

The Inventory of Resources of Power Used by Pre-school Children: A Validity and Reliability Study

Serhat GÜNDOĞDU^{a*}

Research Article

Received: 26.10.2022

Revised: 26.06.2023

Accepted: 15.07.2023

a Assoc. Prof. Dr., Nevşehir Hacı Bektaş Veli University, <https://orcid.org/0000-0001-6841-8890> * gundogduserhat50@gmail.com

Abstract

This study aims to create an inventory to determine the power sources used by preschool children and to bring this inventory to the literature by conducting the necessary validity and reliability study. Participants were selected through maximum variation sampling method. The teachers of 346 children attending pre-school education in different regions of Turkey in the 2021-2022 academic years were included in the study. The validity of the inventory was tested with EFA and CFA. As a result of the EFA analysis, a four-factor structure was obtained. The total number of items for these four factors is 21. The factors obtained were named as charismatic power, coercive power, helplessness power and reward power. The inventory we developed explains 68.26% of the total variance. The fit indices obtained in the CFA are acceptable. The result of the Cronbach's alpha analysis performed to determine the internal consistency of the inventory showed that the reliability coefficients of the inventory were acceptable as well. As a result, it has been shown that "The Inventory of Resources of Power Used by Pre-School Children" is a valid and reliable assessment tool.

Keywords: Pre-school, power resources, inventory

Okul Öncesi Dönemdeki Çocukların Kullandıkları Güç Kaynakları Envanteri: Geçerlik ve Güvenirlilik Çalışması Öz

Bu çalışmada okul öncesi dönemdeki çocukların kullandıkları güç kaynaklarını belirlemeye yönelik bir envanterin geliştirilmesi, geçerlik ve güvenilirlik çalışmasının yapılarak literatüre kazandırılması amaçlanmıştır. Katılımcılar maksimum çeşitlilik örnekleme yöntemi ile seçilmiştir. Çalışmaya Türkiye'nin farklı bölgelerinde 2021-2022 eğitim öğretim yılında okul öncesi eğitime devam eden 346 çocuğun öğretmeni dâhil edilmiştir. Envanterin geçerliliğini test etmek için AFA ve DFA kullanılmıştır. AFA sonucu dört faktörden ve 21 maddeden oluşan bir yapı elde edilmiştir. Elde edilen faktörler karizma gücü, zorlayıcı güç, aciziyet gücü ve ödül gücü olarak adlandırılmıştır. Geliştirilen envanter toplam varyansın %68.26'sını açıklamaktadır. DFA sonucu elde edilen uyum indeksleri kabul edilebilir düzeydedir. Envanterin iç tutarlılığını belirlemek amacıyla gerçekleştirilen cronbach's alpha analizi sonucuna göre envanterin güvenilirlik katsayıları yeterlidir. Sonuç olarak "Okul Öncesi Dönemdeki Çocukların Kullandıkları Güç Kaynakları Envanterin geçerli ve güvenilir bir ölçme aracı olduğu ortaya konmuştur.

Anahtar kelimeler: Okul öncesi, güç kaynakları, envanter

To cite this article in APA Style:

Gündoğdu, S. (2024). The Inventory of Resources of Power Used by Pre-school Children: A Validity and Reliability Study. *Bartın University Journal of Faculty of Education*, 13(1), 181-192. <https://doi.org/10.14686/buefad.1195014>

© 2024 Bartın University Journal of Faculty of Education. This is an open-access article under the Creative Commons Attribution NonCommercial 4.0 license (<https://creativecommons.org/licenses/by-nc/4.0/>).

INTRODUCTION

The pre-school period covers the years that are very important in terms of supporting the social development of children and laying the foundations of their socialization. Interpersonal relations are extremely important in the socialization process of children (Atis-Akyol & Güney-Karaman, 2021). Children experience their first social relationship within their families and begin to socialize by getting together with their peers during the preschool education process. This contributes to the development and growth of children's social interaction network (Dinçer et al., 2019). Children experience the richest peer relationships in the school environment because they spend a significant part of their day with their peers at school (Atış-Akyol & Güney-Karaman, 2021).

Peer relationships are of great importance as they have functions that can affect each and every developmental stage in children (Hay et al., 2008). Peer relationships established in the pre-school period not only shape social relationships and experiences, but also affect children's social and emotional adaptation in the following years (Gülay, 2009). Positive peer relations in the preschool period have significant positive effects on the development of problem solving skills (Reitz et al., 2014), the development of behaviors regarding sharing and cooperation (Beyazkürk et al., 2007), social adaptation, acquiring social skills (Çetin et al., 2003) and increasing social competence (Luczynski & Hanley, 2013). On the other hand, negative peer relations in the preschool period lead to an increase in aggression (Schwartz et al., 2000), impulsivity, hyperactivity (Flouri & Sarmadi, 2016) and adaptation problems (Huber et al., 2019).

Peer relationships refer to a multifaceted relationship between children that encompass positive and negative behaviors and include different types of relationships within the peer group of children (Healy et al., 2015). Children's individual characteristics and interactions with each other shape the structure of their peer relationships (Song, 2006). In addition, power balance/imbalance is a factor that significantly affects the peer relations (Gülay, 2009).

