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The Construction and Modification of Preschool Teacher Training Efficacy Evaluation Model in China

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Abstract

The purpose of this paper aims to construct the preschool teacher training efficacy evaluation (PTTEE) model to face the current problems such as overly subjective evaluation, lower reliability, and validity of the model in China. This study includes two parts: 1) Build a PTTEE model through grounded theory(GT); 2) Modify the model through measurement theory(Classical Testing Theory (CTT) and Item Response Theory (IRT)). For the qualitative part of the conceptual model creation, a total of 60 preschool teachers, principals, and training managers in China were selected to join semi-structured interviews. The resultant model factors include satisfaction, training outcome, and achievement transformation. In the quantitative parts, 465 participants were tested for the statistical significance of the model through CTT and IRT. The results showed that there was inconsistency in the structure of the model. Therefore, a combination of qualitative and quantitative research methods was used to capture statistically significant factors that influence the model. The final model structure was revised to the following factors: the expectations, the perceived quality, the value drivers, the conversion disorder, and the training outcome.

Keywords

Preschool Teacher Training; Efficacy Evaluation Model; Grounded Theory; Classical Testing Theory; Item Response Theory.

1. Introduction

In recent years, PTTEE which aims at promoting the professional growth of preschool teachers has attracted more and more public attention. Although many researchers have carried out related researches and efficacy evaluation practices, there are still some ongoing issues such as strong subjectivity of evaluation and scientific shortage. Due to the regulations issued by the Ministry of Education and the Ministry of Finance General Offices in 2012" in China focus more on training outcome and the policy of "the implementation of the national teacher training program (2014-2019)" emphasizing that it is necessary to innovate teacher training efficacy model and its evaluation method.

Satisfaction evaluation is not enough to fully reflect the training efficacy. As a subjective indicator, satisfaction is an important indicator of public opinion. However, over-relying on satisfaction may cause overly subjective evaluation of preschool teacher training programs (Li & Huang, 2019). The excessive pursuit of satisfaction evaluation may cause the trainers to ignore the original training goals they set and cater to misleading public opinion. (Lu, 2018) In addition, as a single evaluation method, satisfaction evaluation can not objectively reflect the training efficacy, which is also influenced by some other factors like professional ethics, professional knowledge, and professional skills of the preschool teachers. (Jiang, 2017).

To enhance the objectivity of the efficacy evaluation, this study adopts the grounded theory to construct a preschool teacher efficacy evaluation model. To improve the scientificity of the

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efficacy evaluation, the study uses measurement theory to test the model. Finally, we get a simplified model with a set of evaluation indicators with high reliability and validity.

2. Method

2.1. Participants

Participants including two parts:(1) Participants of Model Construction;(2) Participants of Model Modification. Their demographic information including the subject's gender, age, regions, educational background, teaching experience, and professional title was recorded and encoded. The specific screening criteria are:

The age groups to ≤25 years old, [25-30) years old, [30-45) years old, [45-55) years old，≥ 55 years old in five age groups;

The interviewees' education is divided into five categories: below high school diplomas, high school diplomas, associate's degree, bachelor's degree, master's degree, and above;

The teaching age is divided into five categories: ≤5 years, [5-10) years, [10-15) years, [15-20) years, and ≥ 20 years;

The interviewees' job titles are divided into four categories: no titles, primary titles, intermediate titles, and senior titles;

The interviewee includes preschool teachers, principals, training managers, etc.

Interviewees' genders recorded;

Interviewees' ethnic backgrounds were recorded, including Han, Mongolian, Hui, Tibetan, Uyghur, etc.

A total of 60 preschool teachers (N=30), principals (N=20), and training managers (N=10) were recruited to join the interview for model construction.

A total of 465 participants were randomly recruited from Jiangxi, Hunan, Xinjiang, Inner Mongolia, Gansu in China to join the questionnaire investigation for model modification.

2.2. Study Tools

2.2.1. Interview

The questions of the interview include four categories, they are 1) previous training experiences, refer to training outcome, deficiencies, suggestions, etc; 2) the satisfaction of previous training; 3) the changes of trainee's knowledge, attitudes, and skills after previous training; 4) the impact of trainees' work behaviors and achievement transformation.

