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A survey on the care and education leadership of private kindergarten directors in China: From the perspective of the post epidemic era

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Abstract

Care and education leadership is the core of kindergarten directors' leadership to promote the professional development of kindergarten teachers. According to the relevant literature on kindergarten directors' leadership, there are very few studies focusing on care and educational leadership. Therefore, this study is based on the professional requirements specified by the *Professional Standards for Kindergarten Directors* and compiles the "scale of care and education leadership for private kindergarten directors". After the project analysis, exploratory factor analysis, confirmatory factor analysis, reliability analysis and other tests, the scale has good reliability and validity. Then, 461 directors among private kindergartens in Hebei Province were investigated on this scale. The survey found that the overall level of care and education leadership among private kindergarten directors is good but the development is uneven. In addition, the development of the care and education leadership level of the private kindergarten directors shows an increasing trend with age. The higher the educational level, the higher the care and education leadership level. The kindergarten directors who have served for 6-10 years have the highest level of leadership in care and education. There are significant differences in the division of administrative regions where the kindergartens are located. The score of urban kindergarten directors is the highest followed by county directors and the score of rural kindergarten directors is the lowest.

Keywords: Care and education leadership, Kindergarten director, Private kindergarten, Safety care leadership, Teacher's guidance leadership, Teaching and research leadership.

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1. Introduction

The coronavirus has profoundly affected the development of the social economy, culture, education and other industries. It has also brought tremendous impact and changed people's lives. We are forced to enter the "post epidemic era". "Post epidemic era" refers to the era after the coronavirus epidemic. However, in the post-epidemic era, the epidemic

situation may not disappear completely but fluctuate from time to time. It flows back from foreign countries and has seasonal attacks that have a profound impact on all aspects of human society so it is impossible to completely recover as before [1]. As far as the private kindergarten industry is concerned, the impact of the epidemic can be described as a huge wave. According to the survey of the China Education Investment Research Institute, nearly 60% of private kindergartens surveyed could not support normal operation and only 2.7% could support Meng [2].

In the face of the shortage of funds, 44.3% of the kindergarten directors turned to bank loans and 19.1% of the kindergarten directors turned to transfers. The former president of the China Private Education Association and the second chairman of the Preschool Education Professional Committee of the China Private Education Association believed that more than half of the private kindergartens would be in danger of closing down at any time without the timely assistance of the state. In addition, the Preschool Education Professional Committee carried out its work from May 25 to June 3, 2022. A total of 1034 valid questionnaires were collected involving private kindergartens in 28 provinces, municipalities and autonomous regions across the country.

The survey found that since the second quarter of 2022 as COVID-19 has become more frequent throughout the country, private kindergartens in many places across the country have successively taken various measures such as stopping kindergartens and postponing the opening of schools to cope with and prevent the continued spread of the epidemic and to maximize the protection of the health and safety of teachers, students and families. However, due to various reasons, the various national and local policies to help and rescue the epidemic have failed to extend to the field of private kindergartens which has also led to a serious survival crisis for many private kindergartens [3]. It can be seen that the advent of the "post-epidemic era" is a reshuffle of private kindergartens. In addition, malignant events such as "child abuse", "death" and "serious primary school" have occurred from time to time in private kindergartens which have caused social nerves and caused public discussion and indignation. Negative public opinions such as "violating the law of children's physical and mental development" and "lax supervision" have increased people's distrust of the care and education quality, management level of private kindergartens. Under such circumstances, the directors of private kindergartens ensure the health of children, improve the quality of care and education and lead the professional development of preschool teachers.

According to the relevant literature on "kindergarten directors' leadership", preschool educators generally believe that leadership is a crucial factor in seeking to improve the quality of preschool education services and make the community recognize the professionalism of preschool education service personnel [4]. Scholars have verified the importance of kindergarten directors' leadership from both theoretical and empirical perspectives. First of all, the leadership of kindergarten directors is an important factor in improving the care and quality of preschool education. The leader of a preschool education institution is the "gatekeeper of quality" [5]. The leadership of the kindergarten directors is one of the most powerful indicators to predict the quality of the overall project of care and education [6]. It is one of the twelve unique characteristics of high-quality preschool education institutions [7].

