relations were found between teachers' social networks and teacher commitment. According to Bacon (2004), values of Cronbach's alpha lower than .7 decreases statistical power in a research design.

Teacher self-efficacy is worth researching, because of its direct relationship with student achievement. If we are able to expand our knowledge about this concept, we will be able to optimize teachers' sense of self-efficacy which will have its effect on student achievement. This study is a contribution to the literature base about teacher self-efficacy, since it specifies which characteristics of an individual's network position affect teacher self-efficacy. While this study could not evidence the mediating effect of teacher commitment, it has shown that teacher commitment matters for teacher self-efficacy.

### 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), 86-95.10.1177/088840649401700203
- Bacon, D. (2004). The contributions of reliability and pretests to effective assessment. *Practical Assessment, Research & Evaluation*, 9(3). Retrieved June 10, 2015 from <http://PAREonline.net/getvn.asp?v=9&n=3>
- Balkundi, P. & Harrison, D. (2006). Ties, leaders, and time in teams: strong inferences about network structures effects on team viability and performance. *Academy of Management Journal*, 49, 49-68. doi:10.5465/AMJ.2006.20785500
- Bandura, A. (1997). *Self-efficacy: the exercise of control*. New York: Freeman
- Borgatti, S.P., Everett, M.G., & Freeman, L.C. (2002). *Ucinet 6 for Windows: Software for Social Network Analysis*. Harvard, MA; Analytic Technologies
- Brass, D.J. (1984). Being in the right place: A structural analysis of individual influence in an organization. *Administrative Science Quarterly*, 29, 518-539. doi:10.2307/2392937
- Brookhart, S.M., & Loadman, W.E. (1990). School-university collaboration: different workplace cultures. *Contemporary Education*, 61, 125-128
- Brown, S. P., & Leigh, T. W. (1996). A look at psychological climate and its relationship to job involvement, effort, and performance. *Journal of Applied Psychology*, 81, 358 – 368.
- Burley, W. W., Hall, B. W., Villeme, M. G., & Brockmeier, L. L. (1991, April) *A path analysis of the mediating role of efficacy in first-year teachers' experiences, reactions, and plans*. Paper presented at the annual meeting of the American Educational Research Association, Chicago

## DOES TEACHER COMMITMENT MAKE SENSE?

- Caprara, G. V., Alessandri, G., & Eisenberg, N. (2012). Prosociality: the contribution of traits, values, and self-efficacy beliefs. *Journal of personality and social psychology*, 102(6), 1289-1303. doi:10.1037/a0025626
- 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, 473-490.
- Coladarci, T. (1992). Teachers' sense of efficacy and commitment to teaching. *The Journal of experimental education*, 60(4), 323-337. doi:10.1080/00220973.1992.9943869
- Daly, A.J. (2010). *Social Network Theory and Educational Change*. Cambridge, MA: Harvard University Press.
- Daly, A.J., Moolenaar, N.M., Bolivar, J.M., & Burke, P. (2010). Relationships in reform; The role of teachers' social networks. *Journal of Educational Administration*, 48, 39-79. doi:10.1108/09578231011041062
- Dannetta, V. (2002). What factors influence a teacher's commitment to student learning? *Leadership and Policy in School*, 1, 144-171. doi:10.1076/lpos.1.2.144.5398
- Dinham, S. & Scott, C. (2000). Moving into the third, outer domain of teacher satisfaction. *Journal of Educational Administration*, 38, 379-396. doi:10.1108/09578230010373633
- Duyar, I., Gumus, S., & Sukru Bellibas, M. (2013). Multilevel analysis of teacher work attitudes: The influence of principal leadership and teacher collaboration. *International Journal of Educational Management*, 27(7), 700-719. doi:10.1108/IJEM-09-2012-0107
- Elliott, B., & Crosswell, L. (2002). Teacher commitment and engagement: The dimensions of ideology and practice associated with teacher commitment and engagement within an Australian perspective. Retrieved from <http://www.aare.edu.au/02pap/cro02522.htm>.



