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EFFECTS OF PRIMARY SCHOOL TEACHER PERSONALITY AND NETWORK INTENTIONS ON CHANGE: MEDIATING ROLE OF PROFESSIONAL LEARNING

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Abstract

This study aims to examine the mediating role of professional learning on change in teacher practice through the proactive personality and network intentionality. This research also seeks to better comprehend and capture the antecedences and consequences of the network intentions. 438 primary school teacher from 24 schools participated in the study from Istanbul. Network intentionality scale, proactive personality scale, teacher professional learning scale, and change in teacher practices scale were used to collect data. All the measures were conceptualized as individual-level constructs. The results of the study show that there are positive correlations between proactive personality network intention, professional learning and change in teacher practice. Also, the study revealed that proactive personality has positive effects on the network intentions; network intentions has a both direct and indirect effect on the change in teacher practice. These results explicitly indicated that change in teacher practice is closely associated with teacher professional learning, teacher personality, and network intentions. Because of the change in teacher practice is closely related to group dynamics and learning, planning a change strategy about understanding the role of learning and having a relationship with a colleague is so crucial for schools.

Keywords: Professional learning, network intention, proactive personality, change in teacher practice, primary education.

INTRODUCTION

During the last few decades, the social side of teachers' professional learning has been a trend topic in the field of educational management and administration (Baker-Boyle & Yoon, 2020; Baker-Boyle & Yoon, 2018; Van Waes, Van den Bossche, Moolenaar, De Maeyer, & Van Petegem, 2015; Liou & Daly, 2014; Yoon, Koehler-Yom, & Yang, 2017). Some scholars have stressed that developing teacher learning programs is closely related to the extent to which teachers have the right to build collegial relationships with other teachers (Baker-Boyle & Yoon, 2011; Diehl, 2020; Li & Krasny, 2020; Sinnema, Daly, Liou, & Rodway, 2020). Therefore, one of the promising ways conducive to heightening teacher learning is to establish teacher collaboration networks. While teacher learning plays a central role in elevating student learning outcomes, available research has shown that these programs mostly remain ineffective in bringing significant change in teacher's instructional practices and thereby improving student learning (Burt & Keenan, 1998). Thus, this paper investigates the role of "tendency to learning from peer network" and "proactive personality" in sustaining change in practice and professional teacher learning.

Professional development efforts typically include a range of formal policies and procedures to improve teacher performance. However, empirical evidence indicates that school-based and ongoing teacher learning may yield higher quality student outcomes than the top-down and mandated learning activities where teachers are sent randomly (Baker-Boyle and Yoon, 2010; Porter, Garet, Desimone, Yoon, & Birman, 2000). Teacher networks have been shown to provide sustainable professional support and are important sources of teacher knowledge (Lieberman, 2000). Despite the interest and noted value of developing networks and professional communities, little research effort has been devoted, so far, to investigating the structure of teacher networks and how they impact teachers' active participation in professional development programs (Penuel & Riel 2007).

In literature, teacher interaction is represented by several concepts such as professional learning communities, organizational learning, and communities of practice, peer learning networks, and advice networks. These concepts highlighted the importance of teachers learning through interaction. Teachers' professional learning and changing the instructional practices are the expected results of a well-designed teacher development program. Thus, understanding the potential reasons for teachers to change their instructional practices by using a personal network intention lends credence to discovering more about the dynamics of the teacher learning communities.

Although there is an empirical association between teacher professional development and changing practice, little is known about how and why teachers change their instructional practices (Boyle, Lamprianou, & Boyle, 2005; Porter et al., 2000). Research also revealed that change in teacher practice is mainly driven by teacher beliefs, attitudes, and perceptions on instruction rather than knowledge. Thus, there are two mainstream teacher change approaches, namely one highlighting the role of the structure and process of change, the so-called linear model. The other, called the complex model, is a rather dynamic process that includes different points of view, interpretations, and actors' connections. Such models are driven by the relationships between peers and represent an informal and interactive perspective on teacher learning and change. While a range of educational scholars acknowledges the importance of interpersonal relationships and social interaction for teacher development (Daly, Moolenaar, Bolivar, & Burke, 2010; Martin & Dawson, 2009; Wubbels, Brok, Tartwijk, & Levy, 2012), there is little evidence for the informal social interactions and their effects on change in teachers practices.