It can influence or change the quality of education [8]. Secondly, the leadership of kindergarten directors has an important impact on children's development. The kindergarten directors' leadership is related to high-quality children's development [9]. Care and education have a positive role in promoting children's health and brain development. However, the key to these positive impacts is the leadership level of kindergarten directors [10]. Finally, effective directors' leadership is considered to be a relevant factor that helps to improve the self-esteem, job satisfaction and morale of employees, reduce stress and reduce employee burnout [11]. Therefore, kindergarten directors are not only the "professional educators" of infant development but also the "professional leaders" of teacher development and the "expert managers" of kindergarten development [12].

"Care and educational leadership" are the core of the kindergarten directors' leadership and education is the main difference between the school organization and other management organizations. The theoretical model of leadership developed by Zheng [14] includes educational leadership. However, the combination of care and education and the equal emphasis on care and education are the unique characteristics of kindergarten education. According to the relevant policies and regulations on the Chinese Mainland [15, 16], it is the professional responsibility of kindergarten directors to lead children's care and education.

Care and education leadership is divided into three dimensions: safety care leadership, teaching and research leadership and teacher guidance leadership. On this basis, the "scale of care and education leadership for private kindergarten directors" was compiled to conduct empirical research in order to explore the current situation of the care and education leadership of private kindergarten directors in the "post-epidemic era".

2. Research Methods

2.1. Study Samples

This study adopts cluster sampling and takes the directors of private kindergartens in Hebei Province as the object of investigation. In June 2022, an online survey was conducted through the management group of the education administration department for private kindergartens and the management group of colleges and related institutions that undertook the directors training project.

A total of 461 valid and 14 invalid data were collected for an effective rate of 97.0%. The demographic information of the kindergarten such as gender, age, education background and basic information is summarized as follows (see Table 1).

Table 1.

Demographic information of the survey sample and basic information of the kindergarten (N=461).

Variable	Category	Frequency	Percentage
Gender	Male	24	5.20
	Female	437	94.80
Age	29 and under	38	8.20
	30—39	198	43.00
	40—49	184	39.90
	50 and above	41	8.90
Educational level	Technical secondary school (High school)	57	12.40
	Junior or technical college	148	32.10
	Undergraduate	227	49.20
	Master or above	29	6.30
Tenure of the directors	2 and under	82	17.80
	3—5	166	36.00
	6—10	104	22.60
	10 above	109	23.60
Administrative region of the kindergarten	City	183	39.70
	County	158	34.30
	Village	120	26.00

2.2. Preparation of Scale

This study adopts the form of a questionnaire and compiles the "scale of care and education leadership for private kindergarten directors". First of all, the scale was prepared according to the professional requirements of kindergarten directors specified in the *Professional Standards for Kindergarten Principals*. Five private kindergarten directors with many years of work experience were invited to have group discussions and then the initial question of 21 items was established. Secondly, four experts in the field of pre-school education were invited to form an expert team to evaluate the initial scale item and a pre-test scale while 17 items were formed after many evaluations and modifications. Finally, after item analysis, exploratory factor analysis, reliability test, confirmatory factor analysis and other statistical analysis of the pre-test scale by SPSS 22.0 and Analysis of Moment Structures (AOMS) 26.0 statistical software (a formal scale with three dimensions and 13 items) was formed. The scale is composed of two parts: The first part is the private kindergarten directors' care and education leadership scale which contains 13 items. Link 5 point scoring is adopted, 1 represents "very inconsistent"; 2 stands for "basically nonconforming"; 3 stands for "uncertain"; 4 stands for "basically conforming" and 5 stands for "very consistent". The second part is the basic information of the survey sample, including demographic variables and relevant variables of the kindergarten. The purpose is to understand the basic situation of the kindergarten directors and provide data support for the relationship between the basic information of the survey object and the leadership of care and education.