## DOES TEACHER COMMITMENT MAKE SENSE?

- Evans, E. D., & Tribble, M. (1986). Perceived teaching problems, self-efficacy, and commitment to teaching among preservice teachers. *The Journal of Educational Research*, 80(2), 81-85. doi:10.1080/00220671.1986.10885728
- Firestone, W.A., & Pennell, J.R. (1993). Teacher commitment, working conditions, and differential incentive policies. *Review of Educational Research*, 63, 489-525. doi:10.3102/00346543063004489
- Firestone, W.A., & Rosenblum, S. (1988). Building commitment in urban high schools. *Educational Evaluation and Policy Analysis*, 10, 285-299. doi:10.3102/01623737010004285
- Freeman, L.C. (1979). Centrality in Social Networks Conceptual Clarification. *Social Networks*, 1, 215-239. doi:10.1016/0378-8733(78)90021-7
- Friedkin, N.E., & Slater, M.R. (1994). Social Leadership and Performance: A Social Network Approach. *Sociology of Education*, 67, 139-157. doi:10.2307/2112701
- Gist, M. E., & Mitchell, T. R. (1992). Self-efficacy: A Theoretical analysis of its determinants and malleability. *Academy of Management Review*, 77, 183-211.
- Glickman, C. D. & Tamashiro, R. T. (1982). A comparison of first-year, fifth-year, and former teachers on efficacy, ego development, and problem solving. *Psychology in the Schools*, 19(4), 558-562. doi: 10.1002/1520-6807(198210)19:4<558::AID-PITS2310190426>3.0.CO;2-F
- Guskey, T. R. (1988). Teacher efficacy, self-concept, and attitudes toward the implementation of instructional innovation. *Teaching and teacher education*, 4(1), 63-69.
- Haythornthwaite, C. (1996). Social network analysis: An approach and technique for the study of information exchange. *Library & information science research*, 18(4), 323-342. doi:10.1016/S0740-8188(96)90003-1

## DOES TEACHER COMMITMENT MAKE SENSE?

- Hall, B. W., Burley, W. W., Villeme, M. G. & Brockmeir, L. (1992, April). *An attempt to explicate teacher efficacy beliefs among first-year teachers*. American Educational Research Association, San Francisco, CA.
- Ibarra, H. (1993). Power, Social-Influence, and Sense Making: Effect of network centrality and proximity on employee perceptions. *Administrative Science Quarterly*, 38, 277-303. doi:10.2307/2393414
- Jack, S. L. (2005). The role, use and activation of strong and weak network ties: a qualitative analysis. *Journal of management studies*, 42(6), 1233-1259. doi:0.1111/j.1467-6486.2005.00540.x
- Johnson, B. (2003). Teacher collaboration: Good for some, not so good for others. *Educational Studies*, 29(4), 337-350. doi:10.1080/0305569032000159651
- Judge, T. A., Jackson, C. L., Shaw, J. C., Scott, B. A., & Rich, B. L. (2007). Self-efficacy and work-related performance: the integral role of individual differences. *Journal of applied psychology*, 92, 107.
- Kameda, T., Ohtsubo, Y., & Takezawa, M. (1997). Centrality in socio-cognitive network and social influence: An illustration in a group decision-making context. *Journal of Personality and Social Psychology*, 73, 296-309. doi:10.1037/0022-3514.73.2.296
- Kenny, D. A., Kashy, D. A., & Bolger, N. (1998). Data analysis in social psychology. In D. Gilbert, S.T. Fiske, & G. Lindzey (Eds.), *Handbook of social psychology* (pp. 233–265). New York, NY: McGraw-Hill.
- 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. doi:10.1037/a0019237
- Kushman, J.W. (1992). The organizational dynamics of teacher workplace commitment: A study of urban elementary and middle schools. *Educational Administration Quarterly*, 28, 5-42. doi:10.1177/0013161X92028001002

