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Üretken Liderlik Ölçeği Geliştirme Çalışması

Münevver ÇETİN*, Mesut DEMİRBİLEK**

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ÖZET

Bu araştırmanın amacı, okul müdürlerinin üretken liderlik davranışlarını ve bu davranışları tanımlayan ifadeleri kapsayan geçerli ve güvenilir bir ölçek geliştirmektir. Literatür taraması sonucunda madde havuzu oluşturulmuş ve uzman görüşü doğrultusunda kapsam geçerlilik oranları hesaplanmıştır. Taslak madde formu 50 kişilik bir öğretmen grubuna pilot uygulama olarak gerçekleştirilmiştir. Nihai genel uygulama, 442 öğretmene uygulanmıştır. Ölçeğin geçerlilik çalışmaları için Açımlayıcı Faktör Analizi uygulanarak ölçeğin maddelerin faktör yükleri belirlenmiş, önce dört faktörlü bir yapı ortaya çıkmış ardından varimax döndürme yapılarak iki faktörlü yapı elde edilmiştir. Varimax tekniği sonrası bazı maddelerin birden fazla faktörden .30 ve üzerinde yük aldıkları görülmüş ve yük farkının .100'den az olduğu maddeler ölçekten atılmıştır. Bu süreçte de toplam 35 madde ölçekten çıkarılmış ve *"Yaratıcı Dinamikleri Ortaya Çıkarma"*, *"Yenilik Üretme Kapasitesi"* adlı iki faktörlü 27 maddeden oluşan bir ölçek elde edilmiştir. Daha sonra Doğrulayıcı Faktör Analizi yapılmış ardından güvenirlilik analizlerine geçilerek Cronbach's Alpha ve Composite Reliability değerleri hesaplanmış ve Bağımsız Gruplar T Testi kullanılarak ölçeğin ayırt ediciliğine bakılmıştır. Yine Pearson analizi kullanılarak ölçek maddelerinin madde-toplam ve madde-kalan korelasyonları ile alt boyut ve toplam puanları arası korelasyonları hesaplanmıştır. Elde edilen tüm değerler, ölçeğin geçerli ve güvenilir olduğunu kanıtlar niteliktedir.

Anahtar Sözcükler: Liderlik, liderlik türleri, okul müdürleri, üretkenlik, üretken liderlik

Generative Leadership Scale Development Study

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ABSTRACT

The aim of this research is to develop a valid and reliable scale that includes school principals' generative leadership behaviors and the expressions defining these behaviors. As a result of the literature review, the item pool was formed and the scope validity ratios were calculated according to the expert opinion. The draft item form was carried out as a pilot scheme to a group of 50 teachers. Final general practice was applied to 442 teachers. For the validation studies of the scale, the factor loadings of the items of the scale were determined by applying the Exploratory Factor Analysis. First, a four-factor structure emerged, followed by varimax rotation to obtain a two-factor structure. In this process, a total of 35 items were excluded from the scale and a scale with two factors named "*Revealing Creative Dynamics*" and "*Innovation Generating Capacity*" and consisting of 27 items. Subsequently, Confirmatory Factor Analysis was performed and then the study proceeded to reliability analyses and Cronbach's Alpha and Composite Reliability values were calculated. After that, the distinctiveness of the scale was examined. Again, using Pearson analysis, the item-total and item-remainder correlations and the correlations between subscales and total scores of the scale items were calculated. All values obtained prove that the scale is valid and reliable.

Keywords: Leadership, leadership types, school principals, generativity, generative leadership

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1. INTRODUCTION

Generativity is the ability or skill to make way for new possibilities, structures or to create or generate. Generative approaches and generative leaders; (1) challenge common sense assumptions, (2) increase basic questions, (3) encourage reassessment of

* Prof. Dr., Marmara University, Atatürk Faculty of Education, Department of Educational Sciences, Division of Educational Administration and Supervision, İstanbul-TURKEY. e-mail: mcetin@marmara.edu.tr (ORCID: 0000-0002-1203-9098)

** PhD Student, Marmara University, Atatürk Faculty of Education, Department of Educational Sciences, Division of Educational Administration and Supervision, İstanbul-TURKEY. e-mail: demirbilekmesut@gmail.com (ORCID: 0000-0002-7570-7807)

what has been given, (4) think creatively outside the assumed boundaries of a problem in order for new hopes and actions for the future and for identifying new alternatives (Klimek, Ritzenhein & Sullivan, 2008, p.14-16). Generativity has gained an important place in leadership and it facilitates the transfer of business practices and knowledge. Leaders take advantage of the challenge in situations that challenge them and plant development in the organization. This gives dynamism to the organization and revitalizes the organization with regard to organizational development. In this way, generativity contributes to a sustainable organizational structure (Slater, 2003). Generative leadership focuses on bringing new possibilities for action and growth to light.

Generative leaders bring a powerful mix of knowledge, creative thinking, high energy, personal expertise and willingness to take action for their jobs. These managers have the typical authority and responsibilities of each manager and face a number of challenges and some outcomes. Their leadership style is completely different from simple authoritarian leadership. Their approach is based on guiding rather than giving orders. The main aim of these leaders is to increase the concentration of their staff and students rather than controlling employees' time or dictating various actions. These leaders cooperate in setting objectives, goals and defining approaches for employees to recognize. The manager is open to allowing individual knowledge and creativity of employees to manage generation. Generative leadership will give school leaders strong new understandings of dynamic systems and help and guide them to cope more effectively with complex challenges around them (Klimek et al., 2008, p.6-7). In another definition, generative leadership is defined as the aspects of leadership that promote innovation, organizational harmony and high performance over time. At the heart of this definition is the interaction of individuals and groups through an organization, focusing on experience, harmony, speed, division and establishing rules for cooperation (Surie &Hazy, 2006).

In this sense, some important features of generative leaders can be easily observed in their behaviors. These characteristics are as follows (Klimek et al., 2008, p.15):

1. They see their school as dynamic systems and each individual affects his or her current behavior and future conditions.
2. Their leadership is based on cooperation rather than authoritarianism and is intended to understand their students, staff and the goals, potentials, and possibilities at the whole school.
3. They understand the widespread impact of individual and collective mind models and constantly question the assumptions that have taken place in them.
4. They look to the future as very formative, but the future can neither be predicted nor controlled.
5. Strong managerial actions dedicated to initiatives, ideas and moments that require it, and a focus on innovation that dominates their working styles.
6. The spirit of collaboration in creating an extraordinary future exists in every interaction and environment.

The main focus of generative leadership is to raise and encourage the innovative generation through experiences throughout the organizational system (Goldstein, Hazy & Lichtenstein, 2010). In addition, staging generative leadership behaviors can lead to strong organizational outcomes with which especially the capacity of a complex system is to increase significantly (Lichtenstein, 2014). Mike (2018), on the other hand, summarized the basic elements of generative leadership as follows (p.60):

1. Explaining and interpreting complex environments and dynamic contexts rather than trying to predict and control them.
2. Revealing or constituting creative tensions, promoting different perspectives, distributing existing behavior and interaction patterns
3. Supporting network interactions and rich information exchange
4. Encouraging experience, learning and innovation, and creating diversity, including providing appropriate resources and promoting organizational laxity
5. Identifying boundaries and integrating constraints
6. Adopting the innovations assessed to re-combine and stimulate the emergence of previous information

The main characteristic of traditional leaders is generally to organize, to appoint, to direct, to monitor, to correct, and to verify. All of these words represent the direction of efforts to maintain the order and structure. The joint actions of generative leaders can be considered questioning, motivating, encouraging, foreseeing, exploring, influencing and guiding. In other words, generative leaders interact with the system of which they are a part and stimulate their inner intelligence and creativity. The six features below distinguish experienced generative leaders from others. These are (Klimek et al., 2008, p.57-60):

1. *Deepening personal information:* Generative leaders overcome the information experiences they have and always have the aim of seeking new sources of information. For them, the existing information is not enough and they constantly question in order to reach new information. Therefore, they challenge the existing knowledge and pursue new knowledge with a sense of curiosity and learning.
2. *The struggle in personal reflection:* Generative leaders understand that reflection is vital and necessary for natural learning, creativity, and innovation. Reflection also includes the interaction of sensual and sensory processes.
3. *Supporting professional meetings:* Generative leaders think that meetings and speeches have a quality to increase efficiency and generation for organizations. For this reason, they promote informal meetings and they know that informal meetings

will create environments that promote innovation and creativity by eliminating mediocrity and they spread meeting to all organizational processes.

