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The Relationship between School Principals' Quantum Leadership Behaviors and Teachers' Psychological Capital Levels

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Abstract

The current study aims to focus on the relationship between school principals' quantum leadership behaviours and teachers' psychological capital levels. The target population of the study consists of 462 teachers working at public schools in Sapanca district of Sakarya in 2020- 2021 academic year. The sample of the research consists of 224 teachers selected through simple random sampling. "Scale on the Quantum Leadership Behaviours of School Principals" developed by Erçetin, Potas, Açıkalın and Turan (2017) and "Psychological Capital Scale" adapted by Çetin and Basım (2012) were used to gather data. Descriptive statistics and non parametric methods were used to analyze the data. According to the findings, the level of school principals' quantum leadership behaviours is "frequent" and the level of teachers' psychological capital is "totally agree". There is no significant difference between teachers' perceptions on the school principals' quantum leadership behaviours according to "gender, educational background, professional seniority, educational stage and duration of working with the current principals". Teachers' perceptions on the level of teachers' psychological capital don't differ significantly according to "gender, educational background, professional seniority and duration of working with the current principals" but there is a significant difference between high school and primary school teachers in favour of primary school teachers according to "educational stage". Moreover, there is a moderate, positive and statistically significant relationship between school principals' quantum leadership behaviours and teachers' psychological capital levels.

Keywords: Leadership, Psychological capital, Quantum leadership.

Introduction

The importance given to people and human relations in organizations is increasing day by day. It is accepted that human power should be developed in order to ensure organizational development and change, otherwise organizations cannot continue their activities even if their physical facilities are good. Therefore, it can be said that organizations whose most important capital is human should take certain steps in order to increase employee productivity. Not only their cognitive abilities, experience and training, but also their positive psychology are effective in the productivity of employees (Akçay, 2012). The concept of psychological capital, which focuses on the development of social and psychological capacities of human resources (Luthans et al., 2007a), is of vital importance for organizations in terms of understanding and managing human resources (Uğur, 2017). Psychological capital is an approach that contributes to determining the amount of investment to be made in human resources (Koç and Keklik, 2019). With this approach, it is aimed that employees will be better, happier and more successful by identifying and developing their strengths (Youssef & Luthans, 2015). Therefore, high psychological capital levels of individuals will increase their effectiveness at work (Luthans, Avey, Avolio, & Peterson, 2010).

In the literature on psychological capital, psychological capital such as job satisfaction (Çakmak & Arabacı, 2017), job performance (Korkmazer, Ekingen & Yıldız, 2016), organizational commitment (Çakmak & Arabacı, 2017), organizational citizenship (Gupta, Shaheen & Reddy, 2017) were carried out to find out the effect on the variables. In addition, job satisfaction/satisfaction of psychological capital (Akçay, 2012; Kurt & Demirbolat, 2019; Türesin Tetik, Oral Ataç, & Köse, 2018), performance (Luthans et al., 2007a; Türesin Tetik et al., 2018), professional commitment (Hsing- Ming, Mei-Ju, Chia-Hui, & Ho-Tang, 2017), organizational commitment (Uygungil & İşcan, 2018; Yalçın, 2016), organizational trust (Yıldız, 2015), organizational citizenship (Yıldız, 2015), self-esteem (Bissessar , 2014) are the studies examining the relationship with different variables.

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However, studies in the literature about leadership styles such as authentic leadership (Dinçer, Tabak, & Koçyiğit, 2019; Jensen & Luthans, 2006; Karatürk, 2015), transformational leadership (Şengüllendi & Şehitoğlu, 2017), servant leadership (Elçi, 2020; Karaduman, 2017) have been found that there is a positive correlation with psychological capital.

Quantum Leadership

It was discovered in 1900 by Max Planck that light is in the form of discrete energy called "quanta". This discovery is accepted as the emergence of Kauntum physics (Erçetin, 2000). The basis of the wave-particle dilemma was formed by revealing in the experiment that discrete energies called quanta act as both waves and particles (Turan and Erçetin, 2017). In researches such as Einstein's "Special Relativity Theory", Broglie's "On Brown Motion", Born's "Particle-Wave Duality", Heisenberg's "Uncertainty Principle", many scientists reached the results supporting Planck's experiment and developed quantum physics (Erçetin, 2000).