2.2.2. Survey

According to the constructed model and the policy of the Kindergarten Teachers' Professional Standards (Trial) [2012] (KTPS), the satisfaction indicators contain: the satisfaction of 1) organization's management; 2) instructor; 3) education subsidies; 4) logistics support; 5) training theme; 6) training content; 7) training methods; 8) content to be evaluated; 9) evaluation methods; 10) follow-up effects. Training outcome indicators contain the results of 1) professional ethics; 2) professional knowledge; 3) professional skills. The achievement transformation indicators contain the achievement transformation of 1) short-term efficacy; 2) long-term efficacy; 3) learning quality; 4) obstacles; 5) value-added impact.

2.3. Procedure

2.3.1. The Construction of PTTEE Model

First, a semi-structured and face-to-face interview was used to fully collect participants' viewpoints and suggestions of training efficacy evaluation. Second, all audio materials were transcribed into text format. After proofreading the transcribed text material, we imported them into the qualitative analysis software Nvivo 11.0. In addition, Grounded theory methods

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were adopted to process the interview text and construct the model. The text was encoded from bottom to top. In this way, concepts were continuously extracted from the original text and then formed the corresponding categories. Then, the logical relationship among the categories was explored and established.

2.3.2. The Modification of PTTEE Model

After the questionnaire was generated from the model, the CTT was used to verify the reliability and validity, the data obtained were analyzed by SPSS 22.0. The IRT was used to test item discrimination, item difficulty, and item test information function value of the questionnaire, all analyses were conducted with MULTILOG 7.03.

3. Data Analysis and Results

3.1. The Construction of PTTEE Model

The grounded theory involves three levels or types of coding like open coding, axial coding, selective coding. The results are presented as the following.

Open coding, which means original data were input openly (Qian et al., 2019), consists of three steps. First, the transcribed text was labeled using Nvivo 11.0. Second, labels with similar meanings are grouped into the same conceptual category and named by comparing the similarities and differences between them. Third, similar concepts were merged and named. After the duplicates were merged, 1771 tags, 35 concepts, and 10 categories were obtained.

By comparing, analyzing, and abstracting the 10 categories, three main categories, namely satisfaction, training outcome, achievement transformation were obtained.

After eliminating the irrelevant and invalid concepts, including low frequency or off-topic information, we got the PTTEE Model. The three main categories in the model and the relationships among them are presented in Figure 1.

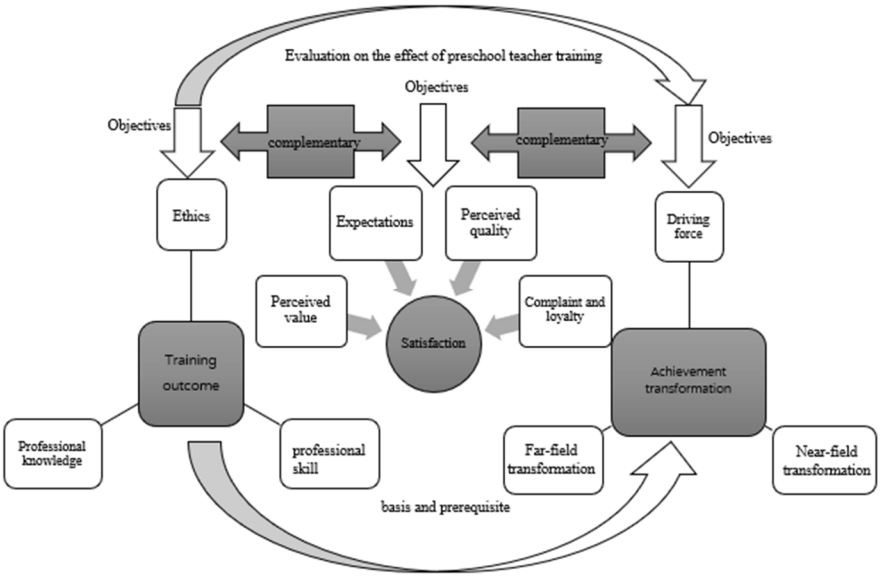

Figure 1. Diagram of PTTEE Model

3.1.1. Theoretical Saturation

According to the grounded theory, encoding can be stopped when it is saturated (Glaser, 1967). The categories stop updating after 48 samples are processed. The remaining 12 samples were used for performing a theoretical saturation test, in which the three-step coding was repeated. The results of the theoretical saturation were consistent with the main model. Therefore, the model passed the theoretical saturation test.

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3.1.2. Model Interpretation and Discussion

According to Figure 1, satisfaction, training outcome, and achievement transformation are key components of the model. The concepts of satisfaction, training outcome, and achievement transformation and their relationship are described as follows.