4. *Blending theory of practice and living systems:* Generative leaders consider organizations as a living system. In this direction, they know that the organization has a live system with its own dynamics and identity. For this reason, they implement and consider the living system thinking in all processes.
5. *Belief-trust in creativity and innovation:* Generative leaders know that creativity and innovation are the basis for this kind of leadership. They encourage innovation and creativity in all organizational behaviors and practices by opposing the idea that creativity and innovation is a symbolic, ordinary action that takes place in certain periods and patterns.
6. *Leading the desired situation:* Generative leaders are aware of new situations that emerge within the framework of the existing potentials and the foreseeable future, and they aim to pioneer this future.

Klimek et al. (2008) listed the leadership styles from the least generative to the most generative as follows (p. 54-55):

Leadership Style	Characteristics
Traditional Leadership	They conduct their leadership skills with the way of thinking that the culture and patterns already embedded in the organization instruct. These leaders see their primary role as ensuring compliance with standards and generally maintaining order. The most important style of traditional leaders is hierarchical, with the top administrator making decisions and subordinates taking directions.
Pragmatic Leadership	In this leadership style, leaders do not seek innovation unless necessary, as when the existing organizational structure or change is forced on them. In other words, they make the necessary changes when there is the need and when the circumstances require. This leadership style is also hierarchical, however, where necessary and in the circumstances that the needs of the organization require, the necessary arrangements are made and innovations are implemented in the organizational structure and content.
Explorative Leadership	Explorative leaders behave with a great feeling of curiosity which create a big advantage to the organization and they instill this feeling to their organization. They go out of the existing patterns and information, and they have the intention and purpose of creating new information and excitement in the organization. These leaders continuously pursue active and dynamic information and innovations. Although these leaders have authoritarian manners, they are authoritarian only when specific circumstances require them to be so. At the same time, these leaders strive to create the research and curiosity climate in their organization.
Generative Leadership	Generative leaders see their organization as a dynamic system that renews itself. In this type of leadership, there is the reality of a system of constant organizational thinking and challenging the existing thought patterns. At the same time, they aim to create environments that enable stakeholders within the organization to reveal their potential to provide efficiency to the organization and to reveal their creativity. Thus, it is an important type of leadership in ensuring organizational change and innovation and the generation within the organization by making the best use of each individual's potentials. In this type of leadership, creativity and innovation have an important place and constitute the cornerstones of this leadership. In these organizations led by these leaders, there is a cultural environment in which all individuals in the organization are committed to creating the future of the system by mobilizing creative and innovative processes and contributing to generation.

Generative leadership mechanisms in organizations serve as a encouraging for dynamic capacity development and exploration. It transforms and consumes it into an internal energy source, focus, and resources to develop learning and internal diversity. After the shaping of potential opportunities in the environment, generative leadership mechanisms support experiences and then create repetitive models of opportunities that can be shared between the members of the institution for more experience and learning in order to clarify what is related to the institution and to make sense of the existing state in the context of the institution's purpose (Surie & Hazy, 2006). Generative leaders are structurally curious individuals and they are not satisfied with the status quo. They are not naïve, but rather they can redefine existing situations in different ways, so different preferences can emerge. Generative leaders acknowledge that there are many known ways around them and the other thought leaders, including those they disagree. They are holistic in their thinking, act systematically and go beyond perceived restrictions. Generative leaders take creativity and innovation as a model, work with others to develop their skills, and create environments where they can manifest themselves. In addition, there are a few important concepts related to generative leadership practice and they often require personal development. These are emotional intelligence, risk-taking, creativity, system thinking, diversity, inspiring and pioneer change, interpersonal relations, evidence-based leadership, and management, reshaping and enthusiasm to achieve goals (Disch, 2009, p.173).

According to Klimek et al. (2008), generative school leadership emerges as the understanding of three fundamental elements (generativity, living system principles, and brain-mind science) that expand and deepen in the new basic ways of seeing a school.

It is powerful to see with the "new eyes" of generative leadership. With these new perspective, leaders can see the entire capacity and creativity of the whole school more clearly and make progress to increase them. With these new eyes, unforeseen paths are discovered for actions that create new futures for the school. Generative school leadership knows and understands that we cannot shape the new future for our schools without the extensive motives that lead to generativity. They also know that they need to nurture and emphasize the living system characteristics of their schools in order to increase the generativity capacity of their schools. They do this by encouraging the open school identity that they constantly take as a model and express. They enable the organizational design and processes of their schools to provide active information and promote open change at all levels. They allow some non-authoritarian controls to achieve new ways of creativity, cooperation, collective intelligence, and action. Generative school leaders acknowledge that the work of the brain/mind is essential in this effort (p.47-49).

Generative leadership, which is one of the important and innovative leadership types of leadership that rasps the authoritarian and repressive aspect of leadership that is based on judging and controlling, utilizes the future possibilities and opportunities within the organization and ensures an environment that creates diversity in the process of cooperation and increases innovation, supports and nourishes new ideas. At the same time, leaders of this kind of leadership go beyond the patterns that have been defined for them and reveal new ideal processes and ideas at the institution. With this type of leadership, the organization changes its ordinary flow and generates colorful and creative alternative ways that encompass different aspects, promote collective intelligence, and produce options. Again, generative leaders push the boundaries of their own thinking and feed the creativity and generativity of their mind structures with new learning. Thus, they establish a dynamic and living system organization and at the same time reflect all elements of their generative mind structure to the organization and its environment. In this sense, it is important to develop a reliable and valid scale that includes generative leadership behaviors and the statements that define these behaviors. In this direction, the aim of this study is to develop a reliable and valid scale that includes school principals' generative leadership attitudes, behaviors and the statements that define these behaviors within the school organization. This scale development study is based on teachers' evaluations regarding the generative leadership behaviors of the school principal, who is the leader of the school.

2. METHODOLOGY

2.1. Establishment of the Item Pool and Submission of the Items to Expert Opinion

In the scale development process, the literature on "Generative Leadership" was reviewed initially and 100 candidate items, which are thought to cover generative leadership behaviors, were created. The candidate items were presented to the (referee) opinions of totally 9 faculty members, and in the group, five of them are experts in the field of Education Management, they can assess the relevant field and conduct studies in the field of leadership whereas four of them are professionals in the field of Measurement. Of the 9 faculty members, five of them work at Marmara University, one of them works at Ankara University, one of them works at Okan University, one of them works at Dicle University, and one of them works at Akdeniz University. These referee faculty members were asked to scale the items by 3 points (must be removed, must be revised, must remain), to evaluate whether the items covered the relevant area, to evaluate the characteristics of the items and to write down into the space under the item what kind of correction should be made in the items that need to be revised.

2.2. Calculation of Content Validity Ratio and Index

The assessments and responses from the relevant experts were combined in a single form and then the Content Validity Ratios (CVR) of each item and the Content Validity Index (CGI) were obtained by using Lawshe (1975) technique in order to achieve the items' measurability of the relevant area and structure. Content Validity Rates are calculated as a percentage of the number of experts indicating the opinion "necessary" on any item, to half of the total number of experts who indicates opinion minus one. Content Validity Index (CVI) is obtained from the average of Content Validity Ratios of the items which are significant at 0.05 level and which will be taken to the final form. For ease of calculation, CVR values were converted into a table by Veneziano and Hooper (1997) and minimum values were created according to the number of experts at the level of 0.05 significance level. According to the values given below, the CVR value was determined as 0.75 in 9 expert evaluations (cited in Yurdugül, 2005, p. 2-3).