As a result of the reflection of quantum theory on organizations, concepts such as quantum behavior, quantum organization, and quantum leadership have emerged (Turan & Erçetin, 2017). Quantum organizations are organizations in which the individual is at the center, based on the understanding that a single stakeholder can affect the entire organization, where uncertainty and unpredictability are emphasized, and alternatives are evaluated (Turan, 2017). Quantum mechanics has been taken as a basis in the evaluation of the attitudes of leaders in situations of uncertainty in such organizations and in the face of emerging events, and the quantum leadership paradigm has emerged (Turan, 2017). Quantum leadership is a process that ensures the active participation of all employees in the organization. Quantum leadership is a conscious management approach that includes building strong relationships, listening to members and empowering them (Kosa, 2020).

The leadership assumptions of the quantum perspective were discussed by Erçetin (2000) in comparison with the assumptions of the classical understanding. The leadership assumptions of the classical physics understanding can be listed as "leadership is its constituent parts", "leadership is explained with the logic of cause and effect", "leadership is a continuous feature attributed to a person", "leadership effect is based on power". On the other hand, the leadership assumptions of the quantum perspective are respectively as "leadership is an interaction area in the leader-follower dilemma", "leadership is unstructured and unpredictable", "the discontinuity of the leadership phenomenon" and "the effect of leadership is based on interaction" (Erçetin, 2000).

Leadership is an interaction area in the leader-followers dichotomy: According to this dimension, which emerged based on the "wave-particle dilemma" assumption of quantum physics, the interaction between the leader and the members is important and leadership expresses a unity between the leader and its members. It is this interaction that makes the characteristics and behaviors of the group members and the leader holistic and individually meaningful (Erçetin, 2000). When evaluated in terms of educational organizations, this dimension has an important aspect. Because the education manager, as a leader, needs to be in constant cooperation and interaction with his stakeholders (Erçetin et al., 2018).

Leadership is unconfigurable and unpredictable: According to this dimension (Erçetin, 2000), which emerges based on the "uncertainty and possibilities" assumption of quantum physics, the quantum leader allows flexibility in the face of unexpected situations (Tufan and Kormaz, 2020). Leaders know what to do in situations of uncertainty and keep the morale of their members high (Erçetin et al., 2018). According to this dimension, leadership requires taking risks constantly. In situations where there is uncertainty, quantum leaders offer options to their members about actions that can be taken instead of giving orders and are not afraid of chaos (Erçetin, 2000).

Discontinuity of leadership phenomenon: According to this dimension, which emerged based on the assumption of "disruption of energy" of quantum physics, leadership is accepted as a reality with discontinuity. According to this dimension, there may be breaks between the leader and the members from time to time, and new leaders may emerge in certain situations by changing the leadership. According to this dimension, leaders; they support their members, try to ensure their development, empower them to assume leadership, advise their members, and at the same time try to learn from them (Erçetin, 2000).

The effect of leadership is based on interaction: According to this dimension, which emerged based on the assumption of quantum physics to apply the force to a certain extent, leadership develops based on the interaction of the leader and the members. Leaders influence their members through an interaction of trust, commitment and respect and support the creation and maintenance of shared visions. It is important to continue learning and development in the interaction between the leader and the members (Erçetin, 2000).

Psychological Capital

The concept of positive psychology, which emerged at the end of the 1990s with the research of Seligman et al., focuses on recognizing and developing the strengths and potentials of individuals. Adapting this point of view to organizations, Luthans pointed out that as a result of improving the strengths and psychological capacities of the employees in an organization, their performance can be increased and their potentials can be revealed. Thus, the concept of "positive organizational behavior" as a reflection of positive psychology

has taken its place in the literature (Akçay, 2011; Luthans & Youssef, 2004).

Psychological capital is an approach based on positive psychology and positive organizational behavior. It focuses on "who the individual is" and "who he might be" (Luthans, Youssef, & Avolio, 2007b). It aims to increase the positive aspects of employees and make them better, happier and more successful (Youssef & Luthans, 2015). Psychological capital is defined as applications made to examine the potential and psychological capacity of human resources that can be developed and directed in order to increase performance in organizations (Keleş, 2011). Luthans et al. (2007b) defines psychological capital as "confident in taking responsibility and making the necessary effort to be successful in the face of challenging tasks (self-efficacy), having a positive view of being successful now and in the future (optimism), perseverance in achieving goals. and to try new ways when necessary (hope) to achieve success and to recover and survive when faced with problems (psychological resilience). In line with the definition made by Luthans et al. (2007b), psychological capital is explained in four dimensions:

Self-efficacy: The concept of self-efficacy (Harms & Luthans, 2012; Stajkovic & Luthans, 1998), which expresses the confidence one has in using his existing cognitive and affective capacity to take action in the face of a certain situation, is the Social Cognitive Theory developed by Bandura. and other related researches (Yıldız and Örücü, 2016). It is accepted as one of the most important strengths of the individual (Keleş, 2011). Self-efficacy is a concept that an individual learns about himself and can develop over time. Gaining self-efficacy of the individual; it depends on trying to do the job in the best way, getting information from the experiences of the people around him, encouraging him and getting positive feedback from people (Luthans et al., 2007b). The perception of efficacy that occurs after an individual successfully fulfills a task improves self-efficacy. When he can achieve difficult tasks, the belief that he can accomplish other similar difficult tasks increases and a perception of competence is formed in the individual (Koç & Keklik, 2019).

It is supported by studies that self-efficacy perception has a significant effect on job performance (Polatcı, 2014). Individuals with high self-efficacy; they are not afraid of risks and threats and try to be successful by taking responsibility in challenging tasks (Luthans, Zhu, & Avolio, 2006). Individuals with low self-efficacy perceptions tend to avoid difficult tasks and are not committed to their goals (Tösten & Özgan, 2017).

Optimism: Optimism, positive states are persistent, generalizable and internal; it is the ability to see negative situations as temporary, situational and external (Luthans & Youssef, 2004). It means that individuals make sense of events according to their own well-being and happiness (Koç & Keklik, 2019). The concept of optimism is a concept that includes finding the reasons behind the events that individuals have experienced in the past, present or may experience in the future (Luthans et al., 2007a).

Optimistic individuals attribute positive events to internal reasons and believe that these reasons will be with them in the future; thus they look to the future positively (Luthans et al., 2007a). Optimistic individuals are not affected by failure and have the courage to try again. These individuals tend to struggle to overcome the obstacles in front of them (Tösten & Özgan, 2017), they can adopt change more easily, they can notice opportunities more easily and take advantage of them more easily. They do not blame themselves in negative situations and consider these situations as external and temporary situations (Luthans et al., 2007b). They are individuals who are more resistant to the difficulties they face and have a dynamic structure. They are more likely to be encouraged to work (Keleş, 2011). They show more patience in the face of negative situations in their working life, and thus their commitment to their work increases and it is seen that they are more successful (Acar and Soydemir, 2019).

Hope: According to Frank, hope is "a feature that gives a sense of well-being and motivates people to take action" (Akman & Korkut, 1993; Keleş, 2011). It refers to the motivation and perceptions of individuals in identifying and using ways to reach a goal (Snyder, 2000). It can be explained as having positive attitudes towards possible but uncertain goals (Macinnis & Mello, 2005).

Individuals with a high level of hope can predict problems and identify different solutions (Koçak & Elçiçek Boyalı, 2020; Snyder, 2000). The high level of hope of the employees contributes positively to their adoption of the work they do and their willingness to do it (Acar and Soydemir, 2019). It is known that employees with a high level of hope perform at a high level (Koçak and Elçiçek Boyalı, 2020).

Psychological Resilience: Psychological resilience is defined as the positive adaptation that an individual will show in case of a problem or threat (Büyükbeşe and Aslan, 2019; Koçak and Elçiçek Boyalı, 2020). Psychological resilience; It is the capacity to recover after challenging situations such as boredom, failures, and increased responsibilities (Luthans, 2002). It is not only the ability to cope with negative situations, but also the ability to cope with unexpectedly positive situations (promotion, promotion, etc.) (Luthans, Norman, Avolio, & Avey, 2008). Resilience is a capacity that can be taught to people and developed over time (Luthans & Youssef, 2007; Stewart, Reid & Mangham, 1997). With the application of this concept in the workplace, it is aimed to reveal this capacity that exists in organizations, employees and leaders (Luthans et al., 2007b).

People with high psychological resilience are those who have the power to resist risks and setbacks (Avey et al., 2011). These individuals show positive reactions in the face of negative

situations. It is seen that these individuals are more successful and dynamic in business life (Acar and Soydemir, 2019).