Power, which is one of many different aspects of group relations, is a relational phenomenon that exists in all relationships (Cederborg, 2021; Eidsvåg & Rosell, 2021; Whittington, 2001). While Dahl (2001) defines power as getting someone else to do what one wants, while Weber (1996) defines power as the capacity to manage the behavior of others for one's own purposes in social relations. Resources of power are used in this process. Resources of power refer to the things that give power to the person who uses it. Individuals can differ in various aspects such as physical characteristics, mental capacity, financial status, education level, profession and social status. These differences can be advantageous for some people to exert power over others (Şişman, 2011). Due to the fact that there are many resources of power, many classifications have been made until today. Of these, the most widely used is the one classified by French and Raven (1959) as legitimate power, reward power, coercive power, charismatic power, and expert power. Whittington (2000) determined that coercive power is perceived negatively and reward, charisma, and expert power are considered positive. In addition to these, helplessness power has emerged as a type of power that is often used by people who feel that they lack other types of resources of power. People use this type of power when they are incapable of handling a task (Bilgin, 1988).

Legal power refers to the authority granted to the person by the authority (Hitt et al., 2005). Reward power refers to influencing people's behavior with rewards in order to exhibit desired behaviors (Hoy & Miskel, 2012). Coercive force refers to directing people to desired behaviors by resorting to material and moral coercion such as threatening, using violence and exerting pressure (Yılmaz & Altınkurt, 2012). Coercive power occurs when a person has the ability to punish others or inflict physical or psychological harm. The power of charisma is the source of power through which people influence others thanks to their exemplary and admired personal characteristics (Hoy & Miskel, 2012). Expert power refers to the ability of a person to influence the behavior of other people with his knowledge and skills (Bayrak, 2001).

Power relations that emerge as a result of interaction with peers are observed in preschool classrooms (Lee & Recchia, 2008; Vuorisalo et al., 2015). Children use power in various ways when establishing relationships with their peers. This use of power can be positive or negative (Hawley, 1999; Eidsvåg & Rosell, 2021). Positive use of power maintains fairness, and access within the group. In contrast, the use of negative power is related to manipulation and rejection of other children's attempts to participate in play (Hawley et al., 2007). Moreover, power can have negative consequences in children's dominance control over play in some cases (Eidsvåg & Rosell, 2021). Children's language skills, social skills (Skånfors, 2010), social status (Nærland & Martinsen, 2011; Whittington, 2001), ability to inspire others, efficiency in playing games (Walker, 2009), strategies and personal abilities (Whittington, 2001) affect the power they will use over their peers.

Previous studies have shown that children often use their power when deciding which game to play (Eidsvåg & Rosell, 2021; Skånfors, 2010), who will participate into the play (Evaldsson, 2004; Lee & Recchia, 2008), who will play with the toys (Cederborg, 2021; Eidsvåg & Rosell, 2021), when deciding the rules of the play (Evaldsson, 2004), deciding the playground, deciding the playtime, setting the agenda (Lee & Recchia, 2008), deciding the roles in the play, and when they try to secure their influence and position (Eidsvåg & Rosell, 2021). Studies have also shown that when children use power, they use the strategies of commanding, excluding, disapproving, giving permission (Cederborg, 2021; Kyratzis & Marx, 2001), using the body, using objects, condemning, appreciating, rewarding (Cederborg, 2021), intimidation, exhibiting aggressive behavior (Hawley, 1999; Whittington, 2001), exhibiting prosocial behavior (Hawley, 1999), and using information (Whittington, 2000).

Power is a relational phenomenon inherent in preschool children's social relationships (Eidsvåg & Rosell, 2021; Whittington, 2001). Ignoring this phenomenon leads to a poor understanding of social relations (Lee & Recchia, 2008; Whittington, 2001). Because the variables related to power among children closely affect peer relations (Gülay, 2009). In addition, children can use power positively or negatively (Eidsvåg & Rosell, 2021; Hawley, 1999; Whittington, 2000), and children can experience it in a natural or normal manner (Eidsvåg & Rosell, 2021). The relationships that children establish in the preschool period have an important effect on how children will use power in later years (Hawley, 1999; Mostow, 2004). This will affect the relationships that children will form later on in all areas of their life. Since power structures are an important part of our identities (Yuval-Davis, 2011), children exposed to negative power use are at risk of interpreting this experience as an integral part of their identities (Eidsvåg & Rosell, 2021). For this reason, it is important to determine the resources of power used by preschool children and to take immediate measures for children who use negative power sources. There is a lack of an assessment tool in the field to investigate the resources of power that preschool children use against their peers. In the literature, children's power relations have been investigated with qualitative approaches using interview and observation techniques (Cederborg, 2021; Eidsvåg & Rosell, 2021; Gündoğdu & Yaşar, 2021). These studies were carried out with fewer participants. In order to reveal the power relations of more children, measurement tools are needed. For this reason, there is a need to develop assessment tools to determine the resources of power that children use against their peers.

METHOD

This study aims to develop “The Inventory of Resources of Power Used by Pre-School Children” (IRoPUPC) to determine the resources of power used by preschool children, as well as to conduct validity and reliability studies of the inventory. This section includes participant information, the development process of the inventory, the data collection process and the data analysis process.

Participants

The participants consisted of teachers of 346 children attending pre-school education in different regions of Turkey in the 2021-2022 academic years. Participants were selected through maximum variation sampling method. With the maximum sampling, children from different regions, different genders and different age groups were included in the study. It was tried to represent Türkiye in general with participants from different regions. The fact that the genders of the children were close to each other prevented the differentiation by gender. The ratio of children's age groups to each other is similar to the age groups of children receiving pre-school education in Turkey. According to the Ministry of National Education (2022), there is a schooling rate of 15% at age 3, 36% at age 4, and 98% at age 5. The children's teachers filled out the form during the data collection process. It is stated in the literature that, in order to perform factor analysis in inventory development studies, the sample size should be between 5 and 10 times the number of items in the inventory (Kline, 2005; Tavşancıl, 2014) or at least 300 (Çokluk et al., 2018). The participants in our study meet these criteria. Demographic information of the participants are presented in Table 1.