Table 1.
Minimum Values for CVRs at Significance Level α = 0.05 which have been Determined by Veneziano and Hooper (1997)

Number of Experts	Minimum Value
5	0.99
6	0.99
7	0.99
8	0.78
9	**0.75***
10	0.62
11	0.59
12	0.56
13	0.54
14	0.51
15	0.49

The significance of the results obtained from the items in the candidate form evaluated by 9 referees (experts) was compared in the 0.75 minimum value criterion and 38 items were removed from the scale form due to the fact that they were below this criterion (0.75). At the same time, the Content Validity Index (CVI) value of the items, which were at or above the item content validity criterion value and were determined to be included in the scale, was found to be 0.90. The fact that the obtained CVI value is greater than the Content Validity Criterion (CVC) value (0.90> 0.75) reveals that the content validity of the items that have remained in the scale is statistically significant (Lawshe 1975).

Table 2.
The Content Validity Ratios and Content Validity Index of the Candidate Items Obtained after the Assessment of Experts (Referees)

Items	CVR	Items	CVR	Items	CVR	Items	CVR
1	1.00	26	0.78	51	0.78	76	0.78
2	**0.33***	27	**-0.11***	52	**0.33***	77	**0.33***
3	**0.33***	28	0.78	53	**0.33***	78	**0.56***
4	0.78	29	1.00	54	1.00	79	**0.56***
5	0.78	30	0.78	55	**0.33***	80	1.00
6	1.00	31	1.00	56	1.00	81	**0.33***
7	1.00	32	0.78	57	0.78	82	1.00
8	**-0.11***	33	0.78	58	**0.56***	83	0.78
9	**0.11***	34	0.78	59	1.00	84	1.00
10	0.78	35	0.78	60	0.78	85	**0.33***
11	**-0.11***	36	**-0.11***	61	**-0.56***	86	1.00
12	**0.11***	37	1.00	62	**0.33***	87	**0.33***
13	1.00	38	0.78	63	0.78	88	0.78
14	0.78	39	1.00	64	**-0.11***	89	**0.11***
15	0.78	40	0.78	65	1.00	90	**0.56***
16	**0.11***	41	0.78	66	**0.56***	91	1.00
17	1.00	42	1.00	67	**0.56***	92	1.00
18	0.78	43	**0.56***	68	**0.11***	93	**-0.33***
19	**-0.33***	44	1.00	69	1.00	94	**0.11***
20	1.00	45	**0.33***	70	1.00	95	**0.33***
21	**0.11***	46	1.00	71	1.00	96	**0.11***
22	1.00	47	1.00	72	0.78	97	1.00
23	**0.33***	48	1.00	73	1.00	98	1.00
24	**0.33***	49	**0.56***	74	1.00	99	0.78
25	1.00	50	1.00	75	0.78	100	0.78
Number of Experts							9
Content Validity Criterion of the Items							0.75
Number of Items Below the CVR Criterion							38
Content Validity Index							0.90

* *38 items below the Content Validity Criterion (0.75) were excluded from the scale.*

2.3. Revising Some Items According to Expert Opinion

After the content validity analyzes were made in accordance with the expert evaluations, the items that were stated by the experts to be revised or corrected were corrected according to the consistent opinions indicated and included in the scale. Corrections have been made in order to remove the words expressing certainty and uncertainty (such as always, sometimes), to write the Turkish equivalents of foreign words, to change the incomprehensible expressions and to clarify vague expressions. For this purpose, 18 articles (10th, 30th, 31st, 33rd, 34th, 35th, 37th, 39th, 41st, 46th, 47th, 48th, 59th, 71st, 83rd, 84th., 91st., and 97th.) were revised without changing the dimension that is intended to be measured. With these arrangements, the scale item draft form was decided to be composed of 62 items and the scale items were randomly re-ordered (1., 2., 3….62.); at the same time, 4-point Likert Scale ("I Strongly Disagree", "I Disagree", "I Agree", "I Strongly Agree") was preferred for grading items. The "Neutral" option was not preferred to avoid conglomeration at this grade and abstaining from answering the item. In this respect, the draft item form was prepared and the pilot scheme was initiated.

2.4. Implementing the Pilot Scheme

Before the final implementation of the scale, draft scale items were implemented as a pilot scheme to a sample group of 50 teachers selected by convenience sampling method which is one of the non-random sampling methods. The pilot scheme of the scale draft form and the personal information form was carried out with teachers working in two schools – one primary school and one secondary school – in Çekmeköy District of Istanbul. The pilot scheme was carried out directly by the practitioner and the participants' opinions regarding the items and draft form were noted down during the application and after the application,

the participants were asked to write down their assessments about the items in the draft form. In the pilot scheme, the application time of the scale was observed to change between 5 and 10 minutes. Some of the spelling errors were corrected and the scale form was made more useful in line with the feedback obtained after the application. In line with the evaluations and opinions achieved, necessary amendments were made in the draft application form, the final application scale item form was prepared and the general application was initiated.

2.5. Research Model

The research was carried out using the screening model in accordance with the purpose of developing the "Generative Leadership Scale". In screening models, the population is composed of a large number of elements and arrangements are made in all of the population or a group, example or sample selected from it in order to reach a general judgment about the population. In this model, there is something to be known and it is there; the important thing is to observe and determine it properly (Karasar, 2012, p.77-79).

2.6. Population-Sample and Performing the General Application

The population of this study consists of teachers working in public schools in the Anatolian side of Istanbul in the academic year 2018-2019. The sample of the study consists of 587 teachers who work on the Anatolian side of Istanbul and the teachers were reached by using the Convenience Sampling method which is among the sampling methods that are not based on probability. In the Convenience Sampling method, it is essential that everyone who responds to the questionnaire is included in the sample, and the process of finding the subject in this method continues until the sample size reaches the desired size. Especially online surveys are widely used at the present time and everyone who is desired and reached can participate in these surveys (Altunışık, Coşkun, Bayraktaroğlu &Yıldırım, 2010, p. 140).

The final general application was carried out in October-November-December 2018. The application was carried out with the teachers who work in various types of schools on the Anatolian side of Istanbul and a total of 587 teachers were reached. The application was performed using both an online answer form (n = 151) and a printed answer form (n = 436). After the application, the responses were examined and a total of 145 answer forms with systematic marking, missing answers or more than one coding were excluded from the analysis. As a result, the analyses were initiated with 442 answer forms and samples.

Table 3.
Demographic Characteristics of the Teachers

	Groups	f	%	% total
Gender	Female	237	53.6	53.6
	Male	205	46.4	100.0
	Total	**442**	**100.0**	
The District of Istanbul where the Teacher Works	Çekmeköy	202	45.7	45.7
	Sancaktepe	32	7.2	52.9
	Ümraniye	41	9.3	62.2
	Sultanbeyli	61	13.8	76.0
	Kartal	7	1.6	77.6
	Pendik	52	11.8	89.4
	Maltepe	8	1.8	91.2
	Kadıköy	11	2.5	93.7
	Ataşehir	28	6.3	100.0
	Total	**442**	**100.0**	
The Type of School where the Teacher Works	Primary School	140	31.7	31.7
	Secondary School	160	36.2	67.9
	Anatolian High School	29	6.6	74.4
	Vocational High School	53	12.0	86.4
	Religious Vocational High School	43	9.7	96.2
	Special Education School	4	0.9	97.1
	Public Education Center	2	0.5	97.5
	Independent Nursery School	11	2.5	100.0
	Total	**442**	**100.0**	

As shown in Table 3, the sample consists of 237 female and 205 male teachers; 202 of them work in the district of Çekmeköy, 32 of them in the district of Sancaktepe, 41 of them in the district of Ümraniye, 61 of them in the district of Sultanbeyli, 7 of them in the district of Kartal, 52 of them in the district of Pendik, 8 of them in the district of Maltepe, 11 of them in the district of Kadıköy, and 28 of them in the district of Ataşehir; 140 of the teachers who make up the sample work in Primary Schools, 160

of them in Secondary Schools, 29 of them in Anatolian High Schools, 53 of them in Vocational High Schools, 43 of them in Religious High Schools, 4 of them in Special Education Schools, 2 of them in Public Education Centers and 11 of them in Independent Nursery Schools.