Positive and supportive behaviors of administrators in educational organizations such as effective communication, cooperation, and fair task sharing affect teachers' psychological capital levels positively. The intrusive and bureaucratic approaches of the administrators towards the teachers negatively affect the psychological capital of the teachers (Çimen, 2015). In this context, the school administrators' display of quantum leadership behaviors (Erçetin, Çelik, & Çevik, 2018), which have features such as being process-oriented, creating interaction, cooperating, focusing on the needs of the organization and the individual, accepting the leadership potential of the employees, struggling with the status quo (Erçetin, Çelik, & Çevik, 2018) is thought to increase. From this point of view, this study aims to determine the relationship between school principals' levels of exhibiting quantum leadership behaviors and teachers' psychological capital levels according to teacher perceptions. Within the scope of the study, answers to the following questions will be sought:

1. What are the levels of school principals exhibiting quantum leadership behaviors according to teacher perceptions?
2. According to teacher perceptions, do school principals' quantum leadership behaviors show a significant difference according to the variables of "gender, educational status, teaching level, professional seniority and working time with the current school principal"?
3. What are the psychological capital levels of teachers according to teacher perceptions?
4. According to teacher perceptions, do teachers' psychological capital levels show a significant difference according to the variables of "gender, educational status, teaching level, professional seniority and working time with the current school principal"?
5. Is there a significant relationship between school principals' quantum leadership behaviors and teachers' psychological capital?

Method

Research Design

This research is a quantitative research. In the research, relational survey model, which is a survey approach, is used to find out whether two or more variables change together, and if there is a change, how the change occurs. (Karasar, 2011).

Population and Sample

In this research, the population consisted of 462 teachers working in the Sapanca district of Sakarya province in the 2020-2021 academic year. The sample was determined using the simple random sampling method. In this method, each sample is given an equal probability of being selected and the selected units are included in the sample (Büyüköztürk, Kılıç Çakmak, Akgün, Karadeniz, & Demirel, 2016). The formula given below was used to determine the number of samples (Büyüköztürk, et al. 2016).

$$n = \frac{t^2 (PQ) / d^2}{1 + \left(\frac{(t^2 PQ) / d^2 - 1}{N} \right)}$$

In the formula, the universe size (N) is 462; tolerance level (d) 0.05; sample percentage (PQ) 0.25; Confidence level table value (t) was taken as 1.96. As a result of the process, 210 was determined as a sufficient number for the sample size. In the study, data were collected by reaching 224 people. 131 (58.5%) of the participants were female and 93 (41.5%) were male. When the educational status distributions are evaluated, 13 (5.8%) are associate degree graduates, 185 (82.6) undergraduate, 26 (11.6%) graduates. 86 (38.4%) of the participants work in primary school, 62 (27.7%) in secondary school, and 76 (33.9%) in high school. When the occupational seniority distribution is examined, 86 (38.4%) of the participants have "1-10 years", 80 (35.7%) "11-20 years", 58 (25.9%) "21 years and above". When the distribution of working time with the current manager is evaluated, 32 (14.3%) of the participants are "less than 1 year", 64 (28.6%) are "1-2 years", 58 (25.9%) are "3-4 years", 70 '(31.3%) of them have been working with their current managers for "more than 5 years".

Data Collection Tools

A "personal information form" was used to collect data on the variables covered in the research.

The "Quantum Leadership Behavior Scale of School Administrators" developed by Erçetin, Potas, Açıkalın, and Turan (2017) was used in the study to determine the perceptions of teachers regarding the quantum leadership behaviors of school principals. The scale consists of 38 items and the scale items are in the form of a 5-point likert. Items were graded as "always (5), often (4), sometimes (3), very rarely (2), and never (1)". The scale consists of 4 dimensions: "Leadership is an interaction area in the leader-follower dilemma, leadership is unstructured and unpredictable, the discrepancy of leadership phenomenon and the effect of leadership are based on interaction". Confirmatory factor analysis of the scale Erçetin et al. (2017) made by the item factor load values of the scale were .88 and .79 in sub-dimensions, respectively; .88 to .71; .88 to .62; It varies between .87 and .65. Scale error coefficients are between .23 and .61. Goodness of fit values of the scale are x^2 = 2246.82, df = 658, x^2/ df = 3.42, CFI = .99, NFI = .99, GFI = .82, RMSEA = .066, RMR = .043. In the dimensions of the scale, the corrected item-total correlations were .77 and .91, respectively; .77 to .89; It ranges from .63 to .86 and from .70 to .86. The reliability coefficient

was found to be .97, .96, .96 and .95 for the dimensions, respectively. The reliability coefficient for the entire scale is .98. While interpreting the values obtained from the scale, intervals such as "1.00-1.80 = Never, 1.81-2.60 = Very Rarely, 2.61-3.40 = Occasionally, 3.41-4.20 = Often, 4.21-5.00 = Always" were used.

