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Investigation of Psychometric Properties of the Turkish Version of the Motivation to Lead Scale on Teachers

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Abstract

Leadership in schools is undergoing a transformation involving all school personnel, especially for teachers. Teachers constitute the basic human resource of both school principals and teacher leadership with their formal and informal leadership roles. However, understanding a teacher's emergence with a leader identity is and interpreting the motivational processes behind leadership tendencies continues to be an equation with many unknowns in the leadership literature. To identify teachers who are motivated to lead in the field of school leadership; help develop a pool of potential leaders for schools; In order to increase leader effectiveness and organizational performance, it is important to investigate the factors that motivate talented teachers to take leadership roles. For these reasons, this study, the psychometric properties of Chan and Drasgow's (2001) "Leadership Motivation Scale" (MTLS), which combines various factors in leadership, on teachers were examined. Research was conducted with teachers working in different school types in Ankara. The psychometric properties of MTLS were primarily examined in terms of content validity and language equivalence. EFA (n: 304) and CFA (n: 500) were performed to test construct validity. It was observed that the research results supported the original structure of the scale. In addition, testing the psychometric properties of MTLS on the teacher group is a first step in the related literature. In this context, it is expected that the research will provide a different perspective to both comparative research in the MTL literature and new research on school leadership.

Keywords: Motivation to lead, validity and reliability, individual differences, leadership

Liderlik Etme Motivasyonu Ölçeğinin Türkçe Formunun Öğretmenler Üzerinde Psikometrik Özelliklerinin İncelenmesi

Öz

Okullarda liderlik, tüm okul personelini özellikle de öğretmenleri kapsayan bir dönüşüm geçirmektedir. Öğretmenler hem okul müdürlüğünün hem de üstlendikleri resmi ve gayri resmi liderlik rolleri ile öğretmen liderliğinin temel insan kaynağını oluşturmaktadır. Ancak bir öğretmenin lider kimliği ile ortaya çıkışını anlamak ve liderlik eğilimlerinin arkasında yatan motivasyonel süreçleri yorumlamak liderlik alanyazınında çok bilinmeyenli bir denklem olmaya devam etmektedir. Okul liderliği alanında, liderlik etmeye motive olmuş öğretmenleri belirleyebilmek; okullar için potansiyel liderlerden oluşan bir havuz geliştirilmesine yardımcı olabilmek; lider etkinliğini ve örgütsel performansı artırabilmek için yetenekli öğretmenleri liderlik rolleri üstlenmeye motive eden faktörleri araştırmak önemlidir. Bu gerekçelerle mevcut araştırmada Chan ve Drasgow'un (2001) liderlikte çeşitli faktörleri birleştiren "Liderlik etme Motivasyonu Ölçeği" (LEMÖ)'nün öğretmenler üzerinde psikometrik özellikleri incelenmiştir. Çalışma Ankara da farklı okul türlerinde görev yapan öğretmenler ile gerçekleştirilmiştir. LEMÖ'nün psikometrik özellikleri öncelikle kapsam geçerliği, dil eşdeğerliği açısından incelenmiştir. Ölçeğin yapı geçerliğine dair kanıtlar AFA (n: 304) ve DFA (n: 500) ile sağlanmıştır. Araştırma sonuçları "sosyal-normatif LEM"; "duyuşsal-kimlik LEM"; "hesapçı olmayan LEM" olmak üzere LEMÖ'nün üç faktörlü yapısını desteklemiştir. Ayrıca LEMÖ'nün psikometrik özelliklerinin öğretmen grubu üzerinde test edilmesi ilgili alanyazında bir ilk adım olma özelliği taşımaktadır. Bu bağlamda araştırmanın hem LEM alanyazınında yapılacak karşılaştırmalı araştırmalara hem de okul liderliği konusunda yapılacak yeni araştırmalara farklı bir bakış açısı sağlaması beklenmektedir.

Anahtar kelimeler: Liderlik etme motivasyonu, geçerlik ve güvenirlik, bireysel farklılıklar, liderlik

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INTRODUCTION

Today, organizations aim to achieve organizational goals by encouraging employees to teamwork and cooperation with a horizontal hierarchical approach. This understanding allows the emergence of more than one leader in organizations. Although the critical importance of the school principal in school leadership is accepted, the leadership approach that focuses on a single person is experiencing a transformation that includes all school personnel, especially teachers (Nguyen, Harris & Ng, 2019; Wenner & Campbell, 2017). On the one hand, teachers constitute the basic human resource of the school principalship (Bush, 2018; Hitt & Player, 2019), and on the other hand, they lead all stakeholders of the school community with formal and informal leadership roles (Silva, Gimbert, & Nolan, 2000; Smylie, & Eckert, 2018). An understanding of school leadership that supports an authentic, collaborative decision-making culture that requires teachers to have a say in decisions regarding educational policy, practice and pedagogy is becoming increasingly widespread (Bellibaş, Gümüş & Kılınç, 2020; Çakır, 2020; Shen et al., 2020; Zhang & Lo Leslie, 2021). Steps are being taken to improve the leadership capacities of teachers, both abroad and at Türkiye. For example, in China, "Master Teacher Studios" programs are implemented to develop the leadership potential of teachers (Zeng & Lo Leslie, 2021). In Sweden, career development studies are carried out to improve the leadership capacity of especially talented teachers (Hirsh & Bergmo-Prvulovic, 2019). Although there are no studies directly aimed at improving the leadership skills of teachers in Türkiye, teachers are indirectly encouraged to become leaders by keeping their pedagogical knowledge and skills up to date and supporting their professional development (Gümüş, Kılınç & Bellibaş, 2022; Karacabey et al., 2022; Kılınç et al., 2021). Existing research is undoubtedly stimulating in terms of revealing and encouraging teachers' leadership potential (Bellibaş et al., 2020; Kurt, 2016; Lee & Kwan, 2021; Zhang & Lo Leslie, 2021). However, understanding a teacher's emergence with a leader identity and interpreting the motivational processes behind leadership tendencies continues to be an equation with many unknowns in the leadership literature. In this sense, identifying teachers with high leadership potential in schools and examining the source of their desire to lead can be an important start in order to develop their leadership potential. Therefore, it may be necessary to look at the issue from a perspective that includes the basic components of leadership psychology. Because an understanding of school leadership in which basic psychological structures are ignored in leadership practices will be incomplete theoretically and may not be sustainable in practice. Chan and Drasgow's (2001) leadership motivation model deserves to be examined as a structure that has the potential to meet this need in the field of school leadership.