2.3. Validity and Reliability Test of the Scale

2.3.1. Project Analysis

The critical ratio (CR) also known as the extreme value method or the extreme group comparison method is the most commonly used discriminant index for project analysis. First of all, the items on the scale are summed up and the total scores are arranged in ascending order from low to high with the first 27% as the low group and the last 27% as the high group. Then, using an independent sample, the T test was conducted for the low and high groups of the scale. According to the standard put forward by Wu [17], the standard value of the T statistic of the critical ratio is set at 3.000 and 0.01 is taken as the significance level of measurement items [17]. The statistical results of SPSS 22.0 show that all items meet the significance requirements. All items have good discrimination abilities, so they are temporarily reserved. In addition, Wu Minglong also proposed that the higher the correlation between a certain item and the total score, the higher the homogeneity of the item and the overall scale.

Table 2.

Project analysis table.

Item	Critical ratio	Pearson correlation coefficients	Item	Critical ratio	Pearson correlation coefficients	Item	Critical ratio	Pearson correlation coefficients
1	11.433***	0.750**	7	15.484***	0.733**	13	17.364***	0.794**
2	31.255***	0.728**	8	11.173***	0.732**	14	27.173***	0.881**
3	22.390***	0.828**	9	50.878***	0.785**	15	23.257***	0.884**
4	18.903***	0.815**	10	12.885***	0.727**	16	48.359***	0.938**
5	10.877***	0.546**	11	20.860***	0.881**	17	9.419***	0.701**
6	17.421***	0.675**	12	43.558***	0.906**	---	---	---
STD	≥3.000	≥0.400	STD	≥3.000	≥0.400	STD	≥3.000	≥0.400

Note: ** P ≤ 0.01; *** P ≤ 0.001.

If the correlation coefficient between the two is less than 0.400, it means that the homogeneity of the item and the overall scale are not high and it is better to delete [17]. In this study, a bivariate correlation test was carried out between the items of the scale and their corresponding total scores. It was found that the Pearson correlation coefficients were all greater than 0.4 and significantly correlated at the 0.01 level (both sides). Therefore, all items and the total score of the scale are of high homogeneity, so they are temporarily retained. The specific results of the critical ratio and the correlation coefficient are shown in Table 2.

2.3.2. Exploratory Factor Analysis

First, the KMO measure and the Bartlett's sphericity test are used to determine whether the sample is suitable for factor analysis. The research uses SPSS 22.0 to carry out KMO measurement values and the Bartlett spherical test on the scale analysis. The KMO value is 0.639. The approximate chi-square value of the Bartlett spherical test is 7257.766, the degree of freedom is 136 and the significance level is infinitely close to 0 (less than 0.001) indicating that the scale can be used for exploratory factor analysis. Secondly, SPSS 22.0 principal component analysis and the maximum variance method were used to solve the common factors and exploratory factor analysis was carried out on 17 items in the scale. Among them, the eleventh item spans two factors at the same time and the load difference between the two factors is not large, so it is deleted. The second and third items should be classified as the dimension of safety care leadership according to the dimension design but the load value on other factors is greater than 0.5, so they are deleted. Finally, the factor load and attribution of the remaining 14 items are relatively clear forming three factors: safety care leadership, teaching and research leadership and teacher guidance leadership which explain 81.241% of the contribution rate. The largest factor variance interpretation rate is 31.211% (less than 40%) which can be considered a serious common method deviation in this study (see Table 3).

Table 3.
Exploratory factor analysis.