In the research, Luthans et al. (2007a) developed to determine the psychological capital levels of teachers; The "Psychological Capital Scale" adapted into Turkish by Çetin and Basım (2012) was used as a total of 21 items, from 4 sub-dimensions reached as a result of the adaptation. The statements in the scale are in the form of a 6-point Likert scale of "Strongly disagree (1)", "Mostly disagree (2)", "Partly disagree (3)", "Partly agree (4)", "Mostly agree (5)", "Totally agree It is rated as "(6)". In the analysis performed by Çetin and Basım (2012), the Cronbach Alpha coefficients were .91 in the total of the scale; .67 in the "optimism" sub-dimension, .81 in the "hope" sub-dimension, .68 in the "psychological resilience" sub-dimension and .85 in the "self-efficacy" sub-dimension. As a result of the confirmatory factor analysis of the 21-item scale, its values were x^2 = 399.9; sd = 183; x^2/sd = 2.18; RMSEA = .057; CFI = .90 and TLI = .91. Item factor loads are between .45-.73. It has been determined that the scale is a valid and reliable scale. Teachers' psychological capital levels are high when high scores are obtained from the scale, and when a low score is obtained from the scale, it is interpreted as low (Çetin & Basım, 2012). In the evaluation of the scale, the range of 1.-1.83 was "I strongly disagree"; 1.84-2.66 range "Mostly disagree"; The range of 2.67-3.50 "Partly disagree"; The range 3.51-4.32 "Partly agree"; 4.33-5.15 range "Mostly agree"; The range of 5.16-6.00 was accepted as "I totally agree".

The Ethics committee approval was obtained from XXX University with the decision numbered XXX on XX.XX.2021.

Data Analysis

The data of the studies were analyzed through the SPSS 23.00 program. First, descriptive statistics results were determined. The normality of the data was examined with the Kolmogorov-Smirnov test, and whether the variances were homogeneous with the Levene test. In the study, non-parametric tests were used because the data did not show a normal distribution. Variables with two categories were determined using the Mann-Whitney U test, and differences between variables with more than two categories were determined using the Kruskal-Wallis H test. In addition, Spearman Correlation Analysis was conducted to determine the relationship between school principals' quantum leadership behaviors and teachers' psychological capital levels.

Findings

The findings of the research on descriptive analysis, difference tests and correlation analysis are included in this section.

Descriptive Statistics on School Principals' Quantum Leadership Behaviors and Teachers' Psychological Capital Levels

According to teacher perceptions, school principals' levels of quantum leadership behaviors and the mean and standard deviation values of teachers' psychological capital levels are shown in Table 1.

According to Table 1, teachers' perceptions of school principals' levels of exhibiting quantum leadership behaviors ($\overline{X}$ = 4.10) are at the "most of the time" level. Averages of sub-dimensions; "Leadership is an area of interaction in the leader-follower dichotomy" ($\overline{X}$ = 4.18); "Leadership is unstructured and unpredictable"($\overline{X}$ = 4.02); "The discontinuity of the phenomenon of leadership" ($\overline{X}$ = 4.12); "The effect of leadership is based on interaction" ($\overline{X}$ = 4.06). All sub-dimensions of the scale are at the "most of the time" level. When the standard deviation values of the sub-dimensions are examined, the most heterogeneous distribution is "Leadership is an interaction area in the leader-follower dilemma" (Ss = .95); It is seen that the most homogeneous distribution is in the

Table 1. Descriptive Statistics on Quantum Leadership, Psychological Capital and Its Sub-Dimensions

	wN	$\overline{X}$	*Ss*
Quantum Leadership Behaviors of School Principals		4.10	.90
Leadership is an Area of Interaction in the Leader-Followers Dilemma		4.18	.95
Leadership Is Unconfigurable and Unpredictable	224	4.02	.93
Intermittency of the Leadership Phenomenon		4.12	.92
The Effect of Leadership is Based on Interaction		4.06	.92
Psychological Capital		5.17	.64
Optimism		4.92	.80
Hope	224	5.21	.64
Self-efficacy		5.29	.75
Psychological Resilience		5.18	.69

dimensions of "Discreteness of the leadership phenomenon" (Ss = .92) and "The effect of leadership is based on interaction" (Ss = .92).