Motivation to lead (MTL) is a theoretical approach that relates individuals' leadership orientation, leadership behaviors, and leader effectiveness to motivational processes (Amit, Lisak, Popper & Gal, 2007; Badura et al., 2020; Chan & Drasgow, 2001; Chan & Kennedy, 2018). In recent years, MTL-based research on determining the professional interests of employees in the field of organizational psychology (Clemmons & Fields, 2011; Felfe & Schyns, 2014; Porter, Riesenmy & Fields, 2016); Investments in leader selection, training and development in organizations are becoming increasingly common within the scope of development studies (Porter et al., 2016; Rossi, 2011; Vilkinas, Murray & Chua, 2020). Research indicates that the leadership behaviors of individuals with different leadership motivation may also be different (Badura et al., 2020; Chan & Kennedy, 2018). According to MTL, the emergence of leadership, leader behaviors and leader effectiveness are related to some individual characteristics and motivational processes. Popper & Mayseless (2007) support the arguments of MTL by arguing that individual characteristics and motivational components must come together in order for individuals to emerge as leaders and sustain leadership. Kennedy et al., (2021) reveals that the three-factor structure of motivation to lead explains individual differences in achieving leadership roles. Some research results show that affective identity MTL(AIMTL) and social normative MTL(SNMTL) predict leader effectiveness more strongly than non-calculative MTL(NCMTL) (Auvinen et al., 2020; Vilkinas et al., 2020). Shelia and Aycan (2023) associate the emergence of leadership with the structural features of MTL. Çetinkaya & Arastaman's (2023) qualitative research findings, in which they examined teacher leaders' motivation to lead, draw attention to the importance of motivation to lead in teacher leadership, while also revealing that teacher leaders are motivated to lead with affective identity MTL(AIMTL) and non-calculative MTL (NCMTL). Arastaman, Fidan & Ayyıldız (2023) draw attention to the mediating effect of leadership motivation on teachers' desire to become school principals.

An important feature of Chan & Drasgow's (2001) MTL model is that it combines the process of leader development and leadership performance. Additionally, MTL is based on the assumption that leadership tendency

can be learned and improved rather than the assumption that people have an innate leadership tendency. In this sense, MTL does not evoke the "big man" approach, nor does it assume that people who turn to leadership have needs such as success, power or commitment. For these reasons, understanding MTL is important in answering questions about whether individuals who are interested in leadership roles and motivated to maintain leadership make more effective leaders. In the field of school leadership, being able to identify teachers who are motivated to lead; In order to develop teachers' leadership potential and increase organizational performance, it is important to examine the processes that motivate teachers to take on leadership roles. It is thought that Chan & Drasgow (2001: 481) may provide a different perspective to school leadership studies in terms of meeting the expectations in this direction with the MTL scale, which combines various factors in leadership. For these reasons, the current research examines the psychometric properties of the Leadership Motivation Scale (MTLS) on teachers. As a matter of fact, MTLS in its original form (Chan & Drasgow, 2001), adaptation studies in different languages (Bobbio & Manganelli Rattazzi, 2006; Felfe & Schyns, 2014; Kasemaa, 2016), and Turkish adaptations (Özbezek, 2018; Polatcan & Cansoy, 2020; Turhan, 2014) that the selected sample groups represent university students or military personnel creates the need to examine the psychometric properties of MTLS on samples containing different occupational groups. In addition, the current research encourages MTL-based research in the field of school leadership; clarifying attempts to understand the characteristics of school leaders; In practice, it is expected to contribute to the review of investments in leadership training and development.

Theoretical Framework

Motivation to Lead

One of the important components of leadership is the motivational processes that push the individual to lead (Badura et al., 2020). Early studies on motivation and leadership revealed that individuals are motivated to enter leadership positions with moderate to high levels of power, low need for affiliation, and high need for self-control. (Jacobs & McClelland, 1994). However, the measurements used in these early studies caused criticisms regarding the construct validity and reliability of the studies (Meyer & Kurtz, 2006). In addition, these studies point out some theoretical and empirical deficiencies in explaining MTL as an individual difference variable. Chan and Drasgow (2001) addressed the relationship between individual characteristics and various leader behaviors with an individual differences construct called motivation to lead (MTL). Research on leadership motivation has changed direction significantly with Chan and Drasgow's (2001) MTL model.

According to Chan (1999), motivation is an interaction of complex intrapersonal processes that predict the direction, intensity, and permanence of behavior (Kanfer, Frese & Johnson, 2017). Motivation to lead is an individual differences variable that affects a leader or candidate leader's decision to undertake leadership training, roles and responsibilities, the intensity of leadership effort, and their permanence as a leader (Chan & Drasgow, 2001). Individual characteristics that position MTL as an individual difference variable also direct the individual's leadership behaviors in a particular field of work or life activity through MTL. Chan & Drasgow (2001) define individual characteristics such as leadership self-efficacy, previous leadership experience, personality, value orientations, and general cognitive abilities as antecedents of MTL. Referencing Singer's (1990) "Leadership Desire Model", Bandura's (1986) "Self-Efficacy Theory" and Ross's (1977) "Attribution Theory", Chan and Drasgow (2001) developed a social cognitive variable such as leadership self-efficacy. He suggested that individuals' leadership motivation may be explained by. As a matter of fact, considering that motivation theorists evaluate general self-efficacy as an important predictor of motivation, leadership self-efficacy has been evaluated as directly related to MTL and the closest antecedent to MTL (Chan & Drasgow, 2001). It was also hypothesized that leadership self-efficacy may partially mediate the relationships between MTL and individual characteristics such as past leadership experience, personality, socio-cultural values, and cognitive abilities. According to the researchers, another close antecedent of MTL is past leadership experience. Proven performance in leadership is a feature that motivates the individual to later take on leadership roles (Cappelli & Keller, 2014). Finally, Chan & Drasgow (2001) define intelligence as cognitive abilities such as verbal or numerical ability and analytical thinking; personality traits such as extraversion, agreeableness, responsibility, openness to experience, emotional balance; He argued that socio-cultural values such as horizontal individualism, horizontal collectivism, vertical individualism, vertical collectivism are among the distant antecedents of MTL. Chan & Drasgow (2001) developed the " Motivation to Lead Scale" to both test the individual antecedents and dimensions of MTL and to provide a measurement for MTL.