3. FINDINGS

3.1. Validity Analyses

3.1.1. Exploratory factor analysis (EFA)

In order to determine the construct validity of the "Generative Leadership" scale in accordance with validity treatments, Exploratory Factor Analysis (EFA) was performed to firstly determine the groupings between the items. In the EFA process, the Kaiser Mayer Olkin (KMO) value was primarily calculated in order to determine whether the sample size was sufficient for analysis and it was found to be .98. The KMO value is between 0 and 1, and the sample size needs to be above .50 for the sufficiency of the sample and it reaches a perfect level as it approaches 1. In this sense, it is seen that the sample size obtained is sufficient (Tavşancıl, 2010; George & Mallery, 2001). In order to test whether there is a high correlation between the variables and the data set is suitable for factor analysis, Bartlett's (Bartlett's Test of Sphericity) test was performed and 28608.707 ($p < .001$) was found. Finding Bartlett's test significant indicates that the data comes from a multivariate normal distribution.

Table 4.
KMO and Bartlett's Test Values

Kaiser-Meyer-Olkin Sample Sufficiency		.985
Bartlett's Test	Chi-Square Value	28608.708
	Degree of Freedom	1891
	p	.000

In the EFA process, which was used to determine the factor loadings and dimensions of the items, the principal components analysis was performed by using the SPSS 21 program and then Varimax rotation was performed, which is one of the orthogonal (vertical) rotation methods, because of the convenience it provides in naming the factors (Altunışık et al., 2010, p.277). In the EFA process, the eigenvalue was determined as 1 and the acceptable load values of the factors were determined as at least .30 during the analysis (Büyüköztürk, 2006; Ntoumanis, 2001). As a result of the analysis, 4 factors with an eigenvalue greater than 1 were determined. The total variance that these four factors explained related to the scale was 68%.

Table 5.
Scale Factor Structure and Total Variance Quantities Explained

Factors	**Initial Eigenvalues**			**Total Factor Loads**			**Rotated Totals of Factor Loads**		
	Total	**Variance (%)**	**Cum. (%)**	**Total**	**Variance (%)**	**Cum. (%)**	**Total**	**Variance (%)**	**Cum. (%)**
1	38.075	61.411	61.411	38.075	61.411	61.411	13.997	22.576	22.576
2	1.829	2.950	64.361	1.829	2.950	64.361	13.218	21.320	43.896
3	1.533	2.472	66.833	1.533	2.472	66.833	8.711	14.050	57.946
4	1.041	1.678	68.512	1.041	1.678	68.512	6.551	10.566	68.512

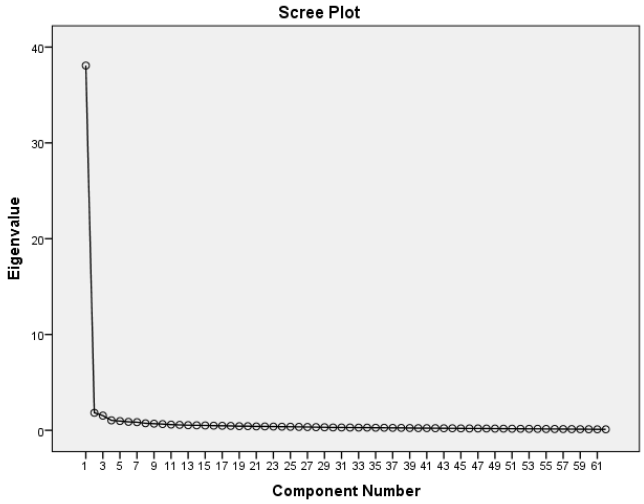

Figure 1. Scale factor structure graph before Varimax rotation

As shown in Table 5 and Figure 1, when the eigenvalue value was taken as 1, 4 factors emerged and the explained variance value of these four factors has been 68.51%. After this process, Varimax rotation was performed to determine the distribution of the

items to the factors. After the Varimax technique, it was observed that some of the items received .30 load and over from more than one factors and the items having load difference less than .100 were removed from the scale. In this process, the items 54, 55, 50, 40, 35, 46, 62, 28, 32, 33, 30, 39, 43, 25, 34, 38, 22, 31, 52, 8, 47, 3, 11, 23, 26, 51, 5, 42, 12, 10, 9, 4, 41, 7, and 6 were excluded one by one from the scale and the analysis was renewed every time. A total of 35 items were excluded from the scale after the rotation and also the factor structure of the scale decreased to 2 and the total variance explained has been 68.51%. Also, the KMO value was found as .97 and Bartlett's test value was found as 11671.702 (p <.001).

Table 6.
Factor Structure after Varimax and Total Variance Quantities Explained

Factors	**Initial Eigenvalues**			**Total Factor Loads**			**Rotated Totals of Factor Loads**		
	Total	**Variance (%)**	**Cum. (%)**	**Total**	**Variance (%)**	**Cum. (%)**	**Total**	**Variance (%)**	**Cum. (%)**
1	16.842	62.378	62.378	16.842	62.378	62.378	9.705	35.944	35.944
2	1.658	6.139	68.517	1.658	6.139	68.517	8.795	32.573	68.517

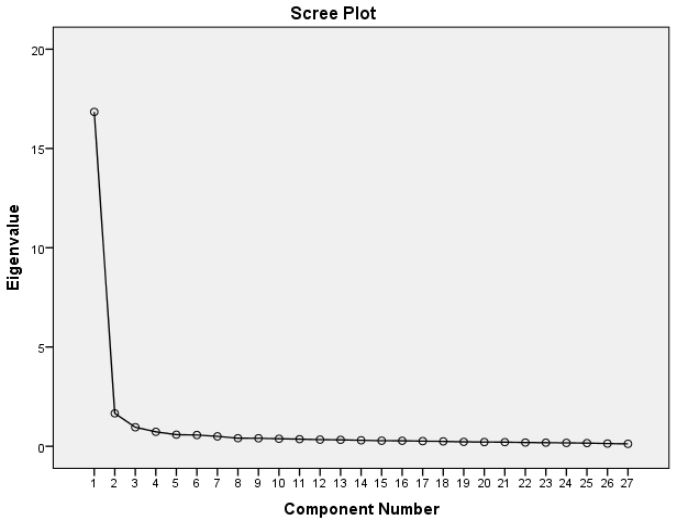

Figure 2. Scale factor structure graph after Varimax rotation

Table 7.
EFA Factor Load Values

	Factors	
Items	**Factor 1**	**Factor 2**
59	**.839**	.308
60	**.822**	.339
58	**.800**	.356
61	**.769**	.370
56	**.759**	.354
18	**.753**	.356
29	**.737**	.345
36	**.721**	.458
45	**.717**	.491
57	**.702**	.499
53	**.699**	.506
37	**.696**	.423
44	**.678**	.339
19	**.668**	.409
16		**.838**
15	.339	**.803**
21	.335	**.791**
20	.344	**.779**
48	.363	**.769**
49	.368	**.736**
17	.416	**.721**
14	.489	**.679**
24	.483	**.636**
27	.507	**.634**
13	.412	**.610**
2	.357	**.597**
1	.335	**.551**

As stated in Table 6 and Table 7, due to the ease of naming (interpreting) the factors (Altunışık et al., 2010, p.277), Varimax vertical rotation technique was used to observe the distribution of the items to the factors and it was seen that the items were collected in totally 2 factors which have eigenvalue greater than 1 and the items have acceptable load values (the lowest load value is .55 and the highest load value is .83) in the factors they have entered.

