THE RELATION OF PHYSICS TEACHERS' LEADERSHIP WITH BURNOUT LEVELS AND ATTITUDES TOWARDS CHANGE. TURKEY CASE

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Abstract
Nowadays, leadership concept has changed into ability to work with team behaviour from doing something alone It is inevitable that school managements include their teachers to the leadership concept. Leadership of physics teachers who educate necessary individuals for developing society in views of technologically and scientifically is important. This study was aimed to determine relation of physics teachers' leadership with burnout levels and attitudes towards change. 57 physics teachers working in Isparta city in Turkey at 2010-2011 educational years were determined as the sample of this correlation survey study. Teacher Leadership Scale (TLS), burnout inventory and attitude towards change scale were used as data tools. Results of study was found out that physics teachers' burnout levels were very low. Expectation leadership behaviour and perceived leadership of the Physics' teachers displaying leadership above normal level were significantly different. Besides, the relation between physics teachers' attitudes towards change and leadership behaviour determined at medium level.
Keywords: Teacher leadership, school management, burnout, attitude towards change.

INTRODUCTION

Nowadays, leadership concept has become behaviours of individuals' working together as a team at the management of organizations. Schools are the organizations leading to society. Therefore, openness to changing and development of these organizations and their staff are possible by means of displaying expectation leadership behaviour (Ehrlich, 1997; Buckner and McDowelle, 2000; Gunter, 2001; Wallace, 2001; Beattie, 2002; Çalık, 2003; Taymaz, 2003; Murphy, 2005).In addition, understanding of school management should be parallel with this perspective. Because school leaders are expected to train individuals transforming their school for development and contributing to this development (Hale, 1998; Nichols, 2007; Buckner and Mcdowelle, 2000; Bolman and Deal, 1988).

The leadership at school managements has been generally considered with school managers and also abilities and capabilities of managers have been regarded as an important issue (Ehrlich, 1997; Begley, 2001; Beycioğlu and Aslan, 2007; Harris and Muijs, 2005).

The change of traditional roles of managers, difficulties at taking all responsibilities, necessities of team work and cooperation of all of the shareholders, importance of displaying leadership roles by all members of school have been emphasized and suggested by many researchers. (Leithwood et al. 1997; Dimmock, 1999; Buckner and Mcdowelle, 2000; Wallace, 2001; Beattie, 2002; Fullan, 2003; Muijs and Harris, 2005).

Labich (1988) grouped the main points of effective leadership as inspiring confidence to people sharing the same environment, developing vision, being cool, taking risk, being a specialist, letting contradictory opinions and making them simple. The teachers having these features are important for school managements. Teachers work more effectively and devolop their schools in which they display their leadership. (Gronn, 2002, 2008; Harris, 2004).

The workers of service sector spend their most of their time for serving to other people at the society. This fact gets them to have the feelings like irritation, distress, amazement, fear and despair. The people who have to work under these conditions face the risk of cronical stress and burnout (Maslach & Jackson, 1981). Especially burnout is stated as a risk factor for the individuals having professions which need communication and interaction such as education, health and police (Barnett et al. 1999; Croom, 2003). The studies related to burnout of teachers show that teachers are under excessive work load and one-third of them have stress and burnout and also indicates that burnout weaken teachers' physical and mental health at significant rates (Goddard and Goddard, 1998; Cemaloğlu and Kayabaşı, 2007).

Many factors could cause burnout of workers. These factors could be generally grown out of factors related to individual (personal) and working organization (environmental) or combination of them (Akcamete et al. 2001; Cam, 1992). The researchers, who have found out the factors effecting burnout, have stated that also leadership behaviour effects burnout (Eren, 2001; Izgar, 2003).

Zabet et al. (1984) studied professional burnout on 601 teachers working with gifted and mentally disabled students and stated that teachers of gifted students are more risky at the subscale of emotional exhaustion compared to teachers of other fields of special education apart from teachers of hearing impaired and emotional disorders. Exhaustion to meet gifted students' needs during whole day is shown for the cause. The difficulties encountered by physics teachers while learning physics subjects also crucial for analysing their burnout.