The MTL scale was developed by testing the MTL structure proposed by Chan & Drasgow (2001), item pools created through focus group discussions, and studies conducted with American and Singaporean students and Singaporean soldiers. Factor analysis results showed, firstly, that the three-factor structure of the scale fits

better than the single-factor structure; secondly, each dimension of the MTL points to different sets of precursors; Finally, it has been shown that the three-factor structure is positively related to each other (Chan, et al., 1999; Chan & Drasgow, 2000; Kessler, et al., 2008).

Affective identity MTL (AIMTL) is related to the individual's individual goals and expectations that are effective in assuming leadership roles (Rosch, Collier & Thompson, 2015). It is based on the assumption that some individuals are interested in leadership roles because they take pleasure in leading (Amit & Bar-Lev, 2012). Individuals with high affective identity MTL are individuals who take pleasure in leading, being at the center of a group and taking responsibility (Clemmons & Fields, 2011). Research reveals that individuals with high affective identity MTL (AIMTL) tend to be more extroverted and social than other individuals in the group, and that they value competition and success (Chan, Rounds, & Drasgow, 2000; Tafero, 2007). Additionally, these individuals have greater leadership self-efficacy and past leadership experience; They are individuals who are motivated to leadership with a sense of duty and responsibility (Tafero, 2007).

According to social normative MTL (SNMTL), individuals are attracted to leadership roles out of a sense of duty or obligation. Individuals motivated for leadership with social normative MTL feel a deep commitment to the groups to which they belong (Amit & Bar-Lev, 2012); tends to reject social inequalities while accepting social hierarchies within the group (Chan et al., 2000). In addition, these individuals are likely to have more leadership self-efficacy and past leadership experience, like individuals with high affective identity MTL (Chan et al., 2000; Kessler et al., 2008). Research reveals that individuals' personality traits characterized by agreeableness and conscientiousness (Tafero, 2007), as well as vertical individualistic and vertical collectivistic value orientations, are positively related to social normative MTL (SNMTL) (Chan & Drasgow, 2001).

Finally, Non-calculative MTL (NCMTL) is based on the assumption that individuals assume leadership roles without any expectation of personal benefit (Amit et al., 2007). In this sense, individuals with high non-calculative MTL (NCMTL) display a selfless stance in leadership, contrary to traditional expectation-oriented motivation approaches. On the other hand, individuals with high non-calculative MTL have horizontal collectivistic socio-cultural values; tend to have an agreeable and tolerant personality and are likely motivated to lead regardless of past leadership experience (Chan et al., 2000; Chan & Drasgow, 2001).

While the MTL scale brings a different perspective to leadership research with its antecedents and three-dimensional structure, adaptation studies of the scale have also been carried out in different cultural contexts. For instance, in Bobbio & Manganelli Rattazi's (2006) adaptation study to Italy, evidence was provided for the validity and reliability of the scale with 15 items. Amit et al., (2007: 144) added patriotic and ideological MTL factors to Chan & Drasgow's (2001) original scale form. Adaptation studies conducted by Felfe & Schyns, (2014), Kasemaa (2015), and Özbezek (2018), Polatcan & Cansoy (2020), Turhan (2014) in Turkey have shown that MTL is a valid and reliable measurement tool.

METHOD

In the study, the psychometric properties of MTLS were tested on teachers. Prior to the research, permission to use the scale was obtained from Chan Kim Yin via e-mail, and Ethics Committee approval was received from Hacettepe University Rectorate with a letter dated 21.03.2023 and numbered E-35853172-300-00002756620.

Research Design

In the first stage of the research, the scope of the original scale form was examined, and language equivalence was ensured. To understand whether the scale items adequately represent the content with content validity; with language equivalence, it is aimed to ensure the equivalence of the meanings of the items in Turkish and the original language. In the second stage, evidence for the construct validity of the MTL was obtained by EFA and CFA. In the final stage, Cronbach Alpha internal consistency coefficients for EFA and CFA sample groups were used to determine the reliability of the scale; In order to determine the item discrimination analysis, item-total correlations were calculated; It was examined whether the overall scores of MTL differed in the lower 27% and upper 27% groups.

Participants

The population of the study consists of 25205 teachers working in different types of schools in Altındağ, Çankaya, Keçiören, Mamak and Yenimahalle districts of Ankara. There are different opinions about the

recommended sample size for factor analysis in scale development and adaptation studies. According to Tabachnick & Fidell (2001), a sample of 150 people is sufficient for factor analysis. Bryman & Cramer (2005) stated that a sample size of 5 to 10 times the number of scale items is sufficient for factor analysis. Çokluk, Şekercioğlu and Büyüköztürk (2010) stated that a sample of 300 people is good for factor analysis and a sample of 500 people is very good. In this study, the sample size for EFA was determined as 300 teachers, taking into account all the opinions suggested for factor analysis. Simple random sampling method was followed to determine the participants. The scale form was answered by 309 teachers. After performing extreme value analysis on the sample group, EFA was completed with the data collected from 304 teachers. EFA sample information is shown in Table.

Data Collection

The scale Hazar and Hazar (2017) developed was used to determine children's digital game addiction levels. As a result of factor analysis conducted in the scale development process, a structure consisting of the Cronbach alpha coefficient of 0.91 and 24 items and four factors were obtained. These four factors are “excessive focus and conflict towards digital gaming”, “development of tolerance in duration of playing and the value of the game”, “postponement of individual and social tasks”, and “psychological-physiological reflection of deprivation and being hooked on digital games”.