The care and education leadership scale				
Item	Commonality	Factor load		
		Teacher guidance leadership	Teaching and research leadership	Safety care leadership
1	0.833	0.875	0.103	0.248
15	0.915	0.827	0.306	0.270
7	0.76	0.773	0.303	0.135
16	0.903	0.727	0.245	0.280
17	0.625	0.726	0.299	0.106
14	0.851	0.715	0.344	0.238
4	0.859	0.332	0.856	0.127
8	0.802	0.146	0.851	0.237
9	0.798	0.268	0.802	0.290
13	0.694	0.346	0.717	0.247
12	0.867	0.373	0.694	0.169
5	0.867	0.135	0.205	0.907
6	0.779	0.242	0.287	0.799
10	0.819	0.384	0.237	0.784
Characteristic value		4.370	4.042	2.962
Contribution rate		31.211	28.87	21.160
Cumulative contribution rate		31.211	60.081	81.241
		4.370	4.042	2.962

2.3.3. Reliability Test

This study uses SPSS 22.0 to analyze the reliability of the remaining items of the scale after the exploratory factors. The results show that the care and education leadership scale of the private kindergarten directors and three dimensions of Cronbach's α are greater than 0.8 indicating good internal consistency.

2.3.4. Analysis Confirmatory Factor

We used AMOS 26.0 to conduct confirmatory factor analysis and tested the rationality and validity of the scale structure through construct validity, convergent validity and discriminant validity.

2.3.4.1. Construct Validity Analysis

In this study, the construct validity of the scale was analyzed using three groups of statistical test scale indexes: absolute fit indices, incremental fit indices and parsimonious fit indices [18]. The research constructs a first-order three-factor structural model for the scale of care and education leadership: safety care leadership (represented by AB in the model diagram including 3 items), Teaching and research leadership (represented by JJ in the model diagram including 5 items) and teacher guidance leadership (represented by SY in the model diagram including 6 items) and uses AMOS 26.0

to analyze its structural validity. According to the MI correction prompt of AMOS 26.0 statistical software, after deleting the fourteenth item in the teacher guidance leadership, all indexes meet the requirements of the model's fitting index and the model's fitting condition is ideal, thus verifying the rationality and preciseness of the structure model of care and education leadership . In Table 4 the model is shown in Figure 1.

Table 4.
Model fit summary.

Statistical inspection quantity	CMIN/DF	RMSEA	GFI	NFI	IFI	CFI	PGFI	PNFI	PCFI
Fit criteria	<3	<0.08	>0.90	>0.90	>0.90	>0.90	>0.50	>0.50	>0.50
Care and education leadership model	2.434	0.078	0.911	0.949	0.969	0.969	0.621	0.754	0.770

Note: CMIN/DF: Chi-square degrees of freedom ratio. RMSEA: Root mean square error of approximation.
 GFI: Goodness of fit index. NFI: Normed fit index.
 IFI: Incremental fit index. CFI: comparative fit index.
 PGFI: Parsimony goodness of fit index. PNFI: Parsimony-adjusted normed fit index.
 PCFI: Parsimony comparative fit index.