Alwan (2006) defined educational change as an ongoing process that takes place with or without deliberate introduction of something different to education. Educational system renovation makes continuous changes necessary. Fulfilling this responsibility can be possible for educational organizations by following all social changes closely and firstly changing themselves regarding these developments (Calik, 2003) . At school organizations both managers and teachers should follow changes, try to get inside of them and encourage themselves (Cenker and Macaroglu, 2010). Eren (2011) stated that workers of organization could show their reactions against change in three ways. The first group consists of the ones ready for change in other words supporters, the second group is the ones against to change or opponents and last group is the ones careless and indifferent for change or namely neutrals. Having outnumbering workers which keep pace with change is important for development of organization (Yeniceri, 2002). The renewal of the physics programme in 2005 (MEB, 2005) has introduced many crucial changes. Researching the leadership features and attitudes towards change of physics teachers, who play the key role in carrying out these changes, has utmost importance.

Research questions are as follows:

Is there a relationship among leadership of physics teachers, burnout levels and attitudes towards change?

Do leadership behaviours of physics teachers differ in terms of their teaching experience, seniority, and the schools they graduated?

Methodology

This study was a correlational survey study aimed to describe leadership structures of physics teachers and their leaderships and to examine the relationships between physics teachers'burnout levels and attitudes towards change (Balci, 2001; Fraenkel & Wallen, 2006).

Sample

The target population of this study included all physics teachers in public and private schools in Turkey. The population was so large that it was difficult to access all physics teachers around Turkey. Thus, sampling procedures were employed. By sampling, it was considerable that the sample selected should be representative of the target population. The accessible population of this study, due to its convenience, consisted of all physics teachers teaching in public and private high schools in Isparta, Turkey. All of public and private schools in Isparta, which involve 82 physics teachers, were sampled in this study. Among all, 57 of them returned the questionnaires administered resulting in a response rate of % 70. It was more appropriate rate of sample (Fraenkel & Wallen, 2006). Data collected only from physics teachers teaching in the academic year of 2010-2011.

Instruments

Teacher Demographic Characteristics Scale (TDCS) : By this scale obtained data about demographic characteristics of participant physics teachers as follows: their age, gender, teaching experience, the faculty or school graduated, school type, their involvement in in-service training.

Teacher Leadership Scale-TLS: TLS was developed by Beycioğlu and Aslan (2010). TLS provides with revealing teachers and administrators' perceptions and expectations on teacher leadership behaviours. The scale is

25 items and Likert type. TLS forms of three subscales. These subscales labelled are the institutional improvement subscale has 9 items, the professional improvement subscale has 11 items, and the collaboration among colleagues subscale has 5 items (Beycioğlu and Aslan, 2010).

Maslach Burnout Inventory-MBI: MBI was developed Maslach and Jackson (1981) which 22 items Likert type scale was formed, MBI constitutes of 3 subscales Emotional Exhaustion, Depersonalization and Personal Accomplishment. MBI was adapted from Ergin (1992) to Turkish.

Attitude toward Change Instrument (ACSI) : ACSI was developed by Dunham et al. (1989), the ATCI was a 5-point Likert type scale ranging from 1 (strongly disagree) to 5 (strongly agree). Scale scores were obtained by calculating the mean of the 18 items.

The quantitative data obtained through the items were analyzed via SPSS for Window using both descriptive and inferential statistics. Demographical data of the participants, their attitudes toward change, perceptions of constructivist curriculum change, and their implementation of constructivist teaching and learning activities in class at primary school level were briefly reported in terms of frequencies, percentages, and means, and visualized by tables or figures.