Table 8.
Scale Sub-Dimensions and Items Determined after EFA

Factor (Sub-Dimension)	Number of Items	Item Numbers
1	14	59, 60, 58,61, 56, 18, 29, 36, 45, 57, 53, 37, 44, 19
2	13	16, 15, 21, 20, 48, 49, 17, 14, 24, 27, 13, 2, 1

As seen in Table 8, the 1st factor (sub-dimension) that constitutes the scale consists of 14 items and the 2nd factor (sub-dimension) consists of 13 items. The total number of items in the scale is 27. The variables (items) which have loaded the factors were examined, the common points between the variables were determined and the factors (sub-dimensions) were named (Altunışık et al., 2010, p.279). In this respect, the first sub-dimension is called *"Revealing Creative Dynamics (RCD)"* and the second sub-dimension is called *"Innovation Generating Capacity (IGC)"*. There is no reverse item in the scale and it is evaluated that the default property will increase as the scores given to the total and sub-dimensions of the scale increase.

3.1.2. Confirmatory factor analysis (CFA)

While the groups of variables, which were tested by Exploratory Factor Analysis, and the highly-correlated factors are determined, in the Confirmatory Factor Analysis, whether the variable groups are adequately represented in the factors obtained is determined (Özdamar, 2004). In the Confirmatory Factor Analysis, the researcher determines which factor will be loaded into which factor in such a way that they form the model (Albright & Park, 2009). In this context, CFA was performed by using Amos 23 program in order to determine the extent to which these factors explained the model of generative leadership scale and to determine whether the structure revealed is validated or not in line with the factors determined by exploratory factor analysis.

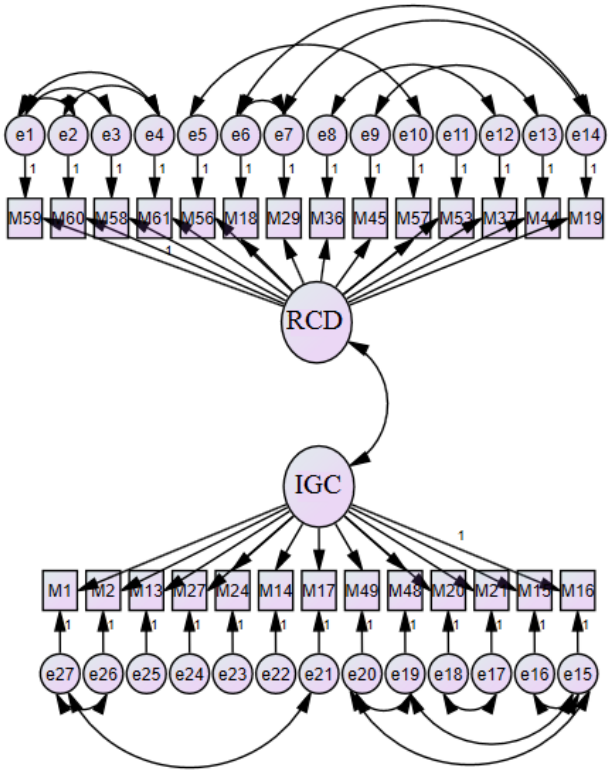

Figure 3. Generative leadership scale Confirmatory Factor Analysis (CFA) model

As shown in Figure 3, in the scale modeled as a 2-factor structure, RCD represents *"Revealing Creative Dynamics"* sub-dimension and IGC represents the *"Innovation Generating Capacity"* sub-dimension.

Table 9.
Adaptive Values Determined As a Result of CFA

χ^2 (CMIN)	Df	p	χ2 /Df (CMIN/DF)	RMSEA	TLI	CFI	NFI	GFI	RMR
654,642	306	P<.001	2,13	.051	.965	.970	.945	.903	.020

As seen in Table 9, the chi-square value determined as a result of CFA is $\chi^2 = 654.642$; the degree of freedom was found to be df = 306 (p <.001) and the chi-square/df value was found to be 2.13. The fact that the χ^2 / df value is below 3 indicates that the model fit is excellent (Jöreskog & Sörbom, 1993; Kline, 2005; Sümer, 2000). The examination of the results of the fit indices reveals that the RMSEA value is .051, the TLI value is .96, the CFI value is .97, the NFI value is .94, the GFI value is .90 and the RMR value is .20. The facts that the RMSEA value is below .08, the GFI value is .90 and above, the RMR value is less than .1, the CFI value is .90 and above, the NFI value is .90 and above, the TLI value is above .80 reveal that the model is accordant with the actual data and that all fit indices have acceptable values (Rigdon, 1996; Hu and Bentler, 1999; Bentler & Bonnet, 1980; Byrne, 2011; Yaşlıoglu, 2017; Cokluk, Sekercioglu & Buyukozturk 2010; Munro 2005).

3.2. Reliability Analyses

After validity analyses, the reliability analysis of the remaining items and the resulting factors were carried out followed by the calculation of Cronbach's Alpha values and Composite Reliability values of the sub-dimensions and total scores.

Cronbach's Alpha Value of the *"Revealing Creative Dynamics"* sub-dimension of the Generative Leadership Scale was found to be .968; the Cronbach's Alpha value of the *"Innovation Generating Capacity"* sub-dimension was found to be .955 and the total Cronbach's Alpha value of the scale was found to be .977; Composite Reliability Value of the sub-dimension "*Revealing Creative Dynamics"* of the Generative Leadership Scale was found to be .945, the Composite Reliability of the sub-dimension "*Innovation Generating Capacity"* was found to be .928 and the total Composite Reliability of the scale was found to be .968. The fact that both the Cronbach's Alpha and the Composite Reliability values exceed the acceptable threshold value of .70 indicates that the scale and its sub-dimensions are reliable (Fornell & Larcker, 1981; Hair & Lukas, 2014).

After these processes, the distinctiveness was calculated by using the scale sub-dimension and total scores. In the calculation of distinctiveness, the distinctiveness of the scale and its sub-dimensions were obtained by determining whether the sub-dimension scores and then the total scores of the scale differ between the top 27% and the bottom 27% groups and whether there is a significant difference between the arithmetic means of the top and bottom groups in favor of the top group by using Independent Groups T-test (independent samples test).

Table 10.
Independent Group t Test Results for Determining the Distinctiveness of Scale Sub-Dimension Scores and Scale Total Scores

Sub-Dimensions	**Groups**	**N**	$\bar{x}$	sd	$Sh_{\bar{x}}$	***t test***		
						t	***Df***	***p***
Revealing Creative Dynamics	Top	119	49.03	3.514	.322	40.868	204	.000
	Bottom	119	25.13	5.324	.488			
Innovation Generating Capacity	Top	119	46.75	2.722	.250	34.769	171	.000
	Bottom	119	26.96	5.581	.512			
Scale Total	Top	119	95.02	6.073	.557	37.036	186	.000
	Bottom	119	53.24	10.701	.981			

As shown in Table 10, a significant difference was determined between the sub-dimension of *"Revealing Creative Dynamics"* and the sub-dimension of *"Innovation Generating Capacity"* and also between the arithmetic means of the top 27% and bottom 27% of scale total scores in favor of the top group (p <. 001), thus, it was found that the scale and its sub-dimensions were distinctive. The significant level difference between the top and bottom group means that the internal structural consistency of the scale is high as well (Büyüköztürk, 2012).