Extant research has shown that personal characteristics may affect professional interactions and the ability to share knowledge (Talebizadeh, Hosseingholizadeh, & Bellibaş, 2021). Although teachers' personality traits have long been examined, little research effort has been spent investigating the role of personality in teachers' professional learning. Therefore, teachers' proactive personality is a potential construct to enhance or constrain teachers' intentions on developing professional learning networks. In this regard, there is a need for further analysis regarding teacher professional learning networks, along with how these networks are associated with teacher personality and professional learning and instructional practices. The current study seeks to contribute to the literature by explaining the link between proactive personality and network intentions on change in teacher practice, with the mediating role of teacher professional learning. The study has some potential contributions to the literature in several ways. First of all, the changes in teachers' instructional practices are examined in terms of network intention variables. In addition, the mediating level of professional learning on the effect of personality and network intentions on change was examined.

Theoretical Framework

Social network theory

Social network theory is important for educational science research, as it structurally enables original evaluations of the whole network and each actor that makes up the network. Since the teaching profession includes competence areas that can be gained through continuous professional development on the job, it is predicted that continuous professional development should be achieved by the efficient use of the school's own resources. The position of teachers in social networks and thus their level of benefiting from the social capital of the school has determinant effects in the context of developing learning and teaching practices (Penuel, Riel, Krause, & Frank, 2009). Social network theory has significant potential for analyzing educational organizations. Especially since the 1990s, with the spread of social networks primarily in the behavioral sciences field, it has also started to attract attention in the educational sciences field (Er, 2017). The social network approach, which has been popular in social sciences for a while, has been used later in educational sciences.

The use of social network theory and methods to understand how teacher collaboration can help or constrain teaching and educational change is an evolving trend in teacher professional development research (Coburn, & Russell, 2008; Daly, Moolenaar, Bolivar, & Burke, 2010; Datnow, 2012;

Moolenaar, Sleegers, & Daly, 2012). However, as the professional networks of teachers affect student success through collective competence (Moolenaar, Sleegers, & Daly, 2012), it plays an important role in achieving a structure suitable for the purposes of the school. Social network analysis in educational research typically provides an alternative way of addressing the teachers, not as isolated actors but as individuals surrounded by others. Therefore, a social network approach offers a powerful lens to examine the degree to which social systems influence individuals' emotions, behaviors, and expectations (Siciliano, 2016). There are three avenues of studies that combine social network theory and education. First, studies that include the structure and characteristics of social networks, second, studies that address the results revealed by social networks, and finally, studies that examine the variables that lead to the formation of social networks. An important strength of the current study is that it covers the structure of social networks, the causes that arise, and the consequences of social networks. In other words, this study examined the current structure of collaborative professional learning networks between teachers, the change in professional learning and teaching practices as the results of the proactive personality and social network structure that is thought to be effective in the emergence of this structure.

Change in teacher practice

How teachers change their teaching practices and who are more effective in this change process is an important area of educational research. A study conducted in the literature on the teaching practices of teachers in the early years of the profession showed that the social networks in which teachers participate in the process of making sense of new practice and moving from interpretation to practice are decisive (Frank, Kim, Salloum, Bieda, & Youngs, 2020). Other studies have focused on the change of teaching practices and the impact of school administrators' leadership (Özdemir, 2019; Parise & Spillane, 2010).

In recent years, studies on teacher failure and the social aspect of professional learning and change have been found in research on teacher change in educational sciences. In educational change literature, it can often be said that teachers seen as only practitioners of change planning. According to the social network approach, the main factor behind successful educational reforms is not well-planned reforms or technical support but the intimate and constructive relationships that teachers provide with their colleagues (Daly, 2010). In this context, it can be said that the colleagues with whom teachers relate have a significant influence on the change in their professional practice. Research that emphasizes the importance of social networks in teachers' professional changes presents change-oriented behavior in a collective context, emphasizes the relationship between individual views and group characteristics, and focuses on teacher failure (Moolenaar, Sleegers, & Daly, 2012; Moolenaar, 2012; Spillane, Kim, & Frank, 2012).