Table 1. Demographic Information of the Participants

Variable	Category	f	%
Sex	Female	186	53.8
	Male	160	46.2
Age	3	17	4.9
	4	75	21.7
	5	254	73.4

Geographical Region	Central Anatolia	116	33.5
	Mediterranean	99	28.6
	Southeastern Anatolia	69	19.9
	Aegean	28	8.1
	Eastern Anatolia	23	6.6
	Marmara	6	1.7
	Black Sea	5	1.4
	Total	346	100

As seen in Table 1, 53.8% (n=186) of the children were girl and 46.2% (n=160) were boy. 73.4% (n=254) of the children were 5 years old, 21.7% were 4 (n=75) and 4.9% (n=17) were 3 years old. In terms of geographical regions, it is seen that of the participants 33.5% (n=116) are in the Central Anatolia Region, 28.6% (n=99) are in the Mediterranean Region, 19.9% (n=69) are in the Southeastern Anatolia Region, 8.1% (n=28) are in the Aegean Region, 6.6% (n=23) are in the Eastern Anatolia Region, 1.7% (n=6) are in the Marmara Region and 1.4% (n=5) are in the Black Sea Region.

The Development Process of the Inventory

A valid and reliable inventory was developed through a systematic process to be used to assess the resources of power used by preschool children. As a first step, a literature review was conducted. In addition, opinions were received from 116 preschool teachers working in different provinces of Turkey on the subject. Participants were asked the following question: What strategies do the children in your class use against their peers to achieve the things they want? (What do they do to achieve the things they want?). In this context, a pool of 60 items was created. The content validity of IROPUPC was ensured by consulting expert opinions. For this, the draft version of IROPUPC was submitted to the opinion of three experts in the field of pre-school education and an expert in the field of measurement and evaluation. In terms of face validity, the draft version of IROPUPC was examined by an expert in the field of Turkish Education. Upon receiving feedback from the experts, items that mean the same thing, that do not assess the desired features and that are considered problematic were removed from the form (14 items in total). In line with the suggested corrections, the draft form of the 46-item IROPUPC was created. Five-point Likert-type ratings such as “Always”, “Often”, “Sometimes”, “Rarely” and “Never” were used in the draft version of IROPUPC. There is no reverse coded negative item in the inventory.

Data Collection Process

The data collection started in December 2021 and lasted approximately four weeks. The data were collected approximately three months after the start of the education in order for the teachers to get to know the children and have information about them. IROPUPC was created as an online form. A link was sent to preschool teachers to fill out the form online. The form contained information about the study. In addition, it was stated that participation in the study required voluntariness and consent forms were obtained from each teacher. The time to fill out the form per participant was approximately 10 minutes. The researcher reached preschool teachers in different regions through school contact information. First of all, school administrators were called by phone and informed about the research. After the approval of the school administrators, pre-school teachers were contacted by phone and informed about the research. Teachers were asked to fill out the form (as many times as they wanted) for each of the children in their class. A total of 112 teachers filled out forms for 367 children. This corresponds to approximately 3.28 children for each teacher.

Data Analysis Process

Before analyzing the collected data, missing and incorrectly filled data were examined and outliers were determined. As a result of the examination, it was revealed that there were no missing or erroneous data, but the data of 21 participants were outliers (Z-score greater than 3 and less than -3). In this context, the data of these 21 participants were excluded from the analysis due to being outliers. Kaiser-Meyer-Olkin (KMO) coefficient and Bartlett Sphericity test were used to decide whether the data were suitable for EFA (Çokluk et al., 2018). EFA was performed using SPSS 22 package software. For CFA, LISREL 8.7 software was used.

FINDINGS

Findings Regarding Validity

The construct validity of the items that compose the IROPUPC was test by EFA. According to Kaiser (1974), a KMO value higher than .90 indicates an excellent construct. The KMO value of 0.909 obtained as a

result of the analysis shows that the sample meets the conditions for conducting a factor analysis. The result of the Bartlett test was found significant ($\chi^2 = 4621.267$; $p = .000$). The obtained results show that the data has a multivariate normal distribution and are suitable for factor analysis.

Factor structure was analyzed using principal component analysis and varimax rotation method. Principal component analysis is used to reduce the number of variables, simplify complex data (Landau & Everitt, 2004) and to determine the size under which items will be grouped (Çokluk et al., 2018). Varimax rotation method is the most common axis rotation method in social sciences (Izquierdo et al., 2014) and it is used for determining the number of factors. This method was used assuming that the factors are not related to each other (Seçer, 2017). Because power resources have different characteristics and differ from each other. Factors with an eigenvalue above one were evaluated as significant in the EFA analysis. (Büyüköztürk, 2014). Factor loadings should be above .32 and the items should not overlap at the level of .10 (Tabachnick & Fidell, 2001). According to these criteria, a four-factor structure consisting of 21 items was obtained. This structure is also seen in the scree plot graph (Figure 1).