(1) Satisfaction

According to the model, the satisfaction dimension includes the expectations, the perceived quality, the perceived value, and the trainee's loyalty and complaint. They are similar with the element of the Customer Satisfaction Index (CSI) (Fornell et al., 1996), the Swedish Customer Satisfaction Barometer (SCSB)(Fornell, 1992), the European Customer Satisfaction Index (ECSI) (Askariazad et al., 2015), the American Customer Satisfaction Index(ACSI)(Fornell et al., 1996), and the China Customer Satisfaction Index (CCSI)(Guo, 2010). The expectations in our model include the trainees' expectations that their specific needs should be satisfied and their expectations on the training reliability, etc. The perceived quality is the trainees' actual feelings on these aspects, as well as the overall feel of training quality. Perceived value reflects the scoring of the trainers and trainees on the benefits obtained from training. The trainee's loyalty and complaint are indicators of the probability of preschool teachers participating in similar training again.

(2) Training outcomes

According to the policy of KTPS, we define the improvements of professional ethics, professional knowledge, and professional skills as the elements of the training outcomes in the model (Figure 1).

Professional ethics refer to the understanding of their career, the attitudes and behaviors toward children, the attitudes and behaviors toward children's education, and self-cultivation. Professional knowledge refers to the knowledge of early childhood development, early childhood care and education, and general knowledge. Professional skills refer to the skills of creating and making use of the preschool environment, day to day caring, the supporting and guiding of games, the planning and implementing of education, incenting and evaluating children, communicating and cooperating with children, parents, colleagues, and community, and the skills of reflecting and developing.

(3) Achievement transformation

According to the model, the achievement transformation consists of near-field transformation, far-field transformation, and driving forces.

Near-field transformation refers to preschool teachers can directly apply their learning in similar working environments which have similar tasks, materials, equipment, or learning environment as the training environment. Far-field transformation preschool teachers can directly or indirectly apply their learning to different environments. The far-field transformation required trainees to be creative.

Driving forces are the important factors of the achievement transformation which include a positive driving force and a negative driving force. The positive driving force includes a good organizational atmosphere, inner transformation strategy, and administrative support. The positive driving forces promote preschool teacher's training achievement transformation, while the negative driving forces hinder.

(4) Satisfaction, Training outcome, and Achievement transformation Complement Each Other

Satisfaction is a relatively subjective evaluation. On the contrary, the investigation of training outcome and achievement transformation is a relatively objective evaluation. These two evaluations complement each other.

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On the other hand, the data of satisfaction evaluation come from questionnaires, while the data of training outcomes come from ability evaluation tests, and the data of achievement transformation come from in-depth interviews.

Training outcomes are the basis and prerequisite for Achievement transformation. The training outcomes include ideas, notes, case summary, hand-made works, audio and video media, etc. The training outcome quality affects training achievement transformation.

3.2. The Modification of PTTEE Model

3.2.1. Reliability Test

Cronbach's (alpha) coefficient was tested as the reliability indicator to analyze the questionnaire in this study. The reliability of satisfaction and achievement transformation are 0.973 and 0.947 respectively, the overall reliability of the questionnaire is 0.977.

The reliability of the revised questionnaire is 0.964; the reliability of the expectations, the perceived quality, the value drivers, and the conversion disorders are 0.97, 0.967, 0.972, and 0.959 respectively.

Alpha below 0.5 is considered as poor reliability, 0.5 ≤ alpha < 0.75 is considered as moderate reliability, 0.75≤ alpha < 0.9 is considered as good reliability and alpha ≥ 0.90 is considered as excellent reliability (Koo & Li, 2016). In our study, the reliability coefficient changed slightly due to the reduction of the number of questions, but the change is insignificant, and the questionnaire still has excellent reliability.

3.2.2. Item Analysis

The questionnaire was analyzed with the critical ratio method which includes five steps:1) calculate the total score obtained by the participants; 2) use descriptive statistics to calculate two critical scores of the high and low groups at 27%; 3) the participants are divided into two groups, in which the high group is defined as 1 and the low group is 2; 4) Independent sample t-test is used to test the difference between the high and low groups on each item; 5) Use 3.0 as the threshold of t, and delete items that are not significant in t-test.