Teacher professional learning

A growing body of educational researchers has related teacher professional development to the quality of teachers' instructional practices, and eventually, student learning outcomes (Meiers, 2007; Timperley, & Alton-Lee, 2008). Effective professional development results in the changing daily practices of the teachers and improvements in student learning outcomes (Darling-Hammond, Hyler, & Gardner, 2017). The development of teachers in professional learning community studies discussed in the context of the sharing of expertise and other resources among the social capital (Liou & Daly, 2014). In this sense, it is important for teachers to develop a common purpose in school and support mutual professional sharing processes in their professional learning. In recent years, it has been emphasized that individual variables, as well as school or group-level variables, have become important, especially in studies on concepts that are considered effective in teachers' professional learning (Kılınç, Polatcan, Atmaca, & Koşar, 2021; Mockler, 2020).

Teacher proactive personality

The quality of educational systems is closely related to the professional development levels of teachers. This situation is related to the organization of activities based on continuous and active participation and the individual involvement of teachers in these activities. Accordingly, teachers with

personality traits that facilitate their professional learning and development will make it easier to reach the expected educational goals. Personality is one of the important variables in understanding the effectiveness of teachers (Rushton, Morgan, & Richard, 2007). Although many studies have been conducted on the relationship between personality and the professional characteristics of teaching, it is observed that the nature of the relationship teachers establish with their students and the increasing expectation of leadership for teaching, especially on proactive personality, has been intensified. Morgan & Richard, 2007). Although many studies have been conducted in which the relationship of personality with the professional characteristics of teaching is discussed, it is seen that research on proactive personality is intensified, especially with the nature of the relationship teachers establish with their students and the expectation of leadership towards increased teaching. Proactive personality traits include an individual's willingness to influence and change their environment (Bateman & Crane, 1993). A proactive personality positively affects people's creativity by making it easier for them to acquire new skills (Joo & Lim, 2009). Individuals with proactive personality traits try to intervene in the environment for their own purposes rather than adapting to environmental conditions (Bateman & Crane, 1993). However, it seems that proactive employees evaluate opportunities for change, make more intensive efforts and take the initiative to achieve set change goals, and try different ways to change results (Bateman & Crant, 1999). The proactive personality has been the subject of many studies to reach organizations matches and predict employee performance (Chackoria, 2019; Gevorkin, 2011; Huber, 2017; Ng, Eby, Sorensen, & Feldman, 2013; Patterson, 2018; Turner, 2003).

Teachers' proactive personality traits positively influence school climate perceptions and creativity levels (Gao, Chen, Zhou, & Jiang, 2020). Other studies have found associations with proactive personality with problem-solving skills (Şener, 2019), perceived organizational support (Yan, 2015), and access to organizational support networks (Chan, 2006). For reasons such as the difference in problems encountered in the teaching profession, the need to produce alternative solutions, and the development of students' original thinking skills inside and outside the classroom, proactive teacher behavior has begun to be among the variables that need to be focused on. The study hypotheses are given below:

H_1: Proactive personality has positive effects on network intentions.

H_2: Proactive personality has positive effects on the teacher's professional learning.

H_3: Network intentions have positive effects on the teacher's professional learning.

H_4: Network intentions have positive effects on the change in teacher practices.

H_5: Teacher professional learning has positive effects on the change in teacher practices.

H_6: Network intentions have positive effects for change in teacher practices and would be mediated by teacher professional learning.

The summary of paths based on the hypotheses presented in the Figure 1.

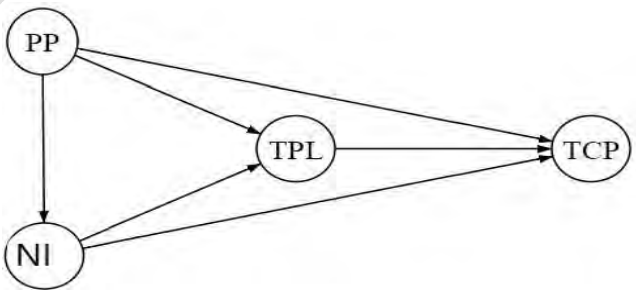

Figure 1. Hypothetical model

METHOD

Sample and Context

A total of 24 elementary schools in Istanbul participated in this study. Stratified sampling technique was used to determine the participants of the study. This method of sampling enable representing all subgroups among the population (Büyüköztürk, Çakmak, Akgün, Karadeniz, & Demirel, 2021). Data for this study were collected in all 24 elementary schools of the Istanbul European Side School District, located in Turkey. Istanbul European School District is managed under 25 site administration which coordinates resources and human capital. The schools in the district mostly are located in urban areas, and while the schools in the district differed regarding students' SES. We purposely selected this large district to ensure data from multiple schools. Data were gathered in 2020 from 438 teachers reflecting a response rate of 92.4%. Of the educators, 45.2% of the respondents were male and 54.8% female. These numbers nearly represent the gender ratio in Turkish elementary education across the country. While 364 (83.1%) of the teachers had a bachelor's degree, only 74 teachers (16.9%) had completed a graduate degree. The average teaching year of the participants was 9.2, with a standard deviation of (SD=8.3).