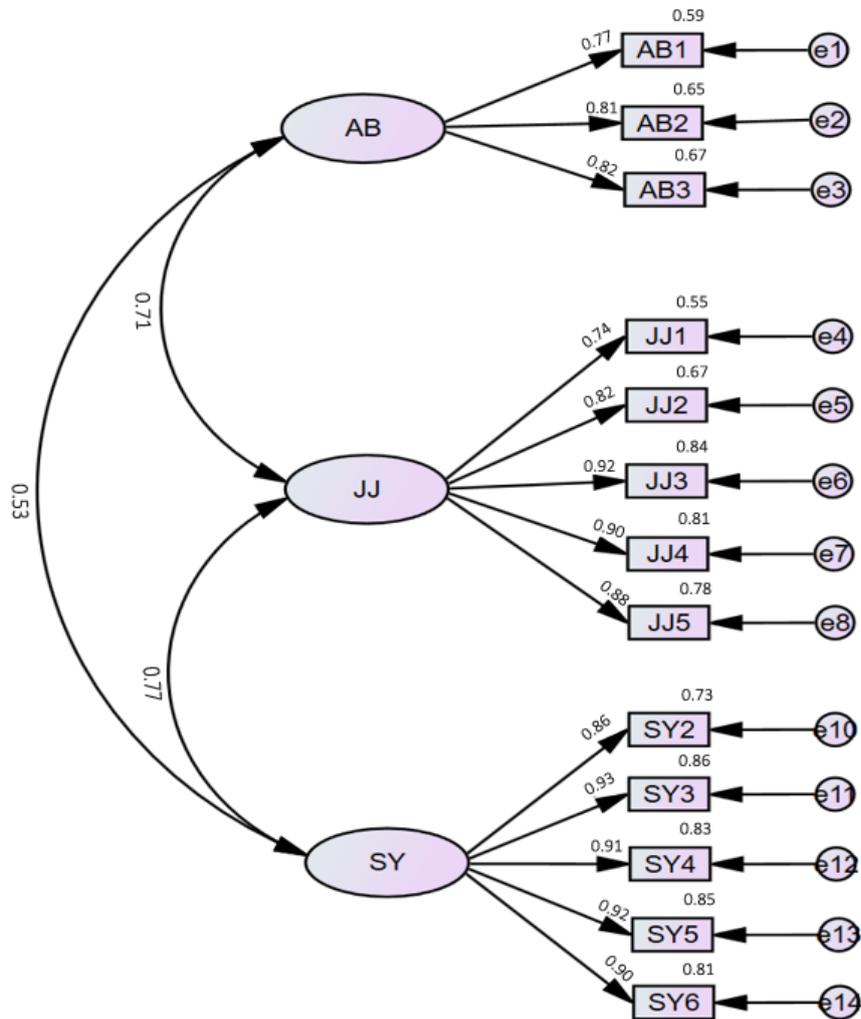


Figure 1.
The revised first-order three-factor structural model of the scale of care and education leadership.
Note: AB represents safety care leadership, including three items AB1-AB3; JJ represents teaching and research leadership, including five items JJ1-JJ5; SY represents teacher guidance and leadership, including five items SY2-SY6.

2.3.4.2. Convergent Validity Analysis

Convergent validity can be determined by AVE (Average Variance Extracted). AVE is to calculate the average variance explanatory power of each measurement item according to its dimension and evaluate the total variance explained by the dimension relative to the measurement error. Composite reliability refers to the reliability of a composite variable. If AVE exceeds 0.5 and the combined reliability (CR) is greater than 0.8, it means that the measurement of each dimension has sufficient convergent validity [18]. The research uses AMOS 26.0 to analyze the convergent validity of the scale. The statistical results show that the factor load of each item corresponding to the three dimensions is greater than 0.7 indicating that the items corresponding to the three dimensions are highly representative. In addition, the AVE of the mean

variance of the three dimensions is greater than 0.5 and the composition reliability CR is greater than 0.8 indicating that the convergent validity of the scale is ideal (see Table 5).

Table 5.
Convergent validity test results.

Dimension (Latent variable)	Item	Factor load	CR	AVE
Safety care leadership	5	0.767	0.839	0.636
	6	0.808		
	10	0.816		
Teaching and research leadership	4	0.739	0.930	0.728
	8	0.820		
	9	0.917		
	12	0.898		
	13	0.880		
Teacher guidance leadership	7	0.856	0.957	0.817
	1	0.926		
	15	0.913		
	16	0.922		
	17	0.902		

2.3.4.3. Discriminant Validity Analysis

The test of discriminant validity can be judged by comparing the root mean square of different dimensions of AVE and the correlation coefficient between dimensions. If the variance shared by the dimension and its measurement topic is greater than that shared by other dimensions, the dimension has a degree of discrimination. Therefore, if the correlation coefficient between the three dimensions is less than the AVE square root of the three dimensions, it means that the differential validity meets the analysis requirements [19]. This study uses AMOS 26.0 to analyze the differential validity of the care and education leadership scale. Table 6 shows the degree of correlation between the three dimensions (latent variables), in which the diagonal is the square root value of each latent variable AVE. It can be seen from the data that the square root value of each AVE is greater than the correlation coefficient of its row and column, indicating that the scale has good discriminant validity.