As stated in Table 1, teachers' psychological capital levels ($\overline{X}$ = 5. 17) are at the level of "totally agree". In other words, teachers' psychological capital levels are very high. The averages of the sub-dimensions of the scale; "optimism" ($\overline{X}$ = 4.92), "hope" ($\overline{X}$ = 5.21), "self-efficacy" ($\overline{X}$ = 5.29), "resilience" ($\overline{X}$ = 5.18). "Optimism" "Mostly Agree"; "hope", "self-efficacy" and "psychological resilience" dimensions are at the level of "totally agree". When the standard deviation values of the sub-dimensions are examined, it is seen that the most heterogeneous distribution is in the "optimism" (Ss = .80) dimension, and the most homogeneous distribution is in the "hope" (Ss = .64) dimension.

Comparison of School Principals' Levels of Exhibiting Quantum Leadership Behaviors and Teachers' Psychological Capital Levels in Terms of Certain Variables

In this section, the findings of the difference tests to determine whether school principals' levels of showing quantum leadership behaviors and teachers' perceptions of teachers' psychological capital levels differ in terms of "gender, educational status, teaching level, professional seniority, working time with the current school principal" are included.

Table 2 shows the findings of the Mann-Whitney U test, which was applied to determine whether teachers' and school principals' levels of showing quantum leadership behaviors and teachers' perceptions of their psychological capital levels differ according to the "gender" variable.

According to Table 2, it was seen that teachers' perceptions of school principals' levels of showing quantum leadership behaviors did not show a significant difference according to the "gender" variable. (U = 6015.50; p > .05). In other words; female and male teachers have similar perception levels regarding the level of quantum leadership behaviors of school principals. As seen in Table 2, teachers' psychological capital levels do not show a significant difference according to the "gender" variable (U = 5221.50; p > .05). In other words, it can be said that the perceptions of male and female teachers about psychological capital are at a similar level.

The findings of the Kruskal-Wallis H test, which was applied to determine whether school principals' levels of displaying quantum leadership behaviors and teachers' perceptions of teachers' psychological capital levels differ according to the variables of "educational status, teaching level, professional seniority, working time with the current principal" are included in this section. Table 3 shows the Kruskal-Wallis H findings of the quantum leadership scale according to the variables of "educational status, teaching level, professional seniority and working time with the current principal".

According to Table 3, school principals' levels of showing quantum leadership behaviors are "educational level" (x^2 = 1.793, sd = 2, p > .05), "educational level" (x^2 = 3.638, sd = 2, p > .05) , does not show a significant difference according to the variables "professional seniority" (x^2 = 2.141, sd = 2, p > .05) and "time working with the current manager" (x^2 = 4.828, sd = 3, p > .05). According to this; Teachers' perceptions of quantum leadership behaviors do not differ depending on their education level, teaching level, working time in the profession and working time with their current manager.

Table 4 shows the findings of the Kruskal-Wallis H test applied to determine whether teachers' perceptions of their psychological capital levels differ according to the variables of "educational status, teaching level, professional seniority, working time with the current principal".

According to the findings given in Table 4, the psychological capital levels of teachers are "educational status" (x^2 = 2.677, sd = 2, p >.05), "professional seniority" (x^2 = 1.132, sd = 2, p >.05). , "time working with the current school principal" (x^2 = 3.731, sd = 3, p >.05) variables were not found to differ significantly. In other words, teachers' perceptions of their psychological capital levels do not differ according to their "educational status, professional seniority, working time with the current school principal". It was determined that teachers' perceptions of their psychological capital levels showed a significant difference depending on the level of education (x^2 = 8.254, sd = 2, p <.05). According to Tamhane's T2 results, the significant difference is between high school and primary school teachers. According to the results of the analysis, it

Table 2. Mann-Whitney U Findings by "Gender" Variable

	Gender	*N*	*Rank Avg.*	*Rank Total*	*U*	*p*
Quantum Leadership Behaviors of School Principals	F	31	111.92	14661.50	6015.50	.873
	M	93	113.32	10538.50		
Teachers' Psychological Capital Levels	F	131	119.14	15607.50	5221.50	.069
	M	93	103.15	9592.50		

Rable 3. Kruskal-Wallis H Test Findings of Quantum Leadership Scale by Variables of "Educational Status, Teaching Level, Professional Seniority and Working Time with Current Manager"