Instrumentation

All the measures were conceptualized as individual-level constructs. Each of four construct was assessed using a Likert scale; network intentionality scale (1=strongly disagree to 5=strongly agree) proactive personality (1-totally disagree to 7-totally agree) teacher professional learning (1-totally disagree to 5-totally agree), change in teacher practices (1-disagree to 4-agree).

Network intentionality

The original scale consists of 14 items and 4 sub-dimensions. Cronbach's Alpha reliability coefficient, calculated from the total score of the scale in the validity and reliability study conducted by Cohen, Klein, Daly, and Finnigan (2011). The Turkish adaptation of this scale was conducted by Er (2017). In Turkish adapted form there are three sub dimensions. The scale evaluated the degree to which an individual intends to sustain social relationships using four dimensions. The scale explains 66.3% of the total variance. A sample item is "I actively seek new friendships across the organization." The Cronbach's Alpha reliability coefficient for total of the scale was calculated as .88. The sub dimensions reliability scores were calculated as .83 for actively seeking relationships, .86 for having the right set of relationships, assessing the relationships and .81 for liking to connect

Teacher proactive personality

The scale, developed by Bateman and Crant (1993), was adapted into Turkish by Akın, Abacı, Kaya, and Arıcı (2011). Rising scores indicate increased proactivity. The measure is of the Likert Scale (1=strongly disagree and 7=strongly agree). An example item is "I'm constantly looking for new ways to improve my own life." The Cronbach's Alpha reliability coefficient is calculated as .80.

Teacher professional learning

Perceptions of Professional learning of the teachers were measured with 27-item Teacher Professional Learning Scale developed by Liu and colleagues (2016) and adapted into Turkish by Gümüş, Apaydın, and Bellibaş (2018). A sample item is "I work together with colleagues to plan educational activities." The Cronbach's Alpha reliability coefficient is calculated as .91. The sub dimensions reliability scores were calculated as .88 for collaboration, .82 for reflection, .85 for experimentation and .84 for reaching the knowledge base.

Change in teacher practice

Change in teacher practice was measured by the extent to which teachers change their classroom practices using borrowed items from Geijsel and colleagues (2009). The Turkish adaptation of this 8-item scale was conducted by Polatcan (2020). A sample item is "I focus more on increasing pupils." The Cronbach's Alpha reliability coefficient is calculated as .83.

Analytic Strategy

Participants' perceptions on the proactive personality, professional learning, and changing practice were examined in regard of their network intentions. Cronbach's Alpha coefficients (α) and descriptive statistics between the variables were calculated. Also, confirmatory factor analysis (CFA) was performed to ensure the construct distinctiveness of the proposed model. Two steps were taken to test the hypotheses. First, correlation analysis was performed to examine the relationships between teachers' network intentions, proactive personality, professional learning, and change in teacher practice. Second structural equation modeling was applied to test the relationships between variables.

RESULTS

CFA was performed to explain the goodness of fit of the study variables. Results of the analysis illustrated that χ^2/df, RMSEA, SRMR, CFI, GFI were at the acceptable level. Table 1 shows the CFA results of the scales.

Table 1. CFA results

	χ^2/df	RMSEA	SRMR	CFI	GFI
Proactive personality	2.47	.07	.03	.89	.90
Teacher professional learning	2.49	.08	.02	.90	.93
Change in teacher practice	2.54	.06	.02	.92	.95
Network intention	2.57	.06	.03	.91	.91