A semi-structured interview form was developed to reveal children's digital game habits and perceptions of digital game addiction and how they are affected by digital games. Firstly, a draft interview form with 12 questions suitable for the research was prepared. Additionally, arrangements for interview form were made in line with feedback received from two field experts working on digital game and digital game addiction. A pilot study was conducted with eight children, a girl, and a boy, from each grade level at secondary school. According to the findings obtained from the pilot study, the interview form was finalized by adding probes to one question.

Table 1: EFA Sample Information

Variables	Category	Frequency	Percentage
Gender	Female	225	74.00
	Male	79	26.00
Education Status	License	242	79.60
	Master	62	20.40
School Level	Pre-school	65	21.40
	Primary school	74	24.30
	Secondary sch.	83	27.30
	High school	82	27.00
Total		304	100.00

When Table 1 is examined, 74% (n=225) of the teachers in the EFA sample are women and 26% (n=79) are men. 79.6% (n=242) of the teachers are graduates of license programs and 20.4% (n=62) are graduates of master programs. 21.4% (n=65) of the teachers are in preschool; 24.3% (n=74) were in primary school; 27.3% (n=83) were in secondary school; 27% (n=82) work in high school. In the EFA sample, the number of female teachers compared to their male counterparts; The number of teachers graduating from license programs is significantly higher than that of teachers graduating from master programs. On the other hand, the distribution of teachers according to school type is quite close to each other.

By following the sampling process followed in the EFA process, the sample size of the CFA was determined as 500 teachers. The sample size was kept higher in order to test the factor structure of the scale more reliably with confirmatory factor analysis (Bryman & Cramer, 2005; Çokluk et al., 2010). The scale form was answered by 506 teachers. After performing extreme value analysis on the sample group, CFA was completed with the data collected from 500 teachers. CFA sample information is shown in Table 2.

Table 2: CFA Sample Information

Variables	Category	Frequency	Percentage
Gender	Female	342	68.40
	Male	158	31.60
Education Status	License	394	78.80
	Master	106	21.20

School Level	Pre-school	21	4.20
	Primary school	215	43.00
	Secondary sch.	84	16.80
	High school	180	36.00
Total		500	100

When Table 2 is examined, 68.4% (n=342) of the teachers in the CFA sample are women and 31.6% (n=158) are men. 78.8% (n=394) of the teachers graduated from master programs and 21.2% (n=106) graduated from license programs. 4.2% (n=21) of the teachers are in preschool; 43% (n=215) were in primary school; 16.8% (n=84) were in secondary school; 36% (n=180) work in high school. In the CFA sample, the number of female teachers compared to their male teachers; The number of teachers graduating from license programs is significantly higher than that of teachers graduating from master programs. On the other hand, the number of teachers working in primary and high schools is higher than those working in preschool and secondary schools. In this sense, EFA and CFA sample distributions are largely consistent.

Data Analysis

In this part of the research, the features of MTLS and the data analysis process are explained.

MTL Scale

The purpose of MTLS is to measure the motivational processes behind individuals' desire to become leaders. MTLS was created as a result of research on American, Singaporean students and Singaporean soldiers. With the item pool created by the researchers through focus group interviews and the exploratory factor analyzes conducted with the participation of American, Singaporean students and Singaporean soldiers, affective-identity, social-normative and noncalculative analyzes were consistent with all three samples. They obtained a three-dimensional 27-item scale consisting of 9 items each, including motivation to lead. Scale dimensions are positively related to each other. For this reason, a general leadership motivation score may be obtained from the scale. With the one-dimensional model, a person's motivation to take a leadership role may be measured as the sum of all leadership motivations; With the three-dimensional model, affective identity, none calculative, and social normative motivation to lead may be measured. The internal consistency of the dimensions of the MTLS was .91 -.84 in affective-identity leadership motivation for all three samples; .84-.80 in the dimension of none calculative leadership motivation; It is between .75 and .65 in the dimension of social-normative leadership motivation (Chan & Drasgow, 2001: 484-486).

Scope Validity

For the content validity analysis of MTLS, the relevant literature was first scanned in detail. Then, the original form of the scale and adaptation studies conducted in different cultures were examined (Bobbio & Manganelli Rattazzi, 2006; Felfe & Schyns, 2014; Kasemaa, 2016; Özbezek, 2018; Polatcan & Cansoy, 2020; Turhan, 2014). Additionally, the results of a recent qualitative study conducted in the Turkish context revealed inferences that the three-factor structure of MTL is compatible with the leadership motivations of teacher leaders (Çetinkaya & Arastaman, 2023).

Language Equivalence

The language equivalence study of MTLS was carried out by two English language experts and a faculty member who is fluent in English and is an expert in educational administration and translation. First of all, the items in the original form of MTLS were translated into Turkish by the researcher and an English language expert. The scale form, which was then translated into Turkish, was translated into English by another English language expert. The scale form obtained by completing the bidirectional translation processes is Özbezek, (2018), Polatcan & Cansoy, (2020); It was compared with the scale forms adapted into Turkish by Turhan (2014). Finally, the draft scale form, which was revised with the suggestions of nine teachers, was checked in terms of meaning and content, and it was made ready for application by taking the appropriate opinions of one measurement and evaluation and two education administration field experts.

Construct Validity

Evidence for the construct validity of the MTL was provided by EFA and CFA, respectively. While responding to the scale items, the participants stated that "they participated in group work in their schools;

imagining that the teachers in the group have similar education, knowledge and experience; and, if someone from the group was to be elected leader, they were asked to consider their reasoning for assuming the leadership role."

Before proceeding with data analysis, normality, linearity and outlier analyzes were performed on the data set to determine whether the data met the eligibility criteria for EFA. Additionally, whether there was multicollinearity between the variables was tested by examining the variance increase factor (VIF) and tolerance values (Field, 2013; Tabachnick & Fidell, 2007). As a result of the analysis, the tolerance value is above .10; It was observed that the VIF value was below 10. According to these results, it can be stated that there is no multicollinearity between the variables (Field, 2013; Tabachnick & Fidell, 2007). Then, to determine the sample adequacy criteria, Kaiser-Meyer-Olkin (KMO); Bartlett coefficients test scores were examined to test the suitability of the data structure. Based on the assumption that the scale dimensions are related to each other, EFA was performed by horizontal rotation using the principal components method.