It was found that the CR values of all items reached a significant level ($p<0.001$) except item 25 ($p=0.904>0.05$) and item 26 ($p=0.510>0.05$). So items 25 and 26 were deleted. (See Table 1) After item correlation analysis, the results show that all 47 items have met the requirements of psychometrics. The internal consistency test is to measure the changes of the internal consistency α coefficient of the remaining items after deleting a certain item of the scale. From table 1, It can be found that the alpha of the initial scale is 0.977, there are no obvious fluctuations in the internal consistency α coefficient of the total table after the item is deleted, which means the other items are reasonable. Next, perform confirmatory factor analysis (CFA) on the questionnaire data through SPSS 22.0 to verify the model fit and its structural validity (see Table 2). It can be seen from Table 2 that all items factor loading greater than 0.5 and all path coefficient P values are significant, indicating that the questionnaire has good structural validity and is considered appropriate (Fornell & Larcker, 1981).

3.2.3. Validity

It can be seen from the two-factor model fitting index of questionnaire satisfaction and achievement transformation, the value of χ^2(df) is 6.187, which does not meet the requirement of χ^2(df)<5, Goodness-of-Fit Index (GFI) value is 0.555, which does not meet the requirement of >0.9; Normed Fit Index (NFI) value is 0.826, IFI value is 0.850, Comparative Fit Index (CFI) value is 0.849, all of them are close to the reference value of 0.9; Root Mean Square Error of Approximation (RMSEA) value is 0.106, which does not meet the requirement of <0.1. The confirmatory factor analysis that the model consists of the two dimensions of satisfaction and the achievement transformation can still be optimized.

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We analyzed the model fitting degree of the revised questionnaire again. In our study, χ^2(df) changed from the original 6.187 to 5.172; NFI increased from the original 0.826 to 0.925; IFI increased from the original 0.850 to 0.939; CFI increased from the original 0.849 to 0.939, and all reached the model index reference standard of >0.9 (Hu & Bentler, 1999); GFI value increased from the original 0.555 to 0.800, which is closer to the reference value of the model index of 0.9; the RMSEA value changed from the original 0.106 to 0.095, which is consistent with the reference value of the model index of <0.1. The analysis results show that the PTTEE model composed of the four dimensions of expectations, perceived quality, value drivers, and barriers to transformation is more suitable from a statistical perspective.

To identify principal components, the questionnaire was divided into two sub-dimension in the factor analysis using varimax rotation. The cumulative variance was 75.093%.

The variance ratio explained by the questionnaire sub-dimension is as follow: variance ratio explained by the first factor with an eigenvalue of 28.043, is 59.665%; variance ratio explained by the second factor with an eigenvalue of 7.251, is 15.428%, which is far less than three times the first factor's explained variance.

There are three kinds of item response theoretical models: 1) one-parameter model; 2) a two-parameter model; 3)a three-parameter model. The questionnaire in this study is a five-level self-reported scale. There are no correct or wrong answers for the test so it is assumed that there is no guesswork because the preschool teachers need not guess the answer (Wang, 2017). Therefore, a two-parameter model was selected in the study. Due to the five-level scale, each item has four difficulty values. Multilog 7.03 was used to calculate the scale to obtain all item parameters.

3.2.4. Discrimination

The discrimination parameter is the indicator of an item's capability to differentiate among respondents with different levels of ability (Woudstra et al., 2019). Items that have low discrimination parameters are considered to be "easier". While items with high discrimination parameters have a high ability to differentiate between respondents (Fransen et al., 2014).

The discrimination in this paper is to identify the quality of preschool teachers' training efficacy, which can also be viewed as the test validity of the questionnaire. It can be seen from Table 3 that the average value of the discrimination degree a1 is 2.76 and the discrimination range of the questionnaire is [0.97, 6.18]. The interval range is relatively small, and the participants can be well concentrated in the range. In general, the item should be deleted when their discrimination is a≤0.30 or a≥4. (Yang et al., 2008), therefore the items 12-17 and 19-21 should be deleted.

Based on the IRT analysis of the revised questionnaire, the value range of the degree of discrimination has been narrowed to [1.15, 4.44]. None of the item discrimination parameters were negative, meaning that participants with high PTTEE had a higher probability of endorsing all items than participants with low PTTEE, and all items meet the statistical requirements except items 15 and 16 (See Table 4).

3.2.5. Difficulty

The difficulty parameter indicates the probability of a correct response (Woudstra et al., 2019). In our study, difficulty refers to the degree of difficulty that preschool teachers feel when completing the questionnaire. The difficulty b of this questionnaire ranges from -5.09 to 2.33, with an average value of -0.161. Theoretically, the difficulty value range is between positive infinity and negative infinity, but the difficulty value range of [-4, 4] is a criterion (Wang, 2017). It can be seen that when the difficulty value of the questionnaire changes incrementally, the difficulty varies greatly. The second difficulty parameter of the second item of the questionnaire is higher than 4, and the difficulty of the remaining 46 items meets the standard, that is, 97.9% of the questions are within a reasonable value range.