Table 11.
Independent Group t Test Results to Determine the Distinctiveness of the Scale Items

Items	**Groups**	**N**	$\bar{x}$	**t**	**Df**	**p**
1	Top	119	4.00	25.372	118	.000
	Bottom	119	2.35			
2	Top	119	4.00	24.768	118	.000
	Bottom	119	2.36			
13	Top	119	3.44	28.229	235	.000
	Bottom	119	1.65			
14	Top	119	3.61	31.159	229	.000
	Bottom	119	1.78			
15	Top	119	3.72	35.350	227	.000
	Bottom	119	1.84			
16	Top	119	3.85	31.628	201	.000
	Bottom	119	1.92			

17	Top	119	3.83	39.712	232	.000
	Bottom	119	1.76			
18	Top	119	3.50	29.583	236	.000
	Bottom	119	1.60			
19	Top	119	3.46	28.973	236	.000
	Bottom	119	1.60			
20	Top	119	3.62	31.472	228	.000
	Bottom	119	1.80			
21	Top	119	3.66	32.933	226	.000
	Bottom	119	1.82			
24	Top	119	3.63	31.762	227	.000
	Bottom	119	1.81			
27	Top	119	3.77	33.801	236	.000
	Bottom	119	1.87			
29	Top	119	3.70	33.602	236	.000
	Bottom	119	1.65			
36	Top	119	3.47	28.365	234	.000
	Bottom	119	1.71			
37	Top	119	3.55	29.911	235	.000
	Bottom	119	1.67			
44	Top	119	3.55	29.694	226	.000
	Bottom	119	1.80			
45	Top	119	3.52	29.139	233	.000
	Bottom	119	1.71			
48	Top	119	3.86	26.706	182	.000
	Bottom	119	2.05			
49	Top	119	3.79	29.357	236	.000
	Bottom	119	1.91			
53	Top	119	3.55	29.586	233	.000
	Bottom	119	1.72			
56	Top	119	3.62	31.380	236	.000
	Bottom	119	167			
57	Top	119	3,52	29.126	229	.000
	Bottom	119	1,77			
58	Top	119	3,62	31.278	235	.000
	Bottom	119	1,71			
59	Top	119	3.51	29.363	235	.000
	Bottom	119	1.64			
60	Top	119	3.56	29.952	234	.000
	Bottom	119	1.71			
61	Top	119	3.60	30.977	236	.000
	Bottom	119	1.64			

In order to determine the individual distinctiveness of all items at the whole scale level after determining the distinctiveness at the level of the total scores of the scale and its sub-dimensions and also in order to determine whether the arithmetic means of the top 27% and bottom 27% groups of the points of the items differed in favor of the top group, in other words in order to determine whether the items are distinctive or not, Independent Samples T-Test was used and are shown in Table 10. As it is seen in Table 11, it was found that all items were distinctive and there was a significant difference between the arithmetic means of item scores in favor of the top group ($p < .001$).

Table 12.
Item-Total and Item-Remainder Correlation Results

		Item-Total Correlation		**Item-Remainder Correlation**	
Items	**N**	**r**	**p**	**r**	**p**
1	442	.627	.000	.600	.000
2	442	.673	.000	.648	.000
13	442	.720	.000	.696	.000
14	442	.821	.000	.804	.000
15	442	.795	.000	.777	.000
16	442	.775	.000	.756	.000

17	442	.797	.000	.778	.000
18	442	.795	.000	.775	.000
19	442	.770	.000	.748	.000
20	442	.783	.000	.764	.000
21	442	.784	.000	.766	.000
24	442	.787	.000	.769	.000
27	442	.803	.000	.786	.000
29	442	.775	.000	.754	.000
36	442	.838	.000	.824	.000
37	442	.797	.000	.778	.000
44	442	.725	.000	.704	.000
45	442	.857	.000	.844	.000
48	442	.790	.000	.772	.000
49	442	.771	.000	.751	.000
53	442	.854	.000	.840	.000
56	442	.796	.000	.776	.000
57	442	.851	.000	.838	.000
58	442	.826	.000	.809	.000
59	442	.822	.000	.806	.000
60	442	.831	.000	.815	.000
61	442	.815	.000	.797	.000

As seen in Table 12, the correlation values found as a result of the item-total correlation (lowest .628; highest .857) and the item-remainder correlation (lowest .600; highest .844) were determined to be higher than .30, to have a high-level positive correlation and to be significant at the ($p < .001$) level. All these results indicate that the internal structural consistency of the scale is high and measures the same structure (Büyüköztürk, 2012).

After these processes, Pearson Product-Moment Correlation Analysis was used to determine the correlation between scale sub-dimensions and scale sub-dimensions and total score and a high-level positive correlation was found both between sub-factors and also between sub-factors and total score. A positive significant correlation was found between *"Scale Total Score"* and *"Revealing Creative Dynamics"* sub-dimension as $r = .964$ $p < .001$; between *"Scale Total Score"* and *"Innovation Generating Capacity"* sub-dimension as $r = .949$ $p < .001$, and between the sub-dimension of *"Revealing Creative Dynamics"* and *"Innovation Generating Capacity"* sub-dimension as $r = .833$ $p < .001$. These results show that all factors measure the same structure.

4. RESULTS, DISCUSSION AND RECOMMENDATIONS

In this study, the main purpose was to develop a scale that defines school principals' generative leadership behaviors based on teacher evaluations. For this purpose, a 100-item measurement tool was presented to 9 experts to obtain content validity, and then, the Lawshe technique was used to obtain the content validity ratios (CVRs) of each item and afterward, the scale content validity index (CGI) was obtained and a total of 38 items were removed from the scale. The remaining 62-item measurement tool was applied to 442 teachers working in different school types, and after the application, Exploratory Factor Analysis and Confirmatory Factor Analysis were carried out, 35 items were removed from the scale and a two-dimensional (two-factor) 27-item scale was obtained. In addition, the reliability coefficients (Cronbach's Alpha and Composite Reliability) of all scales and sub-dimensions, and then the distinctiveness of the scale items, sub-dimensions, and the total scores was calculated. After these processes, item-total and item-remainder correlations, the correlation coefficients of the scale total and scale sub-dimensions and the significance of their correlations were tested. The results obtained from these analyses are as follows:

1. The total variance quantity explained by Exploratory Factor Analysis and subsequent two-factor structure obtained by Varimax rotation (*Revealing Creative Dynamics, Innovation Generating Capacity*) is 68.517%. Factor loads of the items are between .668 and .839 for the sub-dimension of "Revealing Creative Dynamics" and between .551 and .838 for the sub-dimension of "Innovation Generating Capacity".
2. By confirming the two-factor structure and model previously obtained by Confirmatory Factor Analysis, fit indices have acceptable values and over ($\chi 2$ / df = 2.13; RMSEA = 0.51; TLI = .965; CFI = .970; NFI = .945; GFI = .903; RMR = .020).
3. The Cronbach's Alpha values in terms of the whole scale and its sub-dimensions (RCD sub-dimension = .968; IGC sub-dimension = .955; Scale Total = .977) and Composite Reliability (RCD sub-dimension = .945; IGC sub-dimension = .928; Scale total = .968) reliability coefficients are above .70 and this fact shows that the scale and its sub-dimensions are consistent and reliable.
4. The fact that the group averages on the basis of the item, factor and scale total score are significant among the top and bottom groups in favor of the top group ($p < .001$) shows that the items, sub-dimensions and total scores of the scale are distinctive.
5. Item-total correlation coefficients are between .628 the lowest and .857 the highest and item-remainder correlation coefficients are between .600 the lowest and .444 the highest. At the same time, the correlation coefficients between the scale sub-dimensions and the sub-dimensions-total score ranged from .833 the lowest to .964 the highest and all correlation

coefficients were positive and above the .30 lower limit reveal that the scale is highly consistent in terms of structure and that the scale items, sub-dimensions, and total correlations are positive, significant and high level.