## DOES TEACHER COMMITMENT MAKE SENSE?

- Lee, V. E., Dedrick, R. F., & Smith, J. B. (1991). The effect of the social organization of schools on teachers' efficacy and satisfaction. *Sociology of Education*, 64, 190-208. doi:10.2307/2112851
- Lee, J. C. K., Zhang, Z., & Yin, H. (2011). A multilevel analysis of the impact of a professional learning community, faculty trust in colleagues and collective efficacy on teacher commitment to students. *Teaching and Teacher Education*, 27(5), 820-830. doi:10.1016/j.tate.2011.01.006
- Lin, H. F. (2007). Effects of extrinsic and intrinsic motivation on employee knowledge sharing intentions. *Journal of information science*, 33, 135-149. doi:10.1177/0165551506068174
- Little, J. (1990). The persistence of privacy: Autonomy and initiative in teachers' professional relations. *The Teachers College Record*, 91(4), 509-536.
- Macinko, J., & Starfield, B. (2001). The utility of social capital in research on health determinants. *Milbank Quarterly*, 79(3), 387-427. doi:10.1111/1468-0009.00213
- Magaletta, P. R., & Oliver, J. M. (1999). The hope construct, will, and ways: Their relations with self - efficacy, optimism, and general well-being. *Journal of clinical psychology*, 55, 539-551.
- Magee, D.J., Zachazewski, J.E., & W.S. Quillen (2008). *Pathology and Intervention in Musculoskeletal Rehabilitation*. Philadelphia, PA: Saunders
- Moolenaar, N.M. (2010). *Ties with potential: Nature, antecedents, and consequences of social networks in school teams* (PhD thesis, UvA). Retrieved from <http://dare.uva.nl/record/1/374804>.
- Moolenaar, N. M., Daly, A. J., & Slegers, P. J. (2010). Occupying the principal position: Examining relationships between transformational leadership, social network position, and schools' innovative climate. *Educational administration quarterly*, 46(5), 623-670.

## DOES TEACHER COMMITMENT MAKE SENSE?

- Moolenaar, N.M., Slegers, P.J.C., & Daly, A.J. (2012). Teaming up: Linking collaboration networks, collective efficacy, and student achievement. *Teaching and Teacher Education*, 28, 251-262. doi:10.1016/j.tate.2011.10.001
- Mowday, R.T., Porter, L.W., & Steers, R.M. (1982). *Employee-organization linkages: The psychology of commitment, absenteeism, and turnover*. Orlando: Academic Press.
- Mowday, R.T., Steers, R.M., & Porter, L.W. (1979). The measurement of organizational commitment. *Journal of Vocational Behavior*, 14, 224-247. doi:10.1016/0001-8791(79)90072-1
- Nias, J. (1981). Commitment and motivation in primary school teachers. *Educational Review*, 33, 181-190. doi:10.1080/0013191810330302
- O'Leary, A. (1985). Self-efficacy and health. *Behaviour research and therapy*, 23, 437-451.
- Pajares, F. (1997). Current directions in self-efficacy research. In M. Maehr & P. R. Pintrich (Eds.), *Advances in motivation and achievement*. Volume 10, (pp. 1-49). Greenwich, CT: JAI Press.
- Park, I. (2007). Teacher commitment and its effects on student achievement in American high schools. *Educational Research and Evaluation*, 11, 461-485. doi:10.1080/13803610500146269
- Pritchard, A. (2009). *Ways of learning. Learning theories and learning styles in the classroom*. London, New York: Routledge
- Ramey-Gassert, L., Shroyer, M. G., & Staver, J. R. (1996). A qualitative study of factors influencing science teaching self-efficacy of elementary level teachers. *Science Education*, 80(3), 283-315. doi:10.1002/(SICI)1098-237X(199606)80:3<283::AID-SCE2>3.0.CO;2-A
- Reyes, P. (1990). Organizational Commitment of Teachers. In P. Reyes (Ed.), *Teachers and their workplace: Commitment, performance, and productivity* (pp. 143 – 162). San Francisco: Sage.