The factor structure of MTL was tested with CFA on a different data set than the EFA data set. First of all, the normality, linearity and extreme values of the data were examined. Whether there was multicollinearity between the variables was tested by examining the variance increase factor (VIF) and tolerance values (Field, 2013; Tabachnick & Fidell, 2007). In CFA, the level of significance of each item's relationship with the relevant factor and acceptable fit ranges for model fit indices were examined, and covariances were created between error values to reach acceptable goodness of fit values. In this way, a structural equation model was established by considering the relationships between the latent variables. Finally, Cronbach Alpha Internal Consistency Coefficient for EFA & CFA groups; Item-total correlations were calculated. It was examined whether MTL general scores differed in the lower 27% and upper 27% groups.

FINDINGS

Exploratory Factor Analysis (EFA)

Some descriptive statistical analyzes were performed before analysis. According to the analysis, the skewness coefficient value is -.654, the kurtosis coefficient value is .199; The correlation between the items was found to be r< .85. The KMO value calculated to determine whether the data obtained from the EFA sample (n=304) met the sample adequacy criteria was 0.94; The Bartlett test ($\chi 2 = 6946.408$; $df = 351$, $p < 0.01$) calculated to test the suitability of the data structure was found to be significant. According to Büyüköztürk (2018), the fact that KMO is greater than 0.60 and the Bartlett test is significant explains that the data set is suitable for EFA.

It is aimed to reach meaningful conceptual structures from the variables with the principal components method, since the data set provides the basic conditions for performing EFA (Büyüköztürk, 2018). In addition, horizontal rotation was performed based on the assumption that the scale dimensions are related to each other. Although it is recommended to exclude items with a factor loading difference of less than 0.10 in the EFA (Stevens, 2002), no items were removed from the scale since no overlapping items were found in the analysis. As a result of the analysis, a three-factor structure with an eigenvalue above 1 emerged. These factors were found to explain 67.72% of the total variance. The factor loadings of the scale are shown in Table 3.

Table 3: Factor Loads of MTLS

Items	SNMTL	AIMTL	NCMTL
It is not right to decline leadership roles.	.842		
I would only agree to be a group leader if I know I can benefit from that role. *	.815		
I never expect to get more privileges if I agree to lead a group.	.806		
I would never agree to lead just because others voted for me. *	.794		
I agree to lead whenever I am asked or nominated by the other members.	.790		
I was taught in the value of leading others.	.776		
I feel that I have a duty to lead others if I am asked.	.749		
It is an honor and privilege to be asked to lead.	.694		
Leading others is a waste of one's personal time and effort. *	.478		

I am the type of person who likes to be in charge of others.	.865	
I usually want to be the leader in the groups that I work in.	.857	
I have a tendency to take charge in most groups or teams that I work in.	.849	
I am the type who would actively support a leader but prefers not to be appointed as leader. *	.849	
Most of the time, I prefer being a leader than a follower when working in a group	.784	
I am the type of person who is not interested in lead**ing** others. *	.780	
I believe I can contribute more to a group if I am a follower rather than a leader. *	.775	
I am definitely not a leader by nature. *	.760	
I am seldom reluctant to be the leader of a group.	.748	
I have more of my own problems to worry about than to be concerned about the rest of the group. *	.556	
People should volunteer to lead rather than wait for others to ask or vote for them	.539	
I would want to know what's in it for me if I am going to agree to lead a group. *		.940
It is appropriate for people to accept leadership roles or positions when they are asked.		.937
I will never agree to lead if I cannot see any benefits from accepting that role. *		.884
If I agree to lead a group**,** I would never expect any advantages of special benefits.		.792
I have been taught that I should always volunteer to lead others if I can.		.777
I am only interested in lead**ing** a group if there are clear advantages for me. *		.670
I would agree to lead others even if there are no special rewards or benefits with that role.		.606

(*): items are reverse coded items.

The factor loads of the scale items in Table 3 ranged from 0.48 to 0.94. It is seen that 9 of the highest load values of MTLS items occurred in the first factor, 11 in the second factor, and 7 in the third factor. The first factor was "social-normative MTL" (SNMTL); the second factor "affective-identity MTL" (AIMTL); The third factor was named "none-calculative MTL" (NCMTL). The factors that emerged as a result of EFA were found to be compatible with the relevant literature and the MTLS original form. However, in the current analysis, it was observed that some items loaded on factors different from the factors in the original scale. The load values of the items belonging to the factors of the scale were between 0.48 and 0.84 for the "social-normative" MTL; between 0.54 and 0.87 for "affective-identity MTL"; For "non-calculative MTL" it ranges from 0.61 to 0.94. Finally, since the sample group was larger than 200, the scree plot was examined (Field, 2009). Figure 1 shows the scree plot of the scale.

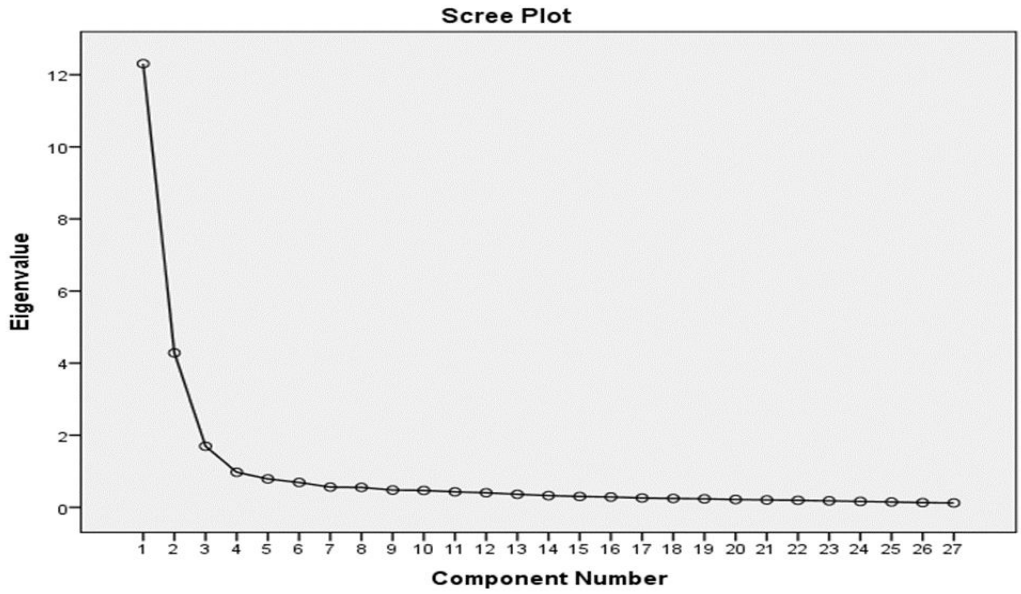


Figure 1: *Scree plot of the scale*

In this analysis, it is seen that the scree plot descends after the first factor. While this indicates that the scale may be grouped under a single factor (Büyüköztürk et al., 2018), it also indicates that the scale consists of 3 factors and that the factors make a similar contribution to the common variance after the 3rd dimension.