The sub-dimensions of the resulting scale of the study have a quality which supports the theoretical infrastructure to reveal a focus on innovation and the creative processes in the organization – indicated by Klimek et al. (2008) about generative leadership – and which is consistent with the literature. These emerging dimensions also support the results of the achieved scale just like the body of literature that addresses the characteristics of the generative leadership such as raising the innovative generation through experiences throughout the organizational system by Goldstein, Hazy and Lichtenstein (2010), revealing or creating the creative tensions in the organization by Mike (2018), and modeling the creativity and innovation by Disch (2009). The research on the relevant body of literature has not revealed a scale of generative leadership and this study is assumed to fill this gap in the literature and leadership practices. At the same time, it is thought that this scale will contribute to the development of adaptive development of the organizations to time and revealing the generative leadership behaviors, considering that generative leadership will play an important role in providing innovative and creative generation in organizations.

All studies indicate that the scale is a valid and reliable scale for determining generative leadership behaviors. The scale developed in this respect has the flexibility to be used in different occupational groups in terms of future research and it is recommended to be used for determining the level of generative leadership behaviors of managers and leaders in different professional fields. Considering the fact that the developed scale has structural traces of Turkey and the perspective such as sample difference that may be considered a limitation, with regard to future research in which this scale will be implemented, its adaptation to different cultural environments and areas is recommended.

Research and Publication Ethics Statement

The authors hereby declare that they have not used any sources other than those listed in the references. The authors further declare that they have not submitted this article at any other journal for publication.

Contribution Rates of Authors to the Article

The authors equally contributed for the article

Statement of Interest

The authors declare that there is no conflict of interest.

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6. EXTENDED ABSTRACT

Üretkenlik, yeni olasılıklara, yeni yapılara yol açmak veya üretme, yaratma yeteneği veya kapasitesidir. Üretken yaklaşımlar ve üretken liderler ; (1) sağduyu varsayımlarına meydan okurlar, (2) temel soruları arttırırlar, (3) verilmiş olanın yeniden değerlendirilmesini teşvik ederler, (4) gelecek için yeni umutlar ve eylemler için, yeni alternatifler belirlemek için bir problemin varsayılan sınırları dışında yaratıcı düşünürler (Klimek, Rıtzenheın ve Sullıvan, 2008, s.14-16). Üretken liderliğin temel odak noktası, örgütsel sistem boyunca deneyimler aracılığıyla yenilikçi jenerasyonu yükseltmek ve teşvik etmektir (Goldstein, Hazy

ve Lichtenstein, 2010). Ayrıca üretken liderlik davranışlarını sahnelemek, özellikle karmaşık bir sistemin işini yapma kapasitesinin önemli ölçüde arttığı güçlü organizasyonel çıktılara yol açabilmektedir (Lichtenstein, 2014). Bu anlamda üretken liderlerin bazı anahtar özellikleri onların kelimelerinde ve davranışlarında kolaylıkla gözlenebilmektedir. Bu özellikler (Klimek ve diğ., 2008, s.15);

1. Onlar, okullarına dinamik sistemler olarak bakarlar ve o sistemin bütünleştirici unsurları olarak her birey, onun şuan ki davranışlarını ve gelecek şartlarını etkiler.
2. Onların liderliği, otoriterlikten daha çok işbirliğine dayanır ve onların öğrencileri, personeli ve bütün okuldaki amaç, potansiyel ve olasılıkları anlama üzerine niyetlenmiştir.
3. Onlar, bireysel ve kolektif zihin modellerinin yaygın etkisini anlarlar ve sürekli olarak onlarda bulunan varsayımları sorgularlar.
4. Onlar geleceğe çok biçimlendirici olarak bakarlar fakat gelecek ne kesin öngörülebilir ne de kontrol edilebilir.
5. Girişim, fikirler ve onu gerektiren anlar için ayrılmış güçlü yönetsel eylemler ile onların çalışma stillerine hâkim olan inovasyon üzerine odaklanma.
6. Sıra dışı bir gelecek öngörme ve başarmada işbirliğinin yapısal ruhu, her etkileşimde, toplantı ve sunumlardan bireysel karşılaşmalara kadar gerçekten mevcuttur.

Üretken liderler, okullarını, tüm katılımcılarının iç ve dış ortamdaki etkileşimleri aracılığıyla birlikte yaratılan dinamik bir sistem olarak görürler ve sürekli olarak düşünen sistemlere vurgu yaparlar. Var olan zihinsel modellerde gömülü olan bir konunun varsayımlarını ve varsayılan limitlerini sorgularlar. Üretken liderler, çalışanların zamanlarını ve enerjilerini kontrol etmeyi değil, okulla bağlantılı olan herkesin potansiyellerini gerçekleştirmeyi ve yaratıcılıklarını ortaya çıkarmayı hedeflerler. Yaratıcılık ve inovasyonun gelişebileceği sürekli bir deney ortamını teşvik ederler. Gelecek, (bir sonraki andan itibaren, okullarının bir ya da iki yıl sonra ne olacağı) bu liderler için temel referanstır. Dengeyi yeniden kurmak için gereken onarımlardan ziyade, öngörülen bir geleceğe ulaşmak için gereken eylemlere odaklanırlar. Bir üretken lideri çevreleyen kültür, her bireyin, sistem ve onun geleceğini şekillendirmeye, yaratıcı bir şekilde katkıda bulunmaya değer verdiği, yetkilendirildiği ve güçlendirdiğinden emin olduğu, yaratıcı bir süreçtir (Klimek ve diğ., 2008, s.54-55). Mike (2018) ise üretken liderliğin temel unsurlarını şu şekilde özetlemiştir (s.60);

1. Tahmin etmeye ve kontrol etmeye çalışmak yerine karmaşık çevreleri ve dinamik bağlamları açıklamak ve yorumlamak.
2. Yaratıcı gerilimleri ortaya çıkarmak veya oluşturmak, farklı bakış açılarını teşvik etmek, mevcut davranış ve etkileşim kalıplarını dağıtmak
3. Ağ etkileşimlerini ve zengin bilgi alışverişini destekleme
4. Uygun kaynakları sağlama ve örgütsel gevşekliği teşvik etme de dâhil olmak üzere deneyim, öğrenme ve inovasyonu teşvik etmek ve çeşitlilik oluşturmak
5. Sınırları belirlemek ve kısıtlamaları entegre etmek
6. Önceki bilgileri yeniden kombine etme ve ortaya çıkmasını teşvik etmek için değerlendirilen yenilikleri benimseme

Bu araştırmada, öğretmen değerlendirmelerini esas alarak okul müdürlerinin üretken liderlik davranışlarını tanımlayan bir ölçek geliştirmek amaçlanmıştır. Bu amaçla oluşturulan 100 maddelik ölçme aracı, kapsam geçerliliğini sağlamak amacıyla 9 uzman görüşüne sunulmuş ve ardından Lawshe tekniği kullanılarak her bir maddenin kapsam geçerlilik oranları (KGO) ve daha sonra ölçek kapsam geçerlilik indeksi (KGİ) elde edilmiş ve toplam 38 madde ölçekten çıkarılmıştır. Kalan 62 maddelik ölçme aracı, farklı okul türlerinde görev yapan 442 öğretmene uygulanmış, uygulama sonrası Açımlayıcı Faktör Analizi ve Doğrulayıcı Faktör Analizi yapılarak 35 madde daha ölçekten atılmış ve iki boyutlu (faktörlü) 27 maddeden oluşan bir ölçek elde edilmiştir. Bunların dışında tüm ölçek ve alt boyutlarının güvenirlilik katsayıları (Cronbach Alpha ve Composite Reliability) ve ardından ölçek maddeleri, alt boyutları ve ölçek toplam puanlarının ayırt edicilikleri hesaplanmıştır. Bu işlemlerin ardından madde-toplam ve madde-kalan korelasyonları ile ölçek toplam ve ölçek alt boyutlarının korelasyon katsayıları ve ilişkilerinin anlamlılıkları test edilmiştir. Bu analizlere bağlı olarak elde edilen sonuçlar şu şekildedir;