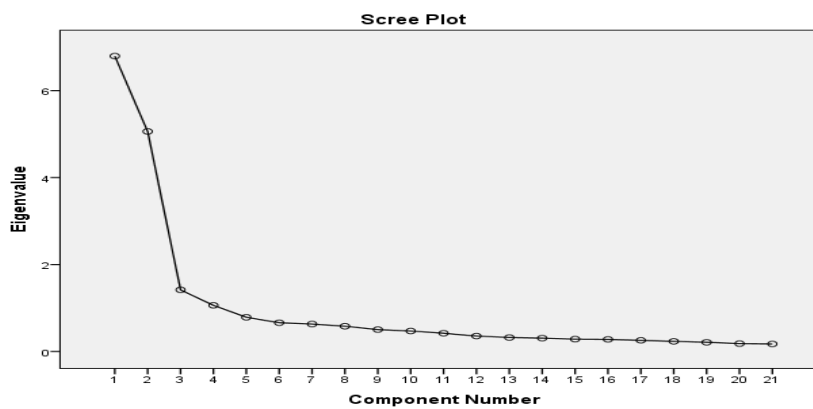


Figure 1. Scree Plot

The inventory explained 68.26% of the total variance. Tavşancıl (2014) state that a total variance rate between 40% and 60% is sufficient for studies in the field of social sciences. Therefore the total explained variance ratio obtained in the study is sufficient. Eigenvalues, percentages of variance explained, and percentages of total variances of the factors revealed in principal components analysis and varimax rotation method are shown in Table 2.

Table 2. Principal Components Analysis Results

Factor	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	Variance Explained (%)	Cumulative Variance Percentage	Total	Variance Explained (%)	Cumulative Variance Percentage
1	6.794	32.353	32.353	4.485	21.359	21.359
2	5.060	24.097	56.450	4.390	20.905	42.264
3	1.418	6.751	63.202	2.845	13.547	55.811
4	1.062	5.056	68.257	2.614	12.447	68.257

As it can be seen in Table 2, there are four factors with eigenvalues above 1. The inventory had four factors and explained 68.26% of the total variance. The total variance explanation rates of the factors are 21.36%, 20.91%, 13.55% and 12.45% respectively. The factor loadings that emerged in the principal component analysis of the items in the inventory are presented in Table 3.

Table 3. IRoPUPC Item Factor Loadings

Items	Factors			
	1	2	3	4
17 By using his speaking ability, he makes his wishes come true.	.857			
18 Makes wishes come true by using inspiring behaviors.	.796			
19 Thanks to his personal abilities, he makes his wishes come true.	.786			
14 By using the leadership feature, he makes his wishes come true.	.782			
16 His wishes come true because he is loved by most children.	.777			
26 By using his persuasion ability, he makes his wishes come true.	.724			
34 Makes his wishes come true by oppression.		.836	.320	
29 Makes his wishes come true by threatening.		.830		
32 Makes your wishes come true by disrupting the play.		.805		
8 Makes his wishes come true by giving a stern warning.		.796		
31 He/She makes her wishes come true by using violence.		.795		
27 It ensures the realization of their wishes by excluding them from the group of friends.		.748		
43 Makes his wishes come true by making emotional pressure.			.817	
42 He makes his wishes come true by showing his wishes small.			.758	
40 Makes their wishes come true by complaining to the teacher.			.703	
39 Crying makes his wishes come true.			.616	
36 By being distant and cold, he makes his wishes come true.		.360	.595	
2 By using the rewards, he makes his wishes come true.	.352			.832
3 By using the expressions of appreciation, he makes his wishes come true.	.484			.738
1 By sharing his toy, he makes his wishes come true.				.710
5 He makes his wishes come true by saying that he will be friends with her.	.387			.662

As it can be seen in Table 3, a four-factor structure consisting of 21 items was obtained as a result of EFA. The first and second factors consist of six items, the third factor consists of five items and the fourth factor consists of four items. The loadings of the first factor vary between .72 and .86, the loadings of the second factor vary between .75 and .84, the loadings of the third factor vary between .60 and .82 and the loadings of the fourth factor vary between .66 and .83. The results show that the items in the inventory strongly represent the dimension to which they belong (Tabachnick & Fidell, 2001).

CFA was performed using Lisrel 8.7 software to test whether the four-factor structure of IRoPUPC resulting from EFA was confirmed. χ^2/sd , RMSEA, GFI, AGFI, NFI, SRMR, CFI, IFI, NNFI, RFI, PNFI and PGFI values were calculated to test whether the model was a fit for CFA. The obtained fit indices are presented in Table 4.

Table 4. Fit Indices in the Confirmatory Factor Analysis

Model Indices	Fit	Good	Acceptable	Obtained	Conclusion	References
χ^2/sd		$\chi^2/sd \leq 3$	$\chi^2/sd \leq 5$	2.296	Good Fit	Kline, 2005; Sümer, 2000; Çokluk et al., 2018
RMSEA		$RMSEA \leq .05$	$RMSEA \leq .08$	0.061	Acceptable Fit	Schumacher & Lomax, 2004
GFI		$.90 \leq GFI$	$.85 \leq GFI$	0.90	Good Fit	Hooper, Caughlan & Mullen, 2008; Schumacher & Lomax, 2004
AGFI		$.90 \leq AGFI$	$.85 \leq AGFI$	0.87	Acceptable Fit	Schumacher & Lomax, 2004
NFI		$.95 \leq NFI$	$.90 \leq NFI$	0.96	Good Fit	Schumacher & Lomax, 2004
SRMR		$SRMR \leq .05$	$SRMR \leq .08$	0.072	Acceptable Fit	Hu & Bentler, 1999
CFI		$.95 \leq CFI$	$.90 \leq CFI$	0.98	Good Fit	Hu & Bentler, 1999; Sümer, 2000; Thompson, 2004
IFI		$.95 \leq IFI$	$.90 \leq IFI$	0.98	Good Fit	Schumacher & Lomax, 2004
NNFI		$.95 \leq NNFI$	$.90 \leq NNFI$	0.97	Good Fit	Schumacher & Lomax, 2004; Sümer, 2000; Tabachnick & Fidell, 2001; Thompson, 2004
RFI		$.95 \leq RFI$	$.90 \leq RFI$	0.95	Good Fit	Schumacher & Lomax, 2004