Confirmatory Factor Analysis (CFA)

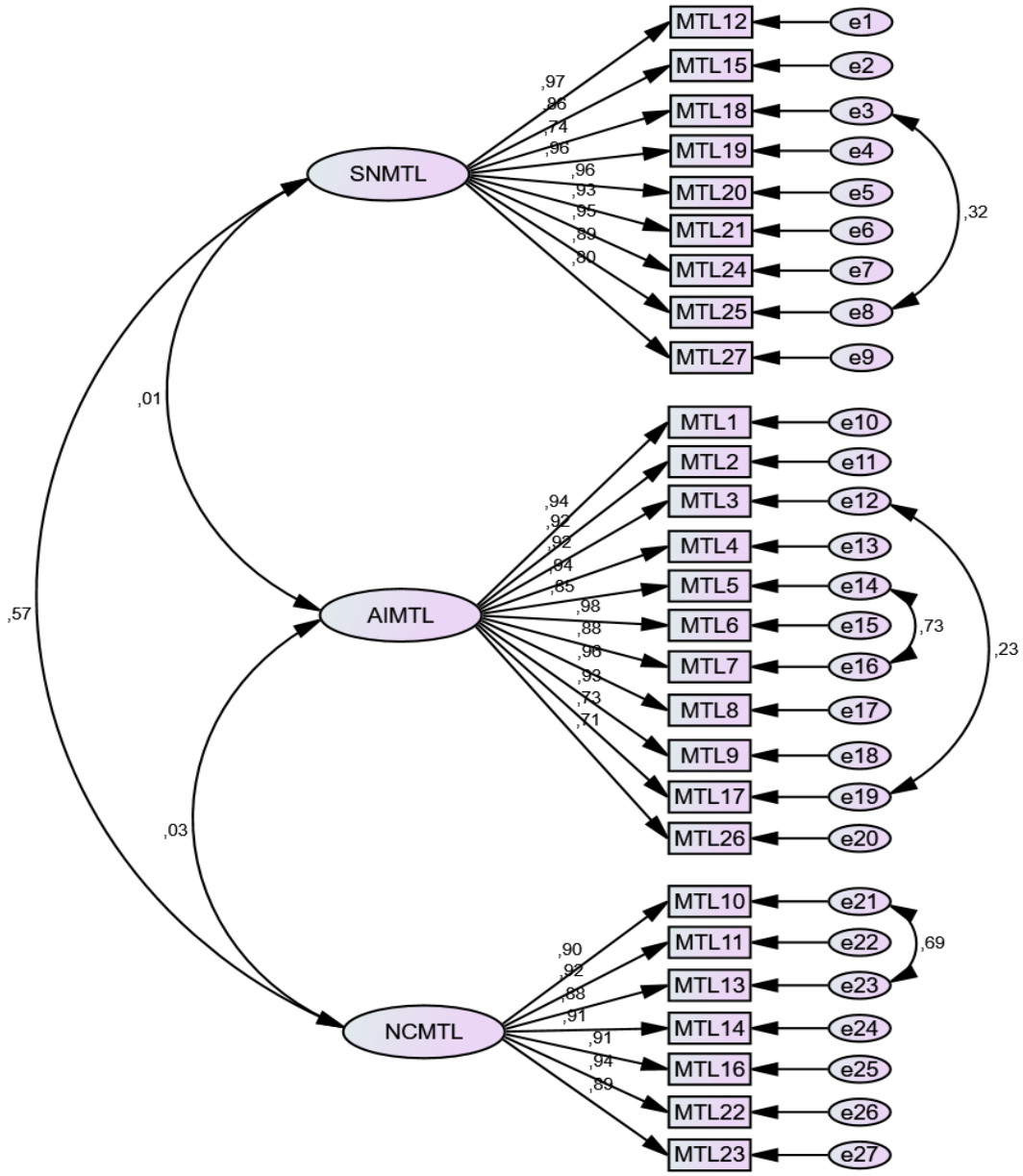
According to the results of EFA, the "Motivation to Lead Scale", which consists of three dimensions and a total of 27 items, was verified by testing with CFA. Before proceeding to CFA, descriptive statistical analyzes were performed to determine the suitability of the data set for analysis. The skewness coefficient value is -.514, the kurtosis coefficient value is -.832; correlation between items was determined as .20-.89. The data showed normal distribution; It was seen that there was a positive relationship between the items and there was no multicollinearity problem.

The AGFI and GFI goodness-of-fit values of MTLS were found below the acceptable reference ranges. In order for the fit indices to be within acceptable reference ranges, it is recommended to examine the modification suggestions that emerged as a result of the analysis (Çokluk et al., 2010). Therefore by examining the modification suggestions, 18th and 25th; 3rd and 17th; 5th and 7th; The model was retested by making covariance between the 10th and 13th items. In Table 4, acceptable and perfect fit values (Schermelleh-Engel, Moosbrugger, & Müller, 2003) and fit values obtained from the scale are shown.