Results

Demographic background of participant physics teachers

Table 1. Demographical background of participant physics teachers

		f	%
Gender (*N*=57)			
	Male	42	73.7
	Female	15	26.3
Age (*N*=57)			
	20-25 years	2	3.5
	26-30 years	-	-
	31-35 years	24	42.1
	36-40 years	17	29.8
	41-45 years	10	17.5
	46-50 years	4	7.0
	51 + years		
Teaching experience (*N*=57)			
	1-5 years	3	5.3
	6-10 years	8	14.0
	11-15 years	21	36.8
	16-20 years	19	33.3
	21-25 years	6	10.5
	25-30 years	-	-
	30 + years	-	-
Faculty or school graduated from (*N*=57)			
	Educational Institute	-	-
	Faculty of Education	50	87.7
	Master degree	7	12.3
Working school type (*N*=57)			
	Public school	55	96
	High school	10	17.5
	Anatolian high school	13	22.8
	Anatolian Teacher Training High	4	0.7

	School Vocational High school Imam-Hatip High school Science High school Private school Anatolian high school	15 1 4 2 2	26.3 0.1 0.7 0.3 0.3
Number of in-service training (*N*=57)			
	1 – 3 times 3 + times	37 20	65.0 35.0

N for each item may vary due to missing responses

Table 1 show the sample profile of this study which was presented in frequencies and percentages. The majority of the physics teachers were males (73.7%), 42.1% of the physics teachers' ages were between 31-35 years old, 36.8% of physics teacher teaching experience 11-15 years and majority of physics teachers graduated from faculty of education (87.7%). Few physics teacher graduated from master degree. Most of physics teacher (96%) worked at public school, just two physics teachers at private school. As it seen Table 1 number of participation of physics teachers' in-service training activities is 1-3 times (65%), 35% of physics teachers have participated more than three times.

Table 2. One-sample Kolmogorov-Smirnov test of normality

		Burnout	**Expectation Leadership**	**Perception Leadership**	**Attitude towards Change**
N		57	57	57	57
Normal Parameters[a,b]	Mean	1,6451	4,0358	3,5411	67,33
Most Extreme Differences	Std. Deviation	,3134	,6435	,6141	9,52
	Absolute	,060	,078	,068	,070
	Positive	,059	,069	,068	,070
	Negative	-,060	-,078	-,043	-,061
Kolmogorov-Smirnov Z		,456	,592	,514	,528
Asymp. Sig. (2-tailed)		,985	,875	,954	,943

a Test distribution is Normal. b Calculated from data.

As it is seen that Table 2, in this study applying parametric tests needs to investigate whether test points are normal distribution or not (Büyüköztürk, 2005; Ravid, 1994). Physics teachers' burnout level points, expectation leadership, perception leadership and attitudes towards change test distribution is normal (p>.005).

Findings from Burnout Scale

Table 3. Descriptive statistics of subscale means of burnout scale

	N	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
Emotional Exhaustion	57	,00	2,50	1,0724	,6568
Depersonalization	57	,50	2,17	1,0731	,4307
Personal Accomplishment	57	1,38	3,50	2,6469	,5149

Table 4. Physics teachers' burnout scale points according to gender t-test results

Gender	N	Mean	Std. Deviation	df	t	p
Female	40	1.62	0.33	53	-0.21	0.835
Male	15	1.64	0.26			

p>.005

Table 5. Physics teachers' burnout scale points according to seniority ANOVA results

	Sum of Squares	df	Mean Square	F	p
Between Groups	,279	4	6,981	,695	,599
Within Groups	5,223	52	,100		
Total	5,502	56			

p>.005

Table 6. Physics teachers' burnout scale points according to graduated school ANOVA results

	Sum of Squares	df	Mean Square	F	p
Between Groups	6,370	1	6,370	,064	,802
Within Groups	5,495	55	9,992		
Total	5,502	56			

Aydın (2002) states that burnout level points of all subscale can be determined as low, medium and high. As it is seen in Table 3, Emotional Exhaustion and Depersonalization subscales of burnout level points of physics teachers are very low and Personal Accomplishment subscale burnout level points are medium so physics teachers feel that they are successful at medium level. As it is shown in Table 4, regarding physics teachers' burnout level points there is no significant difference for gender ($t_{(53)}$=0.21, p>0.05). As it is revealed in Table 5, regarding physics teachers' burnout level points, there is no significant difference for seniority ($F_{(4-52)}$=0.695, p>0.05). Likewise, in Table 6 regarding physics teachers' burnout level points, there is no significant difference for graduated school ($F_{(1-55)}$=0.064, p>0.05).