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The difficulty of the items range of the revised questionnaire ranges from -3.91 to 1.83, and 33 items are concentrated in the range of [-4, 4], which indicates that all items had an easy to medium difficulty level and the revised questionnaire difficulty level is more reasonable (See Table 4).

In short, Based on the CTT and IRT analysis of the questionnaire, items 12-17, 19-21, 25, and 26 were deleted. According to the analysis for the second time, we can see that the revised questionnaire has higher discrimination and reasonable difficulty (See Table 4).

3.3. Model Modification

Based on the analysis of CTT and IRT, the questionnaire has been modified from the original three dimensions (the satisfaction, the training outcome, the achievement transformation) of a total of 47 items to five dimensions of a total of 24 items (The dimensions of training outcome here will be assembled into a future measurement tool) (See Figure 2). The five dimensions are the expectations, the perceived quality, the value drivers, the conversion disorders, and the training outcome. Among them, the expectations and the perceived quality are the same as the previous model. The value drivers are referring to positive driving forces of the original model that benefit the achievement transformation. On the contrary, conversion disorders include the negative driving forces we mentioned before that hinder and affect the achievement transformation.

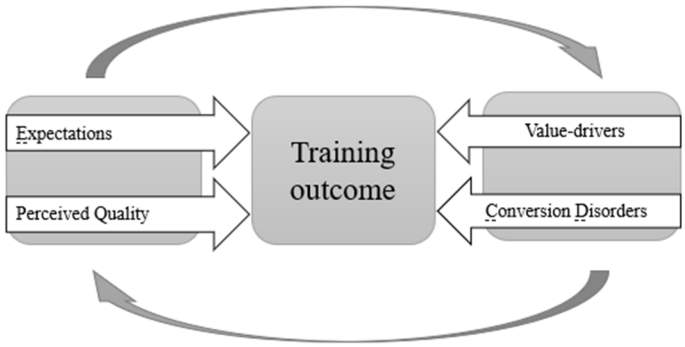

Figure 2. The Revised Model of PTTEE

4. Discussion and Conclusion

Based on the results of the above statistical tests, we modified the model to have five dimensions.

The expectations have a positive effect on perceived quality. Relevant research shows that a large portion of trainees has certain expectations. If we cannot accurately grasp, guide, and moderately meet their needs, the trainees would be disappointed and the training effect would be greatly degraded (Pan, 2014). This shows that there is a close relationship between expectations and perceived quality and training results. According to the theory of attitude-behavior, the attitude of the trainee's expectations is consistent with their behavior results. What's more, some researchers believe that there is a causal relationship between the perceived quality and behavior (Zhao, 2008). When the perceived quality scores higher, the behavior of transformation scores higher too (Han et al., 2015). The value drivers and conversion disorder include kindergarten management, colleague relationship, family support, and public respect, organizational support and practice opportunities, transformation motivation, environmental conditions, etc. The difference between them is that value drivers are positive to improve training achievement transformation and conversion disorder is negative to hinder training achievement transformation. These factors have a significant correlation with the trainee's willingness to continue teaching of training results (Li, 2018).

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The CSI, SCSB, and ECSI models have the dimension of complaint and loyalty, while in our model this dimension was extended into two dimensions of driving forces and conversion disorders. The advantage is we could explore the relationship between these two dimensions and the expectations, the perceived quality, the training outcomes, and the training efficacy. The overall structure of our model is more concise than reference models and more reasonable than our original model. The new model has more clear and detailed content indicators.

In this study, a PTTEE model was constructed. After distribution and testing with 465 questionnaires, the following conclusions were obtained:

Table 1. Item Analysis of Questionnaire of Preschool Teachers Training Efficacy Evaluation