## DOES TEACHER COMMITMENT MAKE SENSE?

Rijksoverheid (2011). *Actieplan leraar 2020*, Retrieved from

<http://www.rijksoverheid.nl/onderwerpen/basisonderwijs/documenten-en-publicaties/kamerstukken/2011/05/23/actieplan-leraar-2020.html>

Rijksoverheid (2013). *Eindrapport Peer review in de praktijk*. Retrieved from

<http://www.rijksoverheid.nl/documenten-en-publicaties/rapporten/2013/03/22/eindrapport-peer-review-in-de-praktijk.html>

Rijksoverheid (2014). *Kamerbrief over de onderwijsakkoorden: samen werken aan het*

*onderwijs van morgen*, Retrieved from <http://www.rijksoverheid.nl/documenten-en-publicaties/kamerstukken/2014/08/27/kamerbrief-over-de-onderwijsakkoorden-samen-werken-aan-het-onderwijs-van-morgen.html>

Raudenbush, S. W., Rowan, B., & Cheong, Y. F. (1992). Contextual effects on the self-perceived efficacy of high school teachers. *Sociology of Education*, 150-167.

Roberts, K.H., & O'Reilly, C.A. (1979). Some correlations of communication roles in organizations. *Academy of Management Journal*, 22, 42-57. doi:10.2307/255477

Ross, J.A. (1998). The antecedents and consequences of teacher efficacy. In J. Brophy (Ed.), *Advances in Research on Teaching* (Vol. 7, pp. 49–74). Greenwich, CT: JAI Press.

Scott, C. R., Connaughton, S. L., Diaz-Saenz, H. R., Maguire, K., Ramirez, R., Richardson, B., ... & Morgan, D. (1999). The Impacts of Communication and Multiple Identifications on Intent to Leave A Multimethodological Exploration. *Management Communication Quarterly*, 12(3), 400-435.

Schunk, D. H. (1989). Self-efficacy and cognitive skill learning. In C. Ames & R. Ames (Eds.), *Research on motivation in education: Vol. 3. Goals and cognitions* (pp. 13-44) San Diego, CA: Academic.

Schwarzer, R., Schmitz, G.S., & Daytner, G.T. (1999). The Teacher Self-Efficacy Scale [Online publication]. Retrieved from [http://www.strivetoegether.org/sites/default/files/images/31%20Teacher%20Self-Efficacy\\_Schwarzer%20el%20al.pdf](http://www.strivetoegether.org/sites/default/files/images/31%20Teacher%20Self-Efficacy_Schwarzer%20el%20al.pdf)

## DOES TEACHER COMMITMENT MAKE SENSE?

- Scott-Ladd, B., Travaglione, A., & Marshall, V. (2006). Casual inferences between participation in decision making, task attributes, work effort, rewards, job satisfaction and commitment. *Leadership & Organization Development Journal*, 27, 399-414. doi:10.1108/01437730610677990
- Shachar, H., & Shmuelewitz, H. (1997). Implementing cooperative learning, teacher collaboration and teachers' sense of efficacy in heterogeneous junior high schools. *Contemporary educational psychology*, 22, 53-72.
- Schunk, D. H. (1987). Peer models and children's behavioral change. *Review of educational research*, 57(2), 149-174. doi:10.3102/00346543057002149
- Schunk, D. H., & Zimmerman, B. J. (1997). Social origins of self-regulatory competence. *Educational psychologist*, 32(4), 195-208. doi:10.1207/s15326985ep3204\_1
- 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
- Somech, A., & Bogler, R. (2002). Antecedents and consequences of teacher organizational and professional commitment. *Educational Administration Quarterly*, 38, 555-577. doi:10.1177/001316102237672
- Tschannen-Moran, M., & Hoy, A. W. (2007). The differential antecedents of self-efficacy beliefs of novice and experienced teachers. *Teaching and teacher Education*, 23(6), 944-956. doi:10.1016/j.tate.2006.05.003
- Tsui, K.T., & Cheng, Y.C. (1991). School organizational health and teacher commitment: A contingency study with multi-level analysis. *Educational Research and Evaluation*, 5, 249-268. doi:10.1076/edre.5.3.249.3883
- World Bank. (2015). *Pupil-teacher ratio, primary*. Retrieved from <http://data.worldbank.org/indicator/SE.PRM.ENRL.TC.ZS>

## DOES TEACHER COMMITMENT MAKE SENSE?

Zhao, X., Lynch, J. G., & Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and truths about mediation analysis. *Journal of consumer research*, 37(2), 197-206.