Findings from Teacher Leaderships Scale

Table 7. Descriptive statistics of subscale means of teacher leadership scale

	N	Minimum	Maximum	Mean	Std. Deviation
ExpectationLeadership	57	2,76	5,40	4,03	,6435
Institutional Exp.	57	2,22	7,89	3,76	,9724
Professional Exp.	57	3,00	5,00	4,23	,5931
Collaboration Exp.	57	2,20	5,00	4,08	,7009
Perception Leadership	57	2,32	5,00	3,54	,6141
Institutional Per.	57	1,44	5,00	3,13	,7481
Professional Per.	57	2,55	5,00	3,86	,6829
Collaboration Per.	57	1,80	5,00	3,56	,7405

Table 8. Paired sample t-test of physics teachers expectation and perception leadership behaviour points

	N	Mean	Std. Deviation	df	t	p
ExpectationLeadership	57	4,03	,6435	56	6,937	,000
Perception Leadership	57	3,54	,6141			

Table 9. Expectation leadership behaviour points according to gender t-test results

Gender	N	Mean	Std. Deviation	df	t	p
Female	40	4,008	,6196	53	-,282	,779
Male	15	4,064	,7485			

Table 10. Perception leadership behaviour points according to gender t-test results

Gender	N	Mean	Std. Deviation	df	t	p
Female	40	3,534	,6089	53	,004	,997
Male	15	3,533	,6589			

As it is seen in Table 7 , physics teachers' expectation leaderships behaviour points are 4.03, perception leadership behaviour points are 3.53. As it is shown in Table 8, there is no significant difference between physics teachers expectation leadership and perception leadership points ($t_{(56)}$=6.937, p<0.05). Moreover, as it displayed in Table 9, there is no significant difference physics teachers expectation leadership for gender ($t_{(53)}$=-0.282, p>0.05). Likewise, as Table 10 reveals, there is no significant difference physics teachers' perception leadership points for gender ($t_{(53)}$=-0.004, p>0.05).

Table 11. Correlation of physics teachers' burnout levels with expectation and perception leadership, and attitudes towards change

		Expectation Part	Perception Part	Attitudes towards Change
Burnout	Pearson Correlation	,154	,079	-,062
	Sig. (2-tailed)	,254	,561	,649
Expectation Part	Pearson Correlation	1,000	,634**	,293*
	Sig. (2-tailed)	,000	,000	,027
Perception Part	Pearson Correlation	,634**	1,000	,316*
	Sig. (2-tailed)	,000	,000	,016

** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).

The results of the correlation analysis presented above Table 11 indicate that only nine of the five correlations were statistically significant. The expectation leadership subscale of TLS was significantly correlated with perception leadership subscale of TLS (r=.634, p<.000). The attitude towards change was significantly correlated with expectation part subscale of TLS (r=,293, p<.005). The attitude towards change was significantly correlated with perception part subscale of TLS (r=.316, p<.005).

Table 12. Correlation of physics teachers' burnout with attitude towards change and leadership subscales

		Institutional Exp.	Professional Exp.	Collaboration Exp.	Institutional Per.	Professional Per.	Collaboration Per.
Burnout	P.Correlation	,187	,099	,054	,127	,040	,015
	Sig. (2-tailed)	,164	,464	,688	,347	,770	,911
Attitude Change	P. Correlation	,206	,372**	,138	,226	,472**	-,056
	Sig. (2-	,125	,004	,305	,091	,000	,681

	tailed)						

** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).

The results of the correlation analysis presented above Table 12 indicate that only twelve of the two correlations were statistically significant. The professional improvement expectation subscale of TLS was significantly correlated with attitude towards change (r=.372, p<.000). The professional improvement perception subscale of TLS was significantly correlated with attitude towards change (r=.472, p<.000).