Item	M±SD	CR	Item-Total Correlation	internal consistency test
1	4.29±0.983	-	.860**	0.977
2	4.31±0.980	26.486	.850**	0.977
3	4.34±0.949	27.177	.870**	0.977
4	4.36±0.969	27.875	.873**	0.977
5	4.43±0.947	30.64	.874**	0.977
6	4.33±1.009	27.264	.871**	0.977
7	4.23±1.076	22.238	.815**	0.977
8	4.33±0.983	29.294	.872**	0.977
9	4.42±0.961	30.822	.871**	0.977
10	4.46±0.955	31.23	.863**	0.977
11	4.25±1.026	26.853	.893**	0.976
12	4.30±0.989	31.477	.928**	0.976
13	4.30±0.997	30.771	.911**	0.976
14	4.42±0.940	32.865	.889**	0.976
15	4.39±0.950	33.574	.909**	0.976
16	4.38±0.942	32.898	.908**	0.976
17	4.37±0.966	33.264	.905**	0.976
18	4.29±0.980	27.472	.902**	0.976
19	4.35±0.956	33.713	.925**	0.976
20	4.37±0.953	33.298	.910**	0.976
21	4.35±0.981	31.364	.906**	0.976
22	4.34±0.984	28.898	.888**	0.976
23	3.61±1.569	7.957	.783**	0.977
24	3.48±1.605	6.991	.767**	0.978
25	3.30±1.638	6.237	.756	0.978
26	3.32±1.647	5.639	.744	0.978
27	4.38±0.999	26.08	.869**	0.977
28	4.40±0.935	28.499	.886**	0.977
29	4.43±0.953	28.83	.863**	0.977
30	4.26±1.032	22.995	.865**	0.977
31	4.23±1.087	22.653	.832**	0.977
32	4.38±0.939	-	.901**	0.976
33	4.32±0.987	41.196	.897**	0.976
34	4.30±0.989	38.725	.903**	0.976
35	4.32±0.980	38.948	.897**	0.976
36	3.93±1.311	17.379	.806**	0.977
37	3.77±1.432	12.873	.802**	0.977
38	3.64±1.513	11.534	.810**	0.977
39	3.73±1.429	11.97	.821**	0.977
40	3.77±1.410	13.531	.798**	0.977
41	3.65±1.479	11.633	.813**	0.977
42	3.67±1.437	12.25	.804**	0.977
43	3.92±1.296	14.661	.815**	0.977
44	3.61±1.493	11.173	.801**	0.977
45	4.22±1.075	26.136	.846**	0.977
46	4.19±1.073	26.877	.868**	0.977
47	4.31±0.947	34.349	.905**	0.976

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Notice: * p<.05； **p<.01； ***p<.001.

(1) The questionnaire has been modified from having the original three dimensions (satisfaction, training outcome, achievement transformation) with a total of 47 items to have five dimensions (expectations, perceived quality, value drivers, conversion disorders, and training outcome) with a total of 24 items.

The reliability of the revised model changed slightly and remains excellent. The fitting index of the modified model is more reasonable than the initial model.

(2) The discrimination has been narrowed from [0.97,6.18] to [1.15,4.44]; the difficulty range narrowed from [-5.09,2.33] to [-3.91,1.83], and the final 33 items are concentrated in [-4, 4], which indicates that the revised questionnaire difficulty level is more reasonable. The maximum information function peak range of each item is 0.498~5.782, and the total information becomes smaller as the total number of items decreases.

In summary, the reliability of the revised questionnaire is still excellent, the structure is more stable, the difficulty and discrimination are more reasonable, and the questionnaire is more concise.

Table 2. Factor Loading of Preschool Teachers Training Efficacy Evaluation

Item	Factor Loading	Item	Factor Loading	Item	Factor Loading
A1	0.909	A17	0.961	A33	0.878
A2	0.949	A18	0.869	A34	0.836
A3	0.962	A19	0.966	A35	0.85
A4	0.955	A20	0.964	A36	0.68
A5	0.947	A21	0.934	A37	0.838
A6	0.888	A22	0.896	A38	0.898
A7	0.807	A23	0.752	A39	0.887
A8	0.906	A24	0.787	A40	0.798
A9	0.956	A25	0.809	A41	0.911
A10	0.955	A26	0.815	A42	0.906
A11	0.847	A27	0.825	A43	0.779
A12	0.93	A28	0.876	A44	0.884
A13	0.924	A29	0.885	A45	0.718
A14	0.957	A30	0.763	A46	0.749
A15	0.96	A31	0.762		
A16	0.957	A32	0.899		

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Table 3. Item Parameters of Questionnaire