$\chi^2=413.20$, $sd=180$, 90 Percent Confidence Interval for RMSEA = (0.054; 0.069)

As it can be seen in Table 4, values of $\chi^2/sd = 2.296$, GFI = .90, NFI = .96, CFI = .98, IFI = .98, NNFI = .97 and RFI = .95 are considered as a good fit and the values of RMSEA = .061, AGFI = .87 and SRMR = .072

are considered as an acceptable fit. Therefore, it can be said that the four-factor model obtained from CFA has a sufficient level of fit. As a result, the four-factor structure of the IROPUPC consisting of 21 items was confirmed. The path diagram of the confirmatory factor analysis and the standardized factor loads are presented in Figure 2.

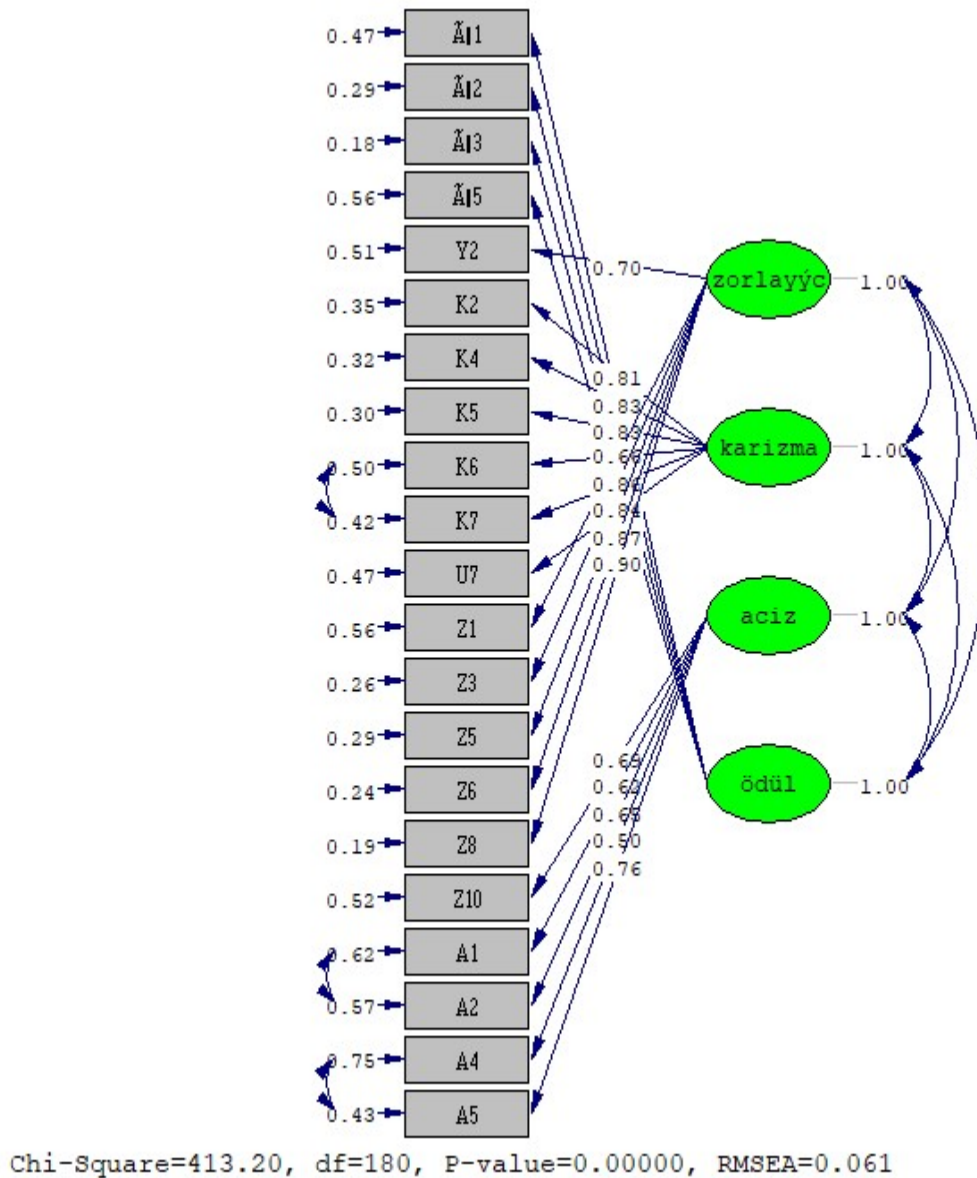


Figure 2. Path Diagram

Findings Regarding Reliability

Cronbach Alpha (α) coefficient, Spearman-Brown coefficient and Guttman Split-Half coefficient were calculated to test the reliability of IROPUPC. The obtained values are given in Table 5.