Table 6.
Discriminant validity test results.

	AVE	Safety care leadership	Teaching and research leadership	Teacher guidance leadership
Safety care leadership	0.636	0.797		
Teaching and research leadership	0.728	0.713***	0.853	
Teacher guidance leadership	0.817	0.531***	0.767***	0.904

Note: *** P ≤ 0.001; The diagonal is the square root of AVE.

After deleting the items through the above tests, the remaining 13 items were finally recoded as "scale of care and education leadership for private kindergarten directors" (see Appendix A1 for details) which has good reliability and validity.

3. Research Results

3.1. A Descriptive Statistical Analysis of the Care and Education Leadership of Private Kindergarten Directors

Using SPSS 22.0 statistical software, it is found that the average score of the care and education leadership is 4.12 and the average score of the three dimensions is 4.53, 3.84 and 4.16 which is higher than the average level (3 points). In general, the leadership level of care and education in this survey is good but there is still room for improvement especially in the dimension of teaching and research (Table 7).

3.2. Statistical Analysis of Differences in the Care and Education Leadership of Private Kindergarten Directors

SPSS 22.0 statistical software was used to carry out a one-way analysis of variance and Least Significant Difference (LSD) Post-Hoc Test on the data to explore the differences in the care and education leadership of the private kindergarten directors' age, education level, tenure and the kindergarten's administrative region.

Table 7.
Statistics of the current situation of the care and education leadership of private kindergarten directors (N=461).

Dimension	Number of items	Minimum	Maximum	Average
Safety care leadership	3	1	5	4.53
Teaching and research leadership	5	1	5	3.84
Teacher guidance leadership	5	1	5	4.16
Scale of care and education leadership	13	1	5	4.12

3.2.1. Analysis of the Differences in the Age and Educational Level of the Private Kindergarten Directors

There are significant differences in the care and education leadership of private kindergarten directors in terms of demographic variables. Specifically, in terms of age classification variables, the scores of kindergarten directors' aged 29 and below are significantly lower than those of the other three age stages in terms of the dimension of safety care leadership. In terms of teacher guidance leadership, teaching and research leadership, the scores of principals aged 40-49, 50 and above are significantly higher than those of principals aged 30-39, 29 and below. In the variable of education level classification, the higher the education level of the directors, the higher the score of the care and education leadership (see [Table 8](#)).

3.2.2. Analysis of the Differences in the Tenure of the Directors and the Kindergartens' Administrative Region

In the classification variables of tenure, the directors who have served for more than 10 years scored significantly higher than the other directors. In general, the level of directors who have served for more than 6 years has shown rapid development but the level of directors who have served for more than 10 years has shown a downward trend compared with those who have served for 6-10 years. Among the administrative region variables in which the kindergarten is located, the care and education leadership level of the city directors is the highest, the level of the county directors is middle and the level of the rural directors is the lowest.