Dimension	Item	a2	b1	b2	b3	b4	Imax
	1	2.08	-1.51	-1.4	-0.53	1.1	1.287
	2	1.74	1.89	-5.09	-0.81	0.97	1.158
	3	2.49	-1.58	-1.42	-0.55	0.96	1.802
	4	2.71	-1.35	-1.19	-0.53	0.88	2.196
	5	3.68	-1.21	-1.02	-0.55	0.77	4.116
	6	2.58	-1.11	-0.95	-0.27	1.0	2.005
	7	2.06	-1.29	-1.1	-0.17	1.11	1.26
	8	2.87	0.76	-3.12	-0.64	1.01	2.893
	9	3.66	-1.21	-1.02	-0.44	0.78	4.002
	10	3.81	-1.19	-1.01	-0.6	0.65	4.455
	11	2.58	-1.49	-0.98	-0.16	1.14	2.014
	12	4.04	-1.17	-0.97	-0.27	1.11	4.79
	13	4.13	-1.17	-0.98	-0.14	1.13	4.914
	14	4.86	-1.26	-1.09	-0.57	0.82	6.932
	15	4.75	0.35	-2.2	-0.63	0.85	5.852
Satisfaction	16	4.35	0.99	-3.23	-0.5	0.93	7.202
	17	5.14	0.34	-2.11	-0.41	0.84	7.182
	18	3.23	-1.73	-1.11	-0.02	1.17	3.02
	19	6.18	-1.52	-1.09	-0.18	0.9	10.218
	20	5.61	-1.23	-1.05	-0.49	0.85	9.11
	21	4.33	-1.0	-0.87	-0.26	0.89	5.329
	22	3.89	-1.08	-0.98	-0.24	0.99	4.239
	23	1.19	-0.23	0.52	0.77	1.78	0.449
	24	1.1	-0.13	0.76	1.01	2.03	0.382
	25	1.01	0.1	1.07	1.41	2.33	0.321
	26	0.97	0.07	1.03	1.35	2.25	0.296
	27	2.77	-1.03	-0.91	-0.44	0.78	2.342
	28	3.07	-1.54	-1.25	-0.55	0.85	2.819
	29	2.99	-1.4	-1.27	-0.76	0.73	2.704
	30	2.12	-1.52	-1.06	-0.2	1.14	1.37
	31	2.26	-1.4	-0.79	-0.16	1.08	1.586
	32	3.59	-1.65	-1.25	-0.29	0.93	3.834
	33	3.2	-1.39	-1.11	-0.24	1.02	3.029
	34	2.75	-1.61	-0.97	-0.29	1.11	2.28
	35	2.79	-1.44	-1.22	-0.35	1.04	2.278
	36	1.37	-1.16	-0.47	0.16	1.48	0.594
	37	1.17	-0.78	-0.05	0.56	1.74	0.432
	38	1.12	-0.62	0.33	0.76	1.97	0.401
Achievement	39	1.14	-0.93	0.1	0.73	2.04	0.414
transformation	40	1.27	-1.05	-0.03	0.44	1.87	0.503
	41	1.2	-0.75	0.29	0.88	2.05	0.457
	42	1.2	-0.98	0.11	0.88	2.12	0.453
	43	1.33	-1.31	-0.3	0.4	1.9	0.554
	44	1.13	-0.7	0.41	1.07	2.15	0.409
	45	2.06	-1.22	-1.01	-0.13	1.28	1.275
	46	2.3	-1.39	-0.99	0.01	1.38	1.584
	47	2.72	-1.79	-1.41	-0.32	1.25	2.204

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Table 4. Item Parameters of Revised Questionnaire

Dimension	Item	a2	b1	b2	b3	b4	Imax
	1	2.49	-1.36	-1.27	-0.48	0.95	1.82
	2	2.35	1.49	-3.91	-0.58	0.85	2.121
	3	2.78	-1.49	-1.35	-0.56	0.83	2.253
	4	2.72	-1.35	-1.23	-0.62	0.75	2.226
	5	3.47	-1.21	-1.08	-0.67	0.65	3.676
	6	2.74	-1.1	-0.97	-0.34	0.85	2.251
	7	2.72	1.24	-3.46	-0.8	0.86	2.89
	8	3.34	-1.23	-1.11	-0.6	0.66	3.369
	9	3.88	-1.15	-1.02	-0.69	0.54	4.6
	10	2.9	-1.39	-0.96	-0.19	1.0	2.541
	11	3.11	-1.69	-1.19	-0.12	1.02	2.876
	12	3.38	-1.23	-1.13	-0.43	0.83	3.252
	13	3.23	-1.53	-1.27	-0.62	0.71	3.126
	14	3.4	-1.35	-1.22	-0.76	0.61	3.485
	15	4.44	-1.6	-1.2	-0.32	0.76	5.782
	16	4.27	-1.28	-1.01	-0.22	0.85	5.362
	17	3.7	-1.49	-0.86	-0.24	0.95	3.929
	18	3.65	-1.32	-1.12	-0.31	0.89	3.897
	19	1.39	-0.69	-0.07	0.45	1.46	0.617
	20	1.25	-0.64	0.21	0.6	1.67	0.498
	21	1.31	-0.87	0.03	0.59	1.73	0.544
	22	1.35	-0.73	0.2	0.73	1.74	0.577
	23	1.37	-0.91	0.05	0.73	1.79	0.593
	24	1.28	-0.69	0.31	0.9	1.83	0.519