Table 5. Reliability Analysis Results of IROPUPC

Factors	Item Number	Cronbach's Alpha	Spearman-Brown	Guttman Split-Half
Charisma power	6	.904	.882	.878
Coercive power	6	.915	.911	.911
Helplessness power	5	.804	.813	.786
Reward power	4	.861	.862	.862

As it can be seen in Table 5, the Cronbach Alpha coefficients of the factors are .90, .92, .80 and .86 respectively. The split-half reliability of the measurements for each factor was calculated using the Spearman-Brown coefficient and the Guttman Split-Half coefficient formula. The split-half reliability coefficients were

found to be above .70. A reliability coefficient above .70 indicates that the measurements are reliable (Büyükoztürk, 2014). Therefore, it can be said that the reliability coefficients of the inventory are sufficient.

Item Analysis

The item-total correlation was calculated to determine the discrimination levels of the items in the IROPUPC. The values obtained in the item analysis are given in Table 6.

Table 6. Reliability Analysis Results of IROPUPC

Factors	X	SD	Item Total Correlation	Cronbach's Alpha If Item Deleted	27% Lower Average n=94	27% Upper Average n=94	p
Factor 1							
17	2.99	1.22	.744	.887	1.54	4.51	.000
18	2.97	1.13	.762	.884	1.42	4.12	.000
19	3.23	1.23	.796	.878	1.73	4.23	.000
14	2.71	1.10	.706	.892	1.39	4.31	.000
16	3.03	1.04	.742	.887	1.52	4.20	.000
26	3.24	1.15	.680	.896	1.65	4.39	.000
Factor 2							
34	2.00	1.10	.651	.916	1.00	3.37	.000
29	1.62	.97	.823	.892	1.00	2.97	.000
32	1.58	.95	.785	.897	1.00	3.29	.000
8	1.79	1.06	.802	.894	1.00	3.73	.000
31	1.87	1.05	.852	.887	1.00	2.88	.000
27	2.23	1.18	.687	.912	1.00	3.54	.000
Factor 3							
43	2.02	1.19	.543	.783	1.00	3.67	.000
42	2.70	1.04	.613	.759	1.00	3.50	.000
40	2.10	1.05	.525	.785	1.49	3.98	.000
39	2.28	1.09	.724	.722	1.00	3.66	.000
36	2.10	1.04	.547	.778	1.00	3.48	.000
Factor 4							
2	3.47	1.01	.656	.844	1.71	4.31	.000
3	3.17	1.08	.793	.788	1.67	4.42	.000
1	3.23	1.15	.792	.787	2.22	4.48	.000
5	3.18	1.11	.603	.866	1.69	4.36	.000

As it can be seen in Table 7, the results regarding the item-total correlation ranged from .68 to .80 for factor 1, .65 to .85 for factor 2, .53 to .72 for factor 3, and .60 to .79 for factor 4. Items with a value of .30 and above are considered sufficient in terms of distinguishing the feature to be measured (Büyükoztürk, 2014). On the other hand, the scores of the participants in the lower 27% group and the upper 27% group are statistically significant at the level of .001 according to the independent groups t-test results. These results showed that all of the items in the inventory have adequate levels of discrimination.

DISCUSSION & CONCLUSION

The present study aimed to develop an inventory to determine the resources of power used by preschool children. For this purpose, a literature search was made, and 116 preschool teachers' opinions on the subject were taken. In this context, a pool consisting of 60 items was prepared. The prepared item pool was sent to academicians in the field of pre-school education, measurement and evaluation, and Turkish, and expert opinion was obtained. In this way, a form with 46 items was created and applied to the teachers of 346 children. According to Tabachnick and Fidell (2001), the Bartlett value must be significant and the KMO value must be greater than .60 in order for the data to be suitable for factor analysis. These results show that the data are suitable for EFA.

In the EFA, it was found that the inventory consisting of 21 items had four factors. The items collected in the factors were named considering their contents and considering the literature. The first factor is charismatic power (six items), the second factor is coercive power (six items), the third factor is helplessness power (five items), and the fourth factor is reward power (four items). It was seen that these factors explained 21.36%, 20.91%,

13.55% and 12.45% of the total variance, respectively. The total variance explained was 68.26%, which is considered sufficient in the literature (Tavşancıl, 2014). Since the factor loads of 21 items in the inventory are .60 and above, the construct validity of the inventory is quite high (Tabachnick & Fidell, 2001).

CFA was applied to the 21-item structure of the inventory, which was collected under four factors as a result of EFA. As a result of DFA, the RMSEA value was found to be 0.061 and $\chi^2/sd = 2.296$. This value indicates an acceptable fit (Schumacher & Lomax, 2004). Goodness of fit values obtained as a result of CFA show that the data obtained in the study have a good fit and CFA is statistically significant and valid. Cronbach's alpha internal consistency coefficients of the factors were found to be 0.90, 0.92, 0.80 and 0.86 respectively. Büyüköztürk (2014) state that a Cronbach's alpha value of .70 and above indicates that the measurements are reliable. Item analysis was performed to determine the predictive power of the items in the inventory and to determine their discrimination levels. Within the scope of item analysis, item-total correlation and 27% lower-upper group comparisons were examined. It was concluded that the t values of the upper and lower 27% groups of each item in the inventory were significant. This result is evidence of item discrimination (Büyüköztürk, 2014). High item coefficient values and high reliability coefficient values obtained as a result of the analyzes show that the internal consistency of the inventory is high. The results obtained in all analyzes show that “The Inventory of Resources of Power Used by Pre-School Children” is a valid and reliable assessment tool. A full score cannot be obtained from the inventory. According to the factors, it is revealed which power sources children use more.