4. Discussion

Care and education leadership are the core of the kindergarten directors. First of all, children's "safety" and "care" are crucial to the development of private kindergartens and are the foundation of their establishment. The occurrence of any accident and the failure of any childcare details may cause negative emotions among children's parents, negative comments from society and fatal blows to private kindergartens. Therefore, the private kindergarten directors put care at the top of their work and invested a lot of time and energy to continuously improve the quality of care. Secondly, for an educational institution, teacher guidance leadership, teaching and research leadership should be the core of kindergarten education and the most prominent aspect of kindergarten directors' leadership but the survey results are contrary to expectations. Other scholars also found that teacher guidance and leadership are insufficient and need to be improved [20-23]. According to the follow-up interview, teacher guidance leadership is relatively weak because of these reasons: First, although the kindergarten directors are aware of the importance of teacher guidance leadership and teaching and research leadership, it is "hidden work". The directors are more willing to devote their limited energy to the efficient and visible work of care. Second, "teacher guidance" and "teaching and research" need to be professional and reflective. Both kindergarten directors and teachers need to invest huge time and energy in repeated learning. However, compared with public kindergartens, the number of teachers in private kindergartens is both limited and unstable. On the one hand, it is difficult to have the corresponding professionalism and reflection. On the other hand, the effectiveness of teacher development and educational research has not been seen and the teachers may leave or move to other kindergartens for personal reasons. For this reason, most heads of private kindergartens are not willing to spend a lot of time and energy training teachers and devoting themselves to teaching and research.

The survey found that the care and education leadership level of kindergarten directors who have served for more than 6 years has shown rapid development but the care and education leadership level of kindergarten directors who have served for more than 10 years has shown a downward trend compared with those who have served for 6-10 years. Previous studies have reached similar conclusions. For example, the overall score on the value of leadership among primary school principals began to decline after 10 years [24]. Therefore, the blooming of the flower of life under the private kindergarten directors' leadership requires not only the accumulation of time and experience but also unremitting efforts and improvement. There are significant differences in the care and education leadership of private kindergarten directors in the division of the administrative region where the kindergartens are located. This conclusion is consistent with the research results of Li Keqin and Yuan Xiaoping. The performance of the value leadership of primary school principals above the county level is significantly better than that of rural principals [24]. Influenced by the dual difference between urban and rural areas on the Chinese Mainland, urban kindergarten education has a relatively concentrated pool of outstanding talents. Many college students are unwilling to work in rural areas after graduation which has delayed the promotion of rural preschool teachers and correspondingly reduced the human reserve resources of outstanding directors in rural areas. At the same time, compared with the directors of urban kindergartens, the directors of county kindergartens especially rural kindergartens have fewer opportunities to receive training and study which makes them lack strong follow-up support and resources for professional development.

Table 8.
Difference test table of directors' age and educational background variables (N=461).

Dimension	Age				Educational level				
	29 and under (1)	30—39(2)	40—49(3)	50 and above (4)	Technical secondary school (High school) 1)	Junior or technical college (2)	Undergraduate (3)	Master or above (4)	
Safety care leadership	Average	4.18	4.52	4.58	4.67	4.3	4.44	4.58	4.98
	Difference test	F=3.05				F=5.415			
	Significance	P=0.028				P=0.001			
	LSD	4>1, 3>1, 2>1				4>3, 4>2, 4>1, 3>1			
Teaching and research leadership	Average	2.47	3.67	4.19	4.40	3.32	3.56	4.08	4.43
	Difference test	F=37.707				F=14.728			
	Significance	P=0.000				P=0.000			
	LSD	3>2>1, 4>2>1				4>2, 4>1, 3>2, 3>1			
Teacher guidance leadership	Average	3.29	4.10	4.36	4.36	3.92	4.01	4.25	4.77
	Difference test	F=16.669				F=8.032			
	Significance	P=0.000				P=0.000			
	LSD	3>2>1, 4>2>1				4>3>2, 4>1, 3>1			
Scale of care and education leadership	Average	3.18	4.03	4.34	4.45	3.78	3.94	4.26	4.69
	Difference test	F=23.191				F=11.321			
	Significance	P=0.000				P=0.000			
	LSD	3>2>1, 4>2>1				4>3>2, 4>1, 3>1			

Table 9.

The difference in the tenure of the director and the administrative region of the kindergarten (N=461).