1. Açımlayıcı Faktör Analizi ve sonrasında Varimax döndürme ile elde edilen iki faktörlü yapının (*Yaratıcı Dinamikleri Ortaya Çıkarma*, *Yenilik Üretme Kapasitesi)* açıkladığı toplam varyans miktarı %68.517'dir. Maddelerin faktör yükleri "Yaratıcı Dinamikleri Ortaya Çıkarma" alt boyutu için .668 ile .839 arasında; "Yenilik Üretme Kapasitesi" alt boyutunda ise .551 ile .838 arasında değişmektedir.
2. Doğrulayıcı Faktör Analizi ile de önceden elde edilen iki faktörlü yapı ve model doğrulanarak, uyum indeksleri kabul edilebilir ve üzerinde değerler (x^2/sd=2.13; RMSEA=0.51; TLI=.965; CFI=.970; NFI=.945; GFI=.903; RMR=.020) almıştır.
3. Ölçeğin tümü ve alt boyutları açısından Cronbach Alpha değerleri (YDOÇ alt boyutu= .968; YÜK alt boyutu= .955; Ölçek Toplam=.977) ve Composite Reliability (YDOÇ alt boyutu= .945; YÜK alt boyutu= .928; Ölçek Toplam=.968) güvenirlilik katsayılarının .70 üzerinde çıkması ölçeğin ve alt boyutlarının güvenilir, tutarlı olduğunu göstermektedir.
4. Madde, faktör ve ölçek toplam puan bazında grup ortalamalarının üst ve alt gruplar arasında üst grup lehine anlamlı çıkması ($p<.001$), ölçeğin maddelerinin, alt boyutlarının ve toplam puanlarının ayırt edici olduğunu göstermektedir.
5. Madde-toplam korelasyon katsayıları en düşük .628; en yüksek .857 arasında; madde-kalan korelasyon katsayıları ise en düşük .600; en yüksek .844 arasında değişmektedir. Aynı zamanda ölçek alt boyutları arası ve alt boyutlar-toplam puan arasındaki korelasyon katsayılarının en düşük .833 en yüksek .964 arasında değişmesi ve tüm korelasyon katsayılarının

pozitif yönde ve .30 alt sınırının üzerinde olması, ölçeğin yapı anlamında yüksek düzeyde tutarlı olduğunu ve ölçek madde, alt boyut ve toplam korelasyonlarının pozitif yönde, anlamlı ve yüksek düzeyde olduğunu göstermektedir.

Yapılan tüm çalışmalar, ölçeğin üretken liderlik davranışlarını saptamada geçerli ve güvenilir bir ölçek olduğunu göstermektedir. Bu yönüyle geliştirilen ölçek, gelecek araştırmalar açısından farklı meslek gruplarında kullanılabilir esnekliğe sahip olup farklı mesleki alanlarda da yönetici ve liderlerin üretken liderlik davranışlarının düzeyinin belirlenmesinde kullanılması önerilmektedir.

Appendix 1. Generative Leadership Scale
Please tick the relevant option, taking into account the level of your school principal (manager) below.

Item	My School Principal (Manager);	I Strongly Disagree	I Disagree	I Agree	I Strongly Agree
1	Strives for employees to realize their potential.	①	②	③	④
2	Properly uses the energy of people in the institution I work.	①	②	③	④
3	Activates the discovery process of employees.	①	②	③	④
4	Encourages employees to increase their individual capacity.	①	②	③	④
5	Focuses on research.	①	②	③	④
6	Uses the common mind of employees.	①	②	③	④
7	Pays attention to recognizing the individual abilities of employees.	①	②	③	④
8	Is open to innovation.	①	②	③	④
9	Activates the creative processes in the institution I work for.	①	②	③	④
10	Always adapts himself/herself to developments.	①	②	③	④
11	Creates a desire to take action in the institution I work for.	①	②	③	④
12	Works to increase the capacity of the institution I work for.	①	②	③	④
13	Establishes a generative dialogue with employees.	①	②	③	④
14	Has a curiosity about discovering new things.	①	②	③	④
15	Is eager to learn.	①	②	③	④
16	Apart from routine applications, he/she strives to add innovation to the organization.	①	②	③	④
17	Provides new learnings.	①	②	③	④
18	Creates environments that will reveal the creativity of employees.	①	②	③	④
19	Strives to learn new things.	①	②	③	④
20	Creates the necessary environment for employees to express themselves.	①	②	③	④
21	Encourages inter-unit interaction.	①	②	③	④
22	Attempts to break down the existing thinking patterns.	①	②	③	④
23	Encourages employees to explore.	①	②	③	④
24	Is an advocate of innovations that contribute to my institution.	①	②	③	④
25	Motivates the employees to ensure the generativity of them.	①	②	③	④
26	Makes a difference in my institution.	①	②	③	④
27	Strives for employees to contribute to the organization.	①	②	③	④

Ek 1. Üretken Liderlik Ölçeği

Aşağıda belirtilen durumların okul müdürünüzde (Yöneticinizde) hangi düzeyde olduğunu dikkate alarak ilgili seçeneği ile işaretleyiniz.

	Okul Müdürüm (Yöneticim);	**Hiç Katılmıyorum**	**Katılmıyorum**	**Katılıyorum**	**Tamamen Katılıyorum**
1	Çalışanların potansiyellerini gerçekleştirmeleri için çaba sarf eder.	①	②	③	④
2	Çalıştığım kurumdaki kişilerin enerjisini doğru bir şekilde kullanır.	①	②	③	④
3	Çalışanların keşfetme sürecini harekete geçirir	①	②	③	④
4	Çalışanların, bireysel kapasitelerini arttırmalarını teşvik eder.	①	②	③	④
5	Araştırma odaklıdır.	①	②	③	④
6	Çalışanların ortak aklını kullanır.	①	②	③	④
7	Çalışanların bireysel yeteneklerini tanımaya özen gösterir.	①	②	③	④
8	Yeniliklere açıktır.	①	②	③	④
9	Çalıştığım kurumdaki yaratıcı süreçleri harekete geçirir.	①	②	③	④
10	Kendini yeniler.	①	②	③	④
11	Çalıştığım kurumda harekete geçme isteği yaratır.	①	②	③	④
12	Çalıştığım kurumun kapasitesini arttırmak için çalışır.	①	②	③	④
13	Çalışanlarla üretken bir diyalog kurar.	①	②	③	④
14	Yeni şeyler keşfetmeye dair meraka sahiptir.	①	②	③	④
15	Öğrenmeye isteklidir.	①	②	③	④
16	Rutin uygulamalar dışında kuruma yenilik katmak için gayret gösterir.	①	②	③	④
17	Yeni öğrenmeler sağlar.	①	②	③	④
18	Çalışanlara yaratıcılıklarını ortaya çıkaracak ortamlar oluşturur.	①	②	③	④
19	Yeni şeyler öğrenmek için çaba gösterir.	①	②	③	④
20	Çalışanların kendilerini ifade etmelerinde gerekli ortamı sağlar.	①	②	③	④
21	Birimler arası etkileşimi teşvik eder.	①	②	③	④
22	Mevcut düşünce kalıplarını yıkmak için çabalar.	①	②	③	④
23	Çalışanları keşfetmeye özendirir.	①	②	③	④
24	Çalıştığım kuruma katkı oluşturan yeniliklerin savunucusudur.	①	②	③	④
25	Çalışanların üretkenliğini sağlamak için onları motive eder.	①	②	③	④
26	Çalıştığım kurumda farklılık yaratır.	①	②	③	④
27	Çalışanların kuruma katkı sağlaması için uğraşır.	①	②	③	④