Table 2 shows the means, standard deviations and correlation among variables

Table 2. Means, standard deviations and correlation among variables

	Mean	SD.	PP	NI	Act.	Like	Bel.	Asse.	TPL	Col.	Ref.	Exp.	Reac	CTP
PP	5.45	.92	-											
NI	4.16	.49	.41**	-										
Act.	4.10	.66	.37**	.88**	-									
Lik.	4.20	.53	.44**	.92**	.83**	-								
Bel.	4.01	.68	.40**	.81**	.76**	.90**	-							
Asse.	3.98	.61	.27**	.80**	.81**	.77**	.84**	-						
TPL	3.90	.44	.24**	.59**	.48**	.63**	.57**	.55**	-					
Col.	4.01	.54	.32**	.62**	.51**	.67**	.44**	.47**	.91**	-				
Ref.	3.89	.56	.20**	.44**	.47**	.51**	.33**	.21**	.88**	.84**	-			
Exp.	3.97	.60	.19**	.40**	.35**	.55**	.34**	.25**	.93**	.77**	.90**	-		
Reac.	4.08	.71	.22**	.33**	.29**	.47**	.37**	.35**	.92**	.80**	.89**	.88**	-	
CTP	3.20	.49	.36**	.31**	.30**	.46**	.29**	.31**	.50**	.45**	.48**	.42**	.50**	-

: Correlation is significant at the .01 level (2-tailed). **SD: Standart deviation PP: Proactive personality, **NI**: Network intention, **Act**: Actively seeking relationships, **Like**: Liking to connect, **Bel**: Belief in having the right relationships, **Asse**: Assessing relationships, **TPL**: Teacher Professional learning, **Col**.: Collaboration, **Ref.**: Reflection, **Exp.**: Experimentation, **Reac.**: Reaching the Knowledge Base, **CTP**: Change in teacher practices.

The mean scores show a high level of teacher proactive personality (Mean=5.45, SD=.92), teacher network intention (Mean=4.16, SD =.49), teacher professional learning (Mean=3.90, SD=.44) and change in teacher practice (Mean=3.20, SD=.49). At the same time there are positive and moderate level relations between proactive personality and teacher network intention (r=.41, p<.01) and change in teacher practice (r=.36, p<.01). In addition there are positive and moderate level relations between teacher professional network and teacher professional learning (r=.59, p<.01). Finally there is a small relationship between teacher professional network and change in teacher practice (r=.21, p < .01).

The fit indices, x2/sd=2.34, RMSEA=.06, AGFI=.92, GFI=.91, CFI=.91, IFI=.93, NFI=.91 yielded acceptable compliance (İlhan & Cetin, 2014). It can be said that the theoretical model created in this direction is compatible with the obtained data and is verified. The tested structural model is presented in Figure 2.

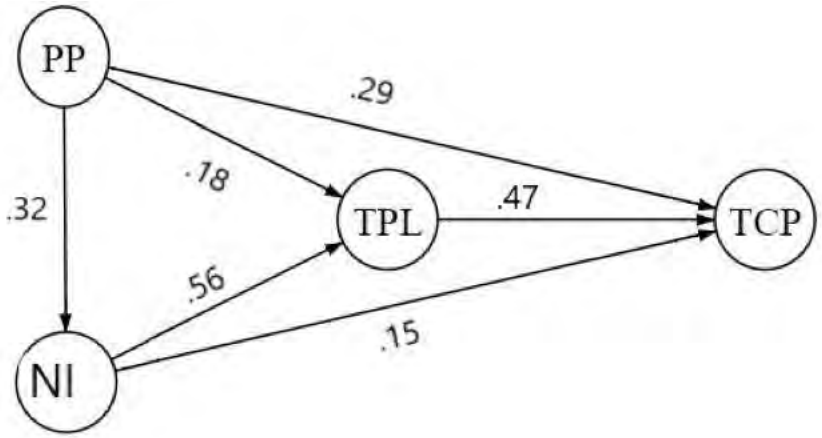

Figure 2. SEM model results

Table 3 shows the standardized direct, indirect, and total effects on change in teacher practice.

Table 3. Standardized direct, indirect, and total effects on change in teacher practice

	β	SE	p
Direct Effect			
PP→NI	.32	.06	.00
PP→TPL	.18	.08	.00
NI→TPL	.56	.12	.00
NI→TCP	.15	.09	.00
TPL→TCP	.47	.11	.00
Indirect Effect			
PP→NI→TCP	.04		
PP→NI→TPL	.18		
NI→TPL→TCP	.26		
Total Effect			
NI→ TCP	.41		

Total effects of teacher professional network on teacher on change in teacher practice is significant (β=.41). This revealed that teacher professional learning shapes the change attitude. Additionally, this study showed that there are some statistically significant indirect effects from proactive personality and teacher professional network on change in teacher practice. Also, there is some evidence for explaining the teacher professional learning by teacher professional network and proactive personality traits.