Table 4: Fit Indices and Findings

Fit indices	Perfect fit indices	Acceptable fit indices	Findings
$\chi 2/df$	$0 \leq \chi 2/df \leq 2$	$2 \leq \chi 2/df \leq 5$	4.61
AGFI	$0.90 \leq AGFI \leq 1.00$	$0.85 \leq AGFI \leq 0.90$	.83
GFI	$0.95 \leq GFI \leq 1.00$	$0.90 \leq GFI \leq 95$	.85
CFI	$0.95 \leq CFI \leq 1.00$	$0.90 \leq CFI \leq 0.95$	.95
NFI	$0.95 \leq NFI \leq 1.00$	$0.90 \leq NFI \leq 0.95$	.93
IFI	$0.95 \leq IFI \leq 1.00$	$0.90 \leq IFI \leq 0.95$	.95
RMSEA	$0.00 \leq RMSEA \leq 0.05$	$0.05 \leq RMSEA \leq 0.08$	.08

As a result of CFA, $\chi 2/sd$ value was calculated as 4.61. According to Kline (2016), this value is among the acceptable fit values. Additionally, the CFI and IFI values in the model are excellent; NFI and RMSEA values are within acceptable goodness of fit limits (Schermelleh-Engel et al., 2003); AGFI and GFI values were found to be close to acceptable values (Marsh, Hau, Artelt, Baumert, & Peschar, 2006). Figure 2 shows the structural equation model obtained as a result of CFA**.**

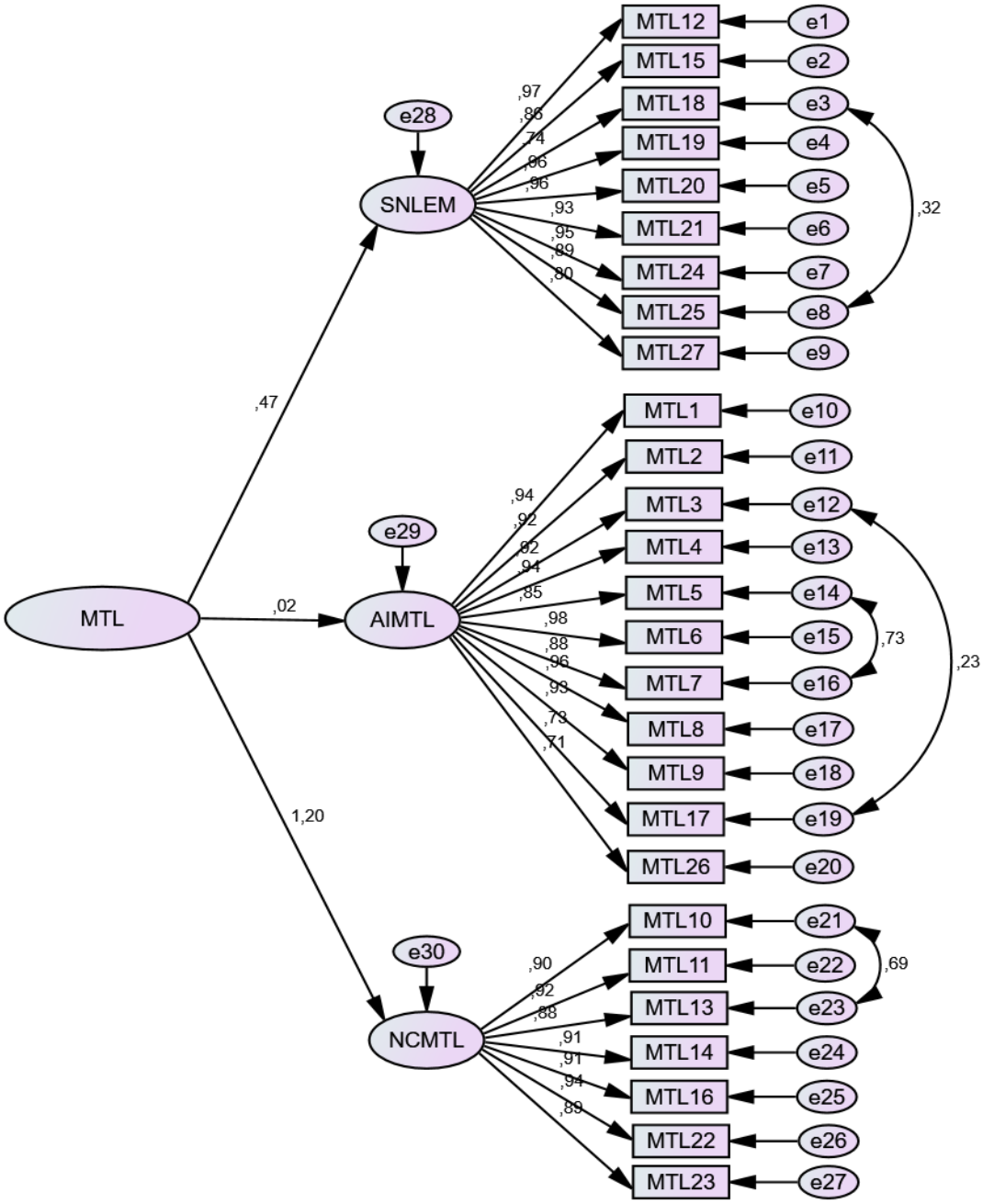


CMIN/df: 4.61; AGFI: .83; GFI: .85; NFI: .93; CFI: .95; IFI: .95; RMSA: .08

Figure 2: *CFA Structural Equation Model*

When Figure 2 is examined, the first factor, social normative MTL (SNMTL), consists of nine items. Item factor loadings of SN MTL vary between 0.74 and 0.97. The second factor, affective identity MTL (AIMTL), consists of 11 items. AIMTL's item factor loadings range from 0.71 to 0.98. Lastly, the third factor, non-calculative MTL (NCMTL), consisted of seven items. The factor loadings of NCMTL are between 0.89 and 0.92.

Finally, second-level factor analysis of the scale was made and the fit indices were examined. In the structural equation model created as a result of the second level CFA, the $\chi 2$/df value was 4.61; AGFI value .83; GFI value of .85; NFI value is .93; CFI value .95; The IFI value is .95 and the RMSA value is .08. In Figure 3, the factor loadings of the three-dimensional model obtained as a result of the second level CFA are shown.