An inventory developed to measure the resources of power used by preschool children has not been found in the literature. In the literature review, only a study on power relations of preschool children in Turkey (Gündoğdu & Yaşar, 2021) was found. It is thought that this inventory developed within this framework will fill the gap in the literature. This inventory, which will determine the power sources of children, will lead the studies to be done on this subject. Children can use positive and negative power sources. With the inventory, the power sources used by children can be determined and children who use positive power resources can be supported, while initiatives can be taken to prevent the use of negative power resources. The inventory can be used to determine the resources of power used by preschool children after the validity and reliability study that is conducted by the researchers.

Statements of Publication Ethics

Ethical approval, numbered 2021.09.310 and dated 25.10.2021, was obtained from Nevşehir Hacı Bektaş Veli University Ethics Committee for the study.

Conflict of Interest

Author declares no competing interests.

REFERENCES

- Atış-Akyol, N., & Güney-Kahraman, N. (2021). Validity and reliability study of teacher's checklist of children's peer relationships. *Cumhuriyet International Journal of Education*, 10(3), 1066-1084. <http://dx.doi.org/10.30703/cije.811946>
- Bayrak, S. (2001). Power and power management in organizations as a neglected subject-II. *Süleyman Demirel Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 6(1), 23-42.
- Beyazkürk, D., Anlıak, Ş., & Dinçer, Ç. (2007). Peer relations and friendship in childhood. *Eurasian Journal of Educational Research*, 26, 13-26.
- Bilgin, N. (1988). *Sosyal psikolojiye giriş [Introduction to social psychology]*. Ege University Faculty of Letters Publications.
- Büyüköztürk, Ş. (2014). *Sosyal bilimler için veri analizi el kitabı [Manual of data analysis for social sciences]*. Pegem Academy Publishing.
- Can, A. (2013). SPSS ile nicel veri analizi [*Quantitative data analysis with SPSS*]. Pegem A Publishing.
- Cederborg, A. C. (2019). Power relations in pre-school children's play. *Early Child Development and Care*, 191(4), 612-623. <https://doi.org/10.1080/03004430.2019.1637342>

- Çetin, F., Bilbay, A. A., & Kaymak, D. A. (2003). *Çocuklarda sosyal beceri [Social skills in children]*. Epsilon Publishing.
- Çokluk, Ö., Şekercioğlu, G., & Büyüköztürk, Ş. (2018). *Sosyal bilimler için çok değişkenli istatistik: SPSS ve LISREL uygulamaları [Multivariate statistics for social sciences: SPSS and LISREL applications]*. Pegem Academy Publishing.
- Dahl, R. A. (2001). *Demokrasi üstüne [On democracy]*. (B. Kadioğlu, trans.). Phoenix Publishing.
- Dinçer, Ç., Baş, T., Teke, N., Aydın, E., İpek, S., & Göktaş, İ. (2019). Evaluation of interpersonal problem solving and social skills and peer relations in early childhood. *Bolu Abant İzzet Baysal University Journal of Faculty of Education*, 19(3), 882-900. <https://doi.org/10.17240/aibuefd.2019.19.49440-478714>
- Eidsvåg, G. M., & Rosell, Y. (2021). The power of belonging: Interactions and values in children's group play in early childhood programs. *International Journal of Early Childhood*, 53(1), 83-99. <https://doi.org/10.1007/s13158-021-00284-w>
- Evaldsson, A. C. (2004). Shifting moral stances: Morality and gender in same-sex and cross-sex game interaction. *Research on Language and Social Interaction*, 37(3), 331-363. https://doi.org/10.1207/s15327973rlsi3703_3
- Flouri, E., & Sarmadi, Z. (2016). Prosocial behavior and childhood trajectories of internalizing and externalizing problems: The role of neighborhood and school contexts. *Developmental Psychology*, 52(2), 253-258. <https://doi.org/10.1037/dev0000076>
- French, J. P., & Raven, B. (1959). The bases of social power. In D. Cartwright (Ed.), *Studies in social power* (150-167). Institute for Social Research.
- Gülay, H. (2009). Peer relationships in preschool years. *Balıkesir University The Journal of Social Sciences Institute*, 12(22), 82-93.
- Gündoğdu, S., & Yaşar, M. (2021). An investigation of in-class power relations between children in preschool. *Ondokuz Mayıs University Journal of Education Faculty*, 40(1), 122-141. <https://doi.org/10.7822/omuefd.790496>
- Hawley, P. H. (1999). The ontogenesis of social dominance: A strategy-based evolutionary perspective. *Developmental Review*, 19(1), 97-132. <https://doi.org/10.1006/drev.1998.0470>
- Hawley, P. H., Johnson, S. E., Mize, J. A., & McNamara, K. A. (2007). Physical attractiveness in preschoolers: Relationships with power, status, aggression and social skills. *Journal of School Psychology*, 45(5), 499-521. <https://doi.org/10.1016/j.jsp.2007.04.001>
- Hay, D. F., Caplan, M., & Nash, A. (2009). The beginnings of peer relations. In K. H. Rubin, W. M. Bukowski & B. Laursen (Eds), *Handbook of peer interactions, relationships, and groups* (121-142). Guilford Publications.
- Healy, K. L., Sanders, M. R., & Iyer, A. (2015). Parenting practices, children's peer relationships and being bullied at school. *Journal of Child and Family Studies*, 24(1), 127-140. <https://doi.org/10.1007/s10826-013-9820-4>
- Hitt, M. A., Black, J. S., & Porter, L. W. (2005). *Management*. Pearson Prentice Hall.
- Hooper, D., Coughlan, J., & Mullen, M. R. (2008). Structural equation modelling: Guidelines for determining model fit. *Electronic Journal of Business Research Methods*, 6(1), 53-60.
- Hoy, W. K., & Miskel, C. G. (2010). *Eğitim yönetimi: Teori, araştırma ve uygulama [Educational administration: Theory, research and practice]* (S. Turan, Ed.). Nobel Publishing.
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indices in covariance structure analysis: Conventional criteria versus new alternatives. *Structural equation modeling: A multidisciplinary journal*, 6(1), 1-55. <https://doi.org/10.1080/10705519909540118>