Variables		*N*	*Rank Avg.*	*sd*	x^2	*p*	*Sd*
Education Background	Associate Degree	13	126.19	2	1.793	.408	-
	Undergraduate	185	113.47	2			
	Graduate	26	98.77	2			
Teaching Level	Primary School	86	120.55	2	3.638	.162	-
	Secondary School	62	114.90	2			
	High School	76	101.43	2			
Professional Seniority	1-10 years	86	120.21	2	2.141	.343	-
	11-20 years	80	109.58	2			
	21 years and over	58	105.10	2			
Working Time with Current Manager	Less than 1 year	32	102.95	3	4.828	.185	-
	1-2 years	64	109.02	3			
	3-4 years	58	104.99	3			
	5 years and over	70	126.26	3			

Table 4: Kruskal-Wallis H Test Findings of Quantum Leadership Scale by Variables of "Educational Status, Teaching Level, Professional Seniority and Working Time with Current Manager"

Variables		*N*	*Rank Avg.*	*sd*	x^2	*p*	*Sd*
Education Background	Associate Degree	13	126.19	2	1.793	.408	-
	Undergraduate	185	113.47	2			
	Graduate	26	98.77	2			
Teaching Level	Primary School	86	120.55	2	3.638	.162	-
	Secondary School	62	114.90	2			
	High School	76	101.43	2			
Professional Seniority	1-10 years	86	120.21	2	2.141	.343	-
	11-20 years	80	109.58	2			
	21 years and over	58	105.10	2			
Working Time with Current Manager	Less than 1 year	32	102.95	3	4.828	.185	-
	1-2 years	64	109.02	3			
	3-4 years	58	104.99	3			
	5 years and over	70	126.26	3			

was seen that primary school teachers' psychological capital levels were higher than high school teachers' psychological capital levels.

Table 5: The Relationship Between School Principals' Quantum Leadership Behaviors and Teachers' Psychological Capital Levels

Variables	*Quantum Leadership*	*Psychological Capital*
Quantum Leadership	1	0.48**
Psychological Capital	0.48**	1

The Relationship Between School Principals' Quantum Leadership Behaviors and Teachers' Psychological Capital Levels

The Spearman Correlation Analysis findings regarding the relationship between school principals' quantum leadership behaviors and teachers' psychological capital levels are given in Table 5.

Discussion

According to the findings obtained in the research, it was seen that the quantum leadership behaviors of school principals were at the level of "most of the time". This result; Erçetin et al. (2018), Kayman Ertürk and Erçetin (2011), Tufan and Korkuz (2020), Turan and Erçetin (2017). According to the results of the analysis of the sub-dimensions of quantum leadership, it was observed that school principals exhibited "most of the time" quantum leadership behaviors in all sub-dimensions. Turan and Erçetin (2017), Tufan and Kormaz (2020) found that all sub-dimensions of the scale were at the level of "most of the time" in their studies. In the study of Erçetin et al. (2018), it was seen that the dimensions of "leadership cannot be structured and unpredictable, the discontinuity of the leadership phenomenon and the effect of leadership are based on interaction" are at the "most of the time" level. In this context, it can be said that these results are consistent with the results obtained in the study. According to this, school principals often exhibit a flexible management approach, attach importance to cooperation, provide opportunities for communication by creating formal and informal interaction environments, are not afraid to take risks, turn uncertainties into opportunities, see success as a common product, provide opportunities for their subordinates to develop, and lead them when necessary. It can be said that they provide the opportunity to do so.

In the study, the quantum leadership behavior levels of school principals according to teacher perceptions; It has been determined that there is no significant difference according to the variables of "gender, education level, education level, professional seniority and working time with the current school principal". This study is consistent with the study of Turan (2017) according to the variables of "gender, professional seniority and working time with the current manager". On the other hand, it does not coincide with the findings of Turan's (2017) study in terms of the "education level" variable. According to the findings of the study, it can be said that school principals provide development opportunities to all teachers, provide leadership opportunities, involve teachers in the process, and display a constructive and flexible approach to the needs of teachers, regardless of variables such as gender and teachers' working time. The fact that school principals' quantum leadership behaviors do not differ according to the "educational level" variable shows that principals at different education levels have a similar management approach. The lack of differentiation according to the variables of "professional seniority" and "educational status" can be explained by the fact that school principals exhibit quantum leadership behaviors at a level that can meet the expectations of teachers with different education levels and professional seniority.