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References

[1] Askariazad, M. H., & Babakhani, N. (2015). An application of European Customer Satisfaction Index (ECSI) in business to business (B2B) context. Journal of Business & Industrial Marketing, 30(1):17-31.

[2] Cao, Q., Sarker, M. N. I., & Sun, J. (2019). Model of the influencing factors of the withdrawal from rural homesteads in China: Application of grounded theory method. Land use policy, 85, 285-289.

[3] Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. Journal of marketing research, 18(1), 39-50.

[4] Fornell, C., Johnson, M. D., Anderson, E. W., Cha, J., & Bryant, B. E. (1996). The American customer satisfaction index: nature, purpose, and findings. Journal of marketing, 60(4), 7-18.

[5] Fornell, C. (1992). A national customer satisfaction barometer: The Swedish experience. Journal of marketing, 56(1), 6-21.

ISSN: 2637-6067 DOI: 10.6918/IJOSSER.202202_5(2).0053

[6] Fransen, M. P., Leenaars, K. E., Rowlands, G., Weiss, B. D., Maat, H. P., & Essink-Bot, M. L. (2014). International application of health literacy measures: Adaptation and validation of the newest vital sign in The Netherlands. Patient education and counseling, 97(3), 403-409.

[7] GLASER BG S A. The Discovery of Grounded Theory: Strategies for Qualitative Research[M]. New York:Aldine Publishing Company, 1967: 555.

[8] Glaser, B. (1967). Strategies for qualitative research. The Discovery of Grounded Theory, 2-6.

[9] Guo, H. (2010, February). Chinese IT industry customer satifaction model and application. In 2010 The 2nd International Conference on Computer and Automation Engineering (ICCAE) (Vol. 4, pp. 261-264). IEEE.

[10] Han, N. , Jian, L. I. , & Liu, J. M. . (2015). A research on formation of mechanism of moral hypocrisy under the context of corporate social responsibility. Journal of Zhejiang Gongshang University, (01):94-106.

[11] Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. Structural equation modeling: a multidisciplinary journal, 6(1), 1-55.

[12] Jian, P. (2014). On the orientation, connotation and implication strategy to the training project of high-quality teachers. Research in Educational Development, (18): 45-49.

[13] Jiang J.(2017).Research on the Effect of Preschool Teachers' Training: Based on Analysis of Kirkpatrick Model's Behavior Level—Take the Preschool Teachers' National Training Projects Held by Chongqing Normal University as Examples. Chongqing Normal University.

[14] Koo, T. K., & Li, M. Y. (2016). A guideline of selecting and reporting intraclass correlation coefficients for reliability research. Journal of chiropractic medicine, 15(2), 155-163.

[15] Li, Y. (2018). On the status of and influencing factors on rural preschool teachers' willingness to continue their jobs. Studies in Early Childhood Education, 000(001):36-48.

[16] Lu, H. (2018). Don't let the satisfaction evaluation result become "false" public opinion. People's Forum, (15)50-51.

[17] Wang, Y. W. (2017). The Preliminary Development of Kindergarten Teacher's Competence Evaluation Scale--- Based on Educational Measurement Theory. East CLina Normal University

[18] Woudstra, A. J., Smets, E. M., Galenkamp, H., & Fransen, M. P. (2019). Validation of health literacy domains for informed decision making about colorectal cancer screening using classical test theory and item response theory. Patient education and counseling, 102(12), 2335-2343.

[19] Yang, Y. B. (2008). Item analysis of the Chinese soldier personality questionnaire using item response theory: item analysis of the Chinese soldier personality questionnaire using item response theory. Acta Psychologica Sinica, 40(5), 611-617.

[20] Zhao, Y. (2009). Research on Implicit Marketing Mode Based on Promotion of Purchase Intentions. Criocm International Symposium on Advancement of Construction Management & Real Estate.