Tablo 13. Correlation of Physics teachers' burnout subscales with expectation and perception leadership subscales

		Institutional Exp.	**Professional Exp.**	**Collaboration Exp.**	**Institutional Per.**	**Professional Per.**	**Collaboration Per.**
Emotional Exhaustion	P.Correlation	,017	-,143	-,032	-,037	-,248	-,101
	Sig. (2-tailed)	,899	,288	,811	,784	,062	,456
Depersonalization	P.Correlation	,153	-,087	-,030	,142	-,100	,041
	Sig. (2-tailed)	,256	,521	,826	,293	,461	,762
Personal Accomplishment	P.Correlation	,195	,403**	,151	,171	,446**	,128
	Sig. (2-tailed)	,146	,002	,263	,204	,001	,342

** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).

The results of the correlation analysis presented above Table 13 indicate that only two of eighteen correlations were statistically significant. The professional improvement expectation subscale of TLS was significantly correlated with personal accomplishment (r=.403, p<.000). The professional improvement perception subscale of TLS was significantly correlated with personal accomplishment (r=.446, p<.000).

Disscussion

In this study, burnout levels of physics teachers have been determined as very low. Subscale of personal accomplishment is at medium level. The low burnout levels of physics teachers, who are teaching a very important course at secondary education, is a very good situation. Besides, physics teachers' burnout level there is not differences for gender, seniority and graduated school. These results are the same (parallel) with certain researchers' results (Çavusoğlu, 2005; Oruç, 2007).

In terms of physics teachers' expectation leadership behaviour and perception leadership behaviour points, there is significant difference ($t_{(56)}$=6.937, p<0.05). This situation is very remarkable. Thus, physics teachers stated that they did not display leadership behaviour as they expected from themselves. This result is the same as Beycioğlu and Aslan's (2010) results. However, regarding expectation and perception leadership behaviour points, there is not meaningful difference for age and seniority (p>0.05).

Physics teachers' attitude towards change points was significantly correlated with expectation part subscale of TLS r=,293 and perception part subscale of TLS (r=.316, p<.05). This correlation is at medium level. The existence of relationship between physics teachers' attitudes towards change points and leadership behaviour is very important (Çalik, 2003; Yeniçeri, 2002). As that relation reveals, there is subscale of TLS which is professional leadership subscale.

Physics teachers' burnout subscales points were significantly correlated with subscales of TLS in which there is a significant relation with personal accomplishment subscale and professional improvement leadership subscale (r=.403, r=.446, p<0.05). As it indicates physics teachers who displayed professional leadership behaviour highly, personal accomplishment subscale of burnout level is very highly, too.

Physics teachers, who are very important members of school system at secondary school, they gear a person working at area that technological and scientifically development of a nation. They have positive attitude towards change, display leadership behaviour frequency, come into prominence with professional improvement, have low level of burnout, these results are important in views of productivity of school management, development of leadership behaviour (Hale, 1998; Buckner and Mcdowelle, 2000; Beattie, 2002; Mayo, 2002; Haris, 2004; Murphy, 2005). In future researches, it can be investigated that measures how physics teachers' leadership behaviour develops, how burnout level decreases and how attitude towards change is transformed more positively.

Physics teachers who are very important members of school system at secondary school, training of individuals who are going to work technological and scientifically development of a nation. The findings suggesting they should have positive attitude towards change, often display leadership behaviour, come into prominence with professional achievement and have low level of burnout are also highlighted by researchers in views of productivity of school management and development of leadership behaviour (Hale, 1998; Buckner & Mcdowelle, 2000; Beattie, 2002; Mayo, 2002; Haris, 2004; Murphy, 2005). In future researches, it can be investigated that measures how physics teachers' leadership behaviour develops, how burnout level decreases and how attitude towards change is transformed more positively.

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