As a result of the study, it was determined that the psychological capital of the teachers was at the level of "totally agree". Accordingly, it can be stated that the teachers participating in the study have a very high level of psychological capital perception. It can be said that this result obtained in the research is in parallel with the results of many studies in the literature in which the psychological capital levels of teachers are high (Altınkurt, Ertürk, & Yılmaz, 2015; Anik & Tösten, 2019; Bahadır & Kahveci, 2020; Çakmak & Arabacı, 2017; Çimen, 2015; Oral , Tösten & Elçiçek, 2017; Tösten & Özgan, 2017; Yalçın, Akan & Yıldırım, 2017; Yıldırım & Tösten, 2020). In this study, it was seen that the "Self-efficacy" sub-dimension had the highest level, consistent with the studies of Bahadır and Kahveci (2020) and Tösten and Özgan (2017). When the study findings are evaluated, it can be said that the teachers are optimistic, they can calmly overcome the stressful situations they encounter in their business life, they can try various ways to solve problems, and they make efforts to reach their business goals. At the same time, it can be said that teachers have a very high level of self-confidence when exchanging information with their colleagues, setting goals in business life, and sharing with stakeholders.

In the study, teachers' psychological capital perception levels; It was investigated whether it differs significantly according to the variables of "gender, educational status, teaching level, professional seniority and working time with the current school principal". As a result of the analysis, the perception levels of teachers about psychological capital; It was determined that there was no significant difference according to the variables of "gender, educational status, professional seniority and working time with the current school principal". On the other hand, it was found that there was a significant difference in favor of primary school teachers according to the "teaching level" variable. Kaya, Balay and Demirci (2014) and Kelekçi and Yılmaz (2015) found in their studies that teachers' perceptions of psychological capital level did not differ significantly according to the "gender" variable. In addition, Altinkurt et al. (2015) and Bahadır and Kahveci (2020)

concluded that teachers' perception levels of psychological capital do not differ significantly according to "gender" and "professional seniority" variables. Unlike the results obtained in this study, Çimen (2015), in his study, according to the "gender" and "professional seniority" variables of teachers' psychological capital levels; Kaya et al. (2014) according to the variables of "professional seniority" and "educational status"; Bahadır and Kahveci (2020) found that there was a significant difference according to the "educational status" variable. The difference in favor of primary school teachers according to the "teaching level" variable may be due to the exam-oriented competitive working environment seen in secondary and high school type schools. However, the fact that primary school teachers spend more time at school than those working in other school types may increase their supportive communication. Since psychological capital has a quality that can be affected by social support, the cooperative attitude among primary school teachers can be seen as the reason for this situation.

A significant and positive relationship was found between the quantum leadership behaviors of school principals and teachers' psychological capital levels. Accordingly, school principals offer teachers the opportunity to find solutions in complex situations; encouraging the formation of values such as unity, solidarity, integrity and cooperation in school; provide teachers with the opportunity to take initiative; encouraging teachers to gain self-confidence; supporting teachers in setting goals for their own development; It can be said that quantum leadership behaviors such as increasing the morale and motivation of teachers with their enthusiastic speeches increase the psychological capital levels of teachers.

Based on the results of the research, some suggestions have been developed for practitioners and researchers. Studies can be carried out to increase the quantum leadership behaviors of school principals. Thus, teachers' psychological capital levels can also increase. This study was conducted with quantitative research methods. A similar study can be designed with qualitative research methods and more in-depth findings can be reached. In addition, a similar study can be carried out in private schools, and a comparison can be made between public and private schools.

Conclusion

A significant and positive relationship was found between the quantum leadership behaviors of school principals and teachers' psychological capital levels. Accordingly, school principals offer teachers the opportunity to find solutions in complex situations; encouraging the formation of values such as unity, solidarity, integrity and cooperation in school; provide teachers with the opportunity to take initiative; encouraging teachers to gain self-confidence; supporting teachers in setting goals for their own development; It can be said that quantum leadership behaviors such as increasing the morale and motivation of teachers with their enthusiastic speeches increase the psychological capital levels of teachers.

Suggestion

Based on the results of the research, some suggestions have been developed for practitioners and researchers. Studies can be carried out to increase the quantum leadership behaviors of school principals. Thus, teachers' psychological capital levels can also increase. This study was conducted with quantitative research methods. A similar study can be designed with qualitative research methods and more in-depth findings can be reached. In addition, a similar study can be carried out in private schools, and a comparison can be made between public and private schools.

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