- Huber, L., Plötner, M., & Schmitz, J. (2019). Social competence and psychopathology in early childhood: A systematic review. *European Child & Adolescent Psychiatry*, 28, 443-459. <https://doi.org/10.1007/s00787-018-1152-x>
- Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika*, 39(1), 31-36.
- Kline, P. (2005). *An essay guide to factor analysis*. Routledge.
- Kyratzis, A., & Marx, T. (2001). Preschoolers' communicative competence: Register shift in the marking of power in different contexts of friendship group talk. *First Language*, 21(63), 387-429. <https://doi.org/10.1177/014272370102106308>
- Landau, S., & Everitt, B. S. (2004). *A handbook of statistical analyses using SPSS*. Chapman & Hall/CRC Press LLC.
- Lee, Y. J., & Recchia, S. L. (2008). Who's the boss?" young children's power and influence in an early childhood classroom. *Early Childhood Research & Practice*, 10(1), 1-15.
- Luczynski, K. C., & Hanley, G. P. (2013). Prevention of problem behavior by teaching functional communication and self-control skills to preschoolers. *Journal of Applied Behavior Analysis*, 46(2), 355-368.
- Mastow, A. J. (2004). *Longitudinal and concurrent prediction of peer acceptance: Direct and indirect effects of emotional, cognitive and behavioral factors*. Doctorate Dissertation, University of Delaware.
- Ministry of National Education (MNE) (2022). Age 5 Schooling Rate Increased From 65 Percent to 98 Percent. <https://www.meb.gov.tr/5-yas-okullasma-orani-yuzde-65ten-yuzde-98e-yukseldi/haber/28189/tr>
- Nærland, T., & Martinsen, H. (2011). Child-child interactions and positive social focus among preschool children. *Early Child Development and Care*, 181(3), 361-370. <https://doi.org/10.1080/03004430903387701>
- Reitz, A. K., Zimmermann, J., Hutteman, R., Specht, J., & Neyer, F. J. (2014). How peers make a difference: The role of peer groups and peer relationships in personality development. *European Journal of Personality*, 28, 279-288. <https://doi.org/10.1002/per.1965>
- Schumacker, R. E., & Lomax, R. G. (2004) *A beginner's guide to structural equation modeling*. Lawrence Erlbaum.
- Schwartz, D., Dodge, D. A., Petit, G. S., & Bates, J. E. (2000). Friendship as a moderating factor in the pathway between early harsh home environment and later victimization in the peer group. *Developmental Psychology*, 36(5), 646-662. <https://doi.org/10.1037/0012-1649.36.5.646>
- Seçer, İ. (2017). *SPSS ve LISREL ile pratik veri analizi [Practical data analysis with SPSS and LISREL]*. Anı Publishing.
- Skånfors, L. (2010). Tokens, peer context and mobility in preschool children's position work. *Nordic Early Childhood Education Research*, 3(2), 41-52. <https://doi.org/10.7577/nbf.256>
- Song, S. Y. (2006). *The role of protective peers and positive peer relationships in school bullying: How can peers help?* Doctorate Dissertation, University of Nebraska.
- Sümer, N. (2000). Structural equation modeling: basic concepts and applications. *Türk Psikoloji Yazıları*, 3(6), 49-74.
- Şişman, M. (2011). *Örgütler ve kültürler [Organizations and cultures.]*. Pegem Publishing.
- Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate statistics*. Allyn and Bacon.
- Tavşancıl, E. (2014), *Tutumların ölçülmesi ve spss ile veri analizi [Measuring attitudes and data analysis with spss]*. Nobel Publishing.
- Thompson, B. (2004). *Exploratory and confirmatory factor analysis: Understanding concepts and applications*. American Psychological Association.
- Vuorisalo, M., Rutanen, N., & Raittila, R. (2015). Constructing relational space in early childhood education. *Early Years*, 35(1), 67-79. <https://doi.org/10.1080/09575146.2014.985289>

- Walker, S. (2009). Sociometric stability and the behavioral correlates of peer acceptance in early childhood. *The Journal of Genetic Psychology, 170*(4), 339-358. <https://doi.org/10.1080/00221320903218364>
- Weber, M. (1996). *Sosyoloji yazıları [sociology writings]*. (T. Parla, Trans.). İletişim Publishing.
- Whittington, V. (2000). *Children's exercise of interpersonal power in the primary classroom*. Doctorate Dissertation, The Flinders University of South Australia.
- Whittington, V. (2001). Is interpersonal power exercised in groups of early school children in the classroom context? *Early Child Development and Care, 170*(1), 77-92. <https://doi.org/10.1080/0300443011700107>
- Yılmaz, K., & Altinkurt, Y. (2012). Relationship between school administrators' power sources and teachers' job satisfaction. *Kastamonu Education Journal, 20*(2), 385-402.
- Yuval-Davis, N. (2011). *The Politics of belonging*. Sage Publishing.