Dimension		Tenure of the director				Administrative region of the kindergarten		
		2 and under (1)	3—5 (2)	6—10 (3)	10 above (4)	City (1)	County (2)	Village (3)
Safety care leadership	Average	4.37	4.34	4.80	4.66	4.68	4.60	4.20
	Difference test	F=9.157				F=14.206		
	Significance	P=0.000				P=0.000		
	LSD	4>2, 4>1, 3>2, 3>1				1>3, 2>3		
Teaching and research leadership	Average	3.60	3.50	4.24	4.17	4.19	3.88	3.26
	Difference test	F=15.638				F=28.727		
	Significance	P=0.000				P=0.000		
	LSD	4>2, 4>1, 3>2, 3>1				1>2>3		
Teacher guidance leadership	Average	3.72	3.90	4.58	4.49	4.43	4.26	3.63
	Difference test	F=26.274				F=32.893		
	Significance	P=0.000				P=0.000		
	LSD	4>2, 4>1, 3>2, 3>1				1>3, 2>3		
Scale of care and education leadership	Average	3.83	3.85	4.5	4.41	4.39	4.19	3.62
	Difference test	F=20.278				F=31.720		
	Significance	P=0.000				P=0.000		
	LSD	4>2, 4>1, 3>2, 3>1				1>2>3		

5. Conclusion

The survey found that the overall level of care and education leadership among private kindergarten directors is good but the development is uneven. The scores from high to low are: safety care leadership (4.53) > teacher guidance leadership (4.16) > teaching and research leadership (3.84). In addition, there is a significant difference in demographic variables, the development of private kindergarten directors' leadership in care and education shows an increasing trend with age; the higher the educational level, the higher the care and education leadership level of the private kindergarten directors; the directors of the private kindergarten who have served for 6-10 years have the highest level of leadership. Finally, there are significant differences in the division of administrative regions where the kindergartens are located, the care and education leadership level of the city directors is the highest, the level of the county directors is middle and the level of the rural directors is the lowest.

Finally, we should actively reflect on some problems and limitations that need to be further explored in this study. First, due to epidemic prevention and control factors, the survey is carried out through the network platform. If we can go deep into the group of kindergarten directors' training classes and conduct face-to-face explanations, the effect of data recovery will be better. Secondly, this study takes the directors of private kindergartens in Hebei Province as the object of investigation. Although it has some representativeness, it still needs to be improved in terms of reliability and popularization. Third, in this survey, the number of male kindergarten directors is significantly lower than the number of female ones. Although the scarcity of male kindergarten directors in the field of preschool education has been verified, the scale that fits the measurement connotation of male kindergarten directors' care and education leadership still needs further verification.

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Appendix A

Table A1.

Items of "Scale of care and education leadership for private kindergarten directors".

Measurement items.

Scale items	
Item1	I encourage kindergarten teachers to carry out scientific research in combination with their own work and give scientific research awards.
Item2	I have established an incentive system of excellent teaching and remuneration to promote the professional development of kindergarten teachers.
Item3	I pay attention to improving the legal awareness of kindergarten teachers, and prohibit abuse, corporal punishment and other behaviors that damage children's physical and mental health.
Item4	I support and encourage kindergarten teachers to participate in professional training and further study.
Item5	I pay attention to the educational principle of combining care with education, and put an end to the "primary school" tendency of kindergarten.
Item6	I can use various ways to discuss new ideas and methods of education and teaching with kindergarten teachers.
Item7	I require the kindergarten teachers to integrate safety education into children's daily life.
Item8	I can configure sufficient teaching aids and game materials to create conditions for children's play and learning exploration.
Item9	I understand the professional development needs of kindergarten teachers, and make appropriate professional development plans for them.
Item10	I insist on taking games as children's basic activities to ensure that children have enough time for games and outdoor activities.
Item11	I pay attention to enhancing the safety awareness of the kindergarten teachers and ensure them master the basic common sense of first aid and the basic methods of prevention and rescue.
Item12	I regularly organize kindergarten teachers to participate in teaching and research seminars to study and solve practical problems from the teaching activities.
Item13	I can establish and improve the professional development mechanism of kindergarten teachers to ensure them complete the pre-job and post-job training requirements of corresponding posts.