CMIN/df: 4.61; AGFI: .83; GFI: .85; NFI: .93; CFI: .95; IFI: .95; RMSA: .08

Figure 3: *Second-level CFA Structural Equation Model*

When Figure 3 is examined, the first factor, social normative MTL (SNMTL), consists of nine items. Item factor loadings of SN MTL vary between 0.74 and 0.97. The second factor, affective identity MTL (AIMTL), consists of 11 items. AIMTL's item factor loadings range from 0.71 to 0.98. Finally, the third factor, non-calculative MTL (NCMTL), consisted of seven items. The factor loadings of NCMTL are between 0.89 and 0.92. In addition, according to the second level CFA results, it is seen that a total score may be obtained from the scale and the factor structure of the original scale is confirmed. On the other hand, 1.20 of the variance of leadership motivation is NCMTL; 0.47 is explained by SNMTL, and 0.02 is explained by DIMTL.

Reliability Analysis

Cronbach Alpha coefficients for EFA and CFA groups to determine the internal consistency reliability of the scale in the study; The item discrimination of the scale was made by calculating the item-total correlations and whether the general scores of MTLS differed in the lower 27% and upper 27% groups.

As a result of EFA, Cronbach's Alpha coefficient was 0.95 for all dimensions of the scale; Cronbach's Alpha reliability coefficients of the sub-dimensions were 0.93 for the social normative MTL; 0.94 for affective identity MTL, and 0.93 for non-calculative MTL were calculated.

Cronbach's Alpha coefficient was 0.94 for all dimensions of the scale as a result of CFA; Cronbach's Alpha reliability coefficients of the sub-dimensions were 0.93 for the social normative MTL; 0.91 for affective identity MTL and 0.89 for non-calculative MTL.

In the item-total correlation analysis of the scale, the correlation coefficient between the score obtained from each item and the total score obtained from the scale was calculated. Table 5 shows the correlation coefficients of the items in the MTLS.

Table 5: Item Total Correlation values

Item	Value	Item	Value	Item	Value
MTL20	.78	MTL24	.69	MTL15	.62
MTL19	.75	MTL18	.67	MTL11	.61
MTL12	.73	MTL1	.67	MTL10	.57
MTL3	.73	MTL6	.67	MTL22	.57
MTL25	.72	MTL9	.66	MTL14	.54
MTL21	.72	MTL16	.64	MTL27	.52
MTL13	.72	MTL7	.64	MTL2	.49
MTL17	.72	MTL23	.64	MTL5	.40
MTL8	.72	MTL4	.63	MTL26	.36

It is seen that the item-total correlations of MTLS take values between .36 and .78. Items with an item-total correlation of .30 and higher are defined as distinctive items (Büyüköztürk, 2018).

Finally, additional analyzes were conducted to determine the internal reliability of the scale using the lower 27%-upper 27% (discrimination) method, which is another reliability determination method frequently used in scale development and adaptation studies. Firstly, the groups comprising the 27% with the highest score and the 27% with the lowest score from the scale were determined. The difference between the scale total score averages of these two groups was compared with the t test for independent groups. The significant difference between the two groups, $p < .05$, was interpreted as another indicator of the internal reliability of the scale. In this way, it was aimed to provide additional evidence regarding the distinctiveness of the scale items. Table 6 shows the t-Test results of the 27% lower and Upper Groups of the MTLS total scores.

Table 6: T-Test Results of 27% Lower and Upper Groups of MTLS total scores

Dimension	Groups	N	M	SD	t	p
MTL	Upper	82	105.12	6.30	29.79	0.00
	Lower	82	58.30	12.76		

The t-test results applied to test the significance of the differences between the total scores of the lower and upper 27% groups showed that the scale items were distinctive.

DISCUSSION & CONCLUSION

In the study, the psychometric properties of the Motivation to Lead Scale (MTLS) developed by Chan & Drasgow (2001) were tested on teachers. The results of the research showed that MTLS can be a valid and reliable measurement tool to be used in studies in the field of school leadership.

Construct validity analyzes were consistent with both the original form of the scale and the results of the adaptation made in different cultures; the first factor was “social-normative MTL”; the second factor is “affective-identity MTL”; provided evidence supporting a three-factor structure, with the third factor being the “non-calculative MTL”. However, in the current study, 10 items loaded on factors different from those in the original scale. This may be due to the structural similarities and relationships between Social normative MTL, Emotional identity MTL and Non-Calculative MTL factors, or it may be related to the socio-cultural differences of teachers in the Turkish context. In addition, according to the CFA results, some of the model fit indices are acceptable rather than perfect. For example, $\chi 2/df$ is 4.61; NFI value .93 and RMSEA value .08 (Kline, 2016); AGFI and GFI

values were calculated close to acceptable values (Marsh, et al., 2006). The relatively low indices of some model fit may be related to the sample group. As a matter of fact, both the original form of MTLS (Chan & Drasgow, 2001) and adaptation studies in various cultures (Bobbio & Manganelli Rattazzi, 2006; Felfe & Schyns, 2014; Kasemaa, 2016; Özbezek, 2018; Polatcan & Cansoy, 2020; Turhan, 2014), military personnel or university students, while the sample group in the current study consists of teachers. Therefore, it is recommended that the results of the study be carefully evaluated in the light of this information. On the other hand, testing the psychometric properties of MTLS on the teacher group is a first step in the related literature. For this reason, it is expected that the results of the research will contribute to both comparative research in the MTL literature and new research on school leadership.

MTLS, leadership emergence in related literature (Hong, Catano, & Liao, 2011); leadership behavior (Mutalib & Ghani, 2013); Leadership identity (Middleton, Walker & Reichard, 2018) is used to explain various constructs, such as career planning for leadership positions and transitioning into formal leadership roles (Luria & Berson, 2013). The results of the current research conducted based on MTL literature are to identify teachers with leadership tendencies in the field of school leadership; encouraging talented teachers to take on leadership roles; It may be useful to create a pool of potential leaders for schools and to increase leader effectiveness and organizational performance in schools. Additionally, new research may examine the relationship of MTLS to various situational factors and specific situations.

Statements Of Publication Ethics

This research does not contain any ethical conflicts or issues that could prevent the publication of the article. Ethics Committee approval was received from Hacettepe University Rectorate with a letter dated 21.03.2023 and numbered E-35853172-300-00002756620.

Researchers' Contribution Rate

Both authors contributed equally to this study.

Conflict of Interest

The authors have no conflicts of interest to disclose.

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