In order to interpret these effects more accurately, Cohen's f^2 analysis results (small=$f^2 \geq .02$, medium=$f^2 \geq .15$, large=$f^2 \geq .35$) were examined (Cohen, 1988). These results showed that the effect sizes of proactive personality (f^2=.32) on change in teacher practice and network intentions (f^2=.41) were large. These results revealed that current model was significant.

DISCUSSION and CONCLUSION

The study found a positive relationship between proactive personality and network intention. In the literature, there are studies where proactive personality and professional learning are associated (Er & Çalık, 2020; Tunca, Elçi, & Murat, 2018; Van der Heijden et al., 2015). However, in the current study, proactive personality is associated with changes in teachers practice. Our findings also found

support from several pieces that evidenced a positive link between proactive personality and innovation and change in the literature (Li, Liu, Liu, & Wang, 2017).

The results revealed a moderate association between participants' professional learning networks and professional learning. The paradigm on the rise in teachers' professional learning emphasizes that learning activities based on participatory, reciprocal relationships, and interaction and performed as part of a community (Duncan-Howell, 2010; Krutka et al., 2016; Sinnema et al., 2020). In this context, it can be said that teachers can't learn independently of each other, and from the point of view of educational organizations, learning should be considered collectively.

It is seen that positive relations have been achieved between the professional learning of teachers and the change in teaching practices. Accordingly, it can be said that a positive and moderate link has been established between learning and change. It is possible to establish similarities with studies in the literature that have established a relationship between teacher exchange and professional learning (Guskey, 2008; Timperley & Alton-Lee, 2008; Polatcan, 2020).

As part of the study, it is seen that teachers' professional learning networks have an impact on their professional practice. Accordingly, the Professional Learning Network has a positive and decisive impact on the exchange of teachers. In the literature, some studies establish a relationship between the exchange of teachers and the learning network they participate in (Daly, Moolenaar, Bolivar & Burke, 2010). However, proactive personality traits were found to be effective in establishing a professional learning network of teachers. In other words, the personality traits of teachers also affect community participation and learning activities.

According to research results, teachers' professional learning has an impact on the change in their practice. Accordingly, three variables can be listed as personality, learning, and networking among the determining factors in changing teachers. According to the results obtained in this study, it is seen that the proactive personality variable affects teachers' professional learning processes and that the professional learning network affects the change in teaching practices.

Potentially, this study can make some significant contributions to practitioners and researchers in terms of understanding the supporting factors for teacher learning, better understanding the structure and results of teacher learning. In this context, it would be useful to consider vocational learning based on research results by considering the individual characteristics of teachers and the structure of the professional group in which they participate. As increasing the number of teachers with whom teachers establish professional relationships affects professional learning and change, emphasis should be placed on individual-group harmony. It is recommended to support original areas where teachers can work together and produce.

The results obtained in the current study clearly show the impact of personality, network intentions, and professional learning on changing teachers' professional practice. Accordingly, it is meaningful to define a successful educational reform based on the relationship between learning and individual variables. However, the study found that proactive personality traits influence teachers' network intentions. This indicates the importance of personality traits in teachers' potential to learn from each other. In other studies, teacher learning can be studied more extensively at the individual, group, and school levels. However, the nature of teachers' professional learning networks is strongly associated with the resources transferred between actors in the network. Therefore, change in educational reforms can be seen as a result of strong professional interactions. Examining the change in teacher practices through a series of time-based studies is important for achieving broader findings. In addition, it is important to examine the teacher professional network structure, including the density, reciprocity, and demographic composition of a social relationship pattern.

This study has some key implications for policy, practice, and research. This research has some potential contribution to the Turkish Educational System's school-based transformation process in line with the "Turkey's Education Vision 2023". This study also sheds light on developing the school

principal's leadership practices in regard to social capital and teachers' individual professional learning needs. Furthermore, this study provides an understanding of teachers' interactions and personality characteristics for explaining the professional learning and change.

Limitation of the study

The study has some limitations that should be taken into account when interpreting its results. First, this study only including the data through self-reported measures. Therefore participants may falsify the results of the study. Second, network intentions as a social construct were examined from an individual perspective. However, there should be some dyadic data to confirm the results revealed from individuals. Finally, change in teachers practice should be measured with a longitudinal perspective because of the nature of the change phenomena.

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