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ARTICLE

A Three-Perspective Study on Resilience Assessment of Primary School Students

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ABSTRACT

The purpose of this study is to comprehensively assess the psychological resilience of primary school students, using a multi-angle measurement method. Firstly, data were collected through open-ended questionnaire survey, and then a simplified psychological resilience scale was developed based on the results of factor analysis, which included three different assessment perspectives: student self-assessment, parent evaluation and teacher evaluation. This study further tested the internal consistency reliability and structural validity of these scales, and constructed a multi-perspective measurement model (MTMM) to comprehensively assess the mental resilience of primary school students. The results show that the scale has high reliability and validity in different evaluation angles, and the MTMM model has a good fit. This study not only verified the rationality of the mental resilience table of primary school students, but also revealed the possible methodological deviations of different evaluation angles, thus emphasizing the necessity of multi-angle evaluation in the evaluation of mental resilience.

Keywords: Primary School Students; Resilience; Internal Consistency Reliability; MTMM Model

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1. Introduction

The study of resilience originated in the 1960s and 1970s, when pathological psychologists studied children with schizophrenia and noticed that some children showed healthy adaptation in high-risk environments [1]. From the perspective of pathological psychology, Garmezy et al. focused on "atypical cases" of children who can still show healthy adaptation in high-risk environments [2]. Their research marks a shift from the traditional symptom-based medical model to exploring positive outcomes and protective factors in life's dilemmas [3].

Subsequent studies further confirmed the reliability of the phenomenon of psychological resilience [4–7]. Resilience is a multi-dimensional concept, and the academic community has not yet unified its definition. According to recent research, resilience can be understood in the following ways: First, resilience as a stable trajectory of healthy functioning: Dr. George Bonanno defines resilience as a stable trajectory of an individual's ability to maintain healthy functioning after a highly adverse event. This trajectory is characterized by relatively brief periods of imbalance, but generally remains healthy. Bonanno posits that the majority of trauma survivors do not develop PTSD or other forms of psychopathology [8]. Second, resilience is the adaptive capacity of a dynamic system: Masten proposes resilience as the ability of a dynamic system to successfully adapt to disturbances that threaten its viability, function, or development. This definition emphasizes the systems-oriented nature of resilience, which can be extended across different disciplines and levels of analysis, from the molecular level to the level of human behavior, families, communities, and even socioeconomic levels [9]. Third, resilience is the process of using resources to maintain happiness: Dr. Catherine Panter-Brick regards resilience as a process through which individuals can mobilize resources to maintain happiness. This highlights the role of resilience in different areas of life and the differences in functional performance of individuals in these areas [10]. Fourth, resilience is regarded as an adaptation mechanism to adversity: The American Psychological Association (APA) believes that resilience is the good adaptation process shown by individuals when they encounter adversity, trauma, tragedy, threat or major pressure, that is, the ability of individuals to recover and rebound from difficulties [11]. Fifth, resilience is an individual's ability to successfully cope with pressure: Since the 1970s, psychological resilience has gradually attracted the attention of social psychology researchers, mainly referring to the self-adjustment ability of individuals in the face of pressure and crisis [12].

In summary, resilience is an individual trait that emerges in the face of crises and challenges. It is the ability, potential, or characteristic that individuals exhibit in their interactions with the environment that enables them to cope effectively with adversity and maintain a positive and well-adapted state [6]. It refers to the ability, capacity, or characteristic exhibited by individuals through environmental interactions, which enables effective coping with adversity while maintaining a positive, well-adapted state.

Throughout the research in the field of mental health, especially in the assessment of primary school students' mental health, there are some obvious research gaps. These gaps are mainly reflected in the definition and measurement standards of mental health and the multi-dimensional application of assessment tools [13]. At present, most mental health assessment tools tend to adopt a single perspective, such as student self-assessment, parent evaluation or teacher evaluation, and the latter is used relatively rarely. In general, the autonomy of elementary school students increases with age, making it difficult for parents and teachers to fully monitor their daily behaviors and mood swings. Therefore, most assessments rely on students' own evaluations. However, due to the complexity of mental health problems, potential biases of evaluators and different ways of interaction, it is particularly necessary to conduct multi-angle assessment [14]. In this study, the psychological resilience of primary school students was assessed mainly through the self-assessment of students, supplemented by the evaluation of parents and teachers. This three-angle assessment method will help to deeply explore the components of mental resilience of primary school students, provide theoretical support for the construction and implementation of multi-angle assessment framework, and then provide more effective services for mental health education in schools.

2. Methods

2.1. Preliminary Collection and Compilation of Scale Questions

2.1.1. Open Questionnaire Survey

An open-ended questionnaire survey was conducted for primary school students to gain an in-depth understanding of their cognitive level of psychological resilience. After the investigation, the data were sorted out to screen out high-frequency behavior samples. In this study, we define the psychological resilience of primary school students as the ability, potential or personality characteristics that students show in the face of setbacks and difficulties in the process of interacting with the outside world. Specifically, we will assess their psychological resilience in four key dimensions: self-confidence, positive thinking, problem solving, and social support.

2.1.2. Referring to Relevant Items in Similar Scales

The main reference scales include: the Mental Health Scale of Primary and Secondary School Students compiled by Yu Guoliang[15]; Mental Health Diagnostic Test (MHT), revised by Zhou Bucheng et al.[16]; Mental Health Rating Scale for primary school students (MHRSP) compiled by Chen Yongsheng[17].

2.1.3. Reference Cases of Psychological Counseling of Primary School Students

This study adopted the suggestions of several school psychological counseling experts, conducted an in-depth analysis of the problems encountered by primary school students in psychological counseling, and sorted out relevant typical cases for topic compilation[18].

2.1.4. Formation of Initial Scale

According to the results presented above, the following initial test version of resilience scale was developed: The self-assessment Scale of Resilience for primary school students included 58 items, including self-confidence (18 items), positive cognition (15 items), problem solving (14 items), and social support (11 items). There are 23 items in the parent assessment scale of elementary school students' resilience, including self-confidence (9 items), problem solving (8 items), and social support (6 items). There are 17 items in the teacher assessment scale of elementary school students' resilience, including self-confidence (5 items), problem solving (7 items), and social support (5 items).

2.2. Preparation of Formal Scales

2.2.1. Participants

The subjects were randomly selected from 873 primary school students in grades 3–6 in a primary school in Beijing, including 450 boys and 423 girls. There were 182 students in the third grade (87 boys and 95 girls), 240 students in the fourth grade (130 boys and 110 girls), 210 students in the fifth grade (113 boys and 97 girls), and 241 students in the sixth grade (120 boys and 121 girls). In the assessment process, students filled out the primary school Resilience self-assessment scale (abbreviated version); The parent (randomly selected from the family) is responsible for filling out the parent rating scale; The teacher rating scale is filled out by the head teacher, who needs to rate all the students in the class.

2.2.2. Test Procedure

Before compiling the formal resilience form for primary school students (abbreviated version), the initial test, retest and final test of the three scales of self-assessment, parent evaluation and teacher evaluation were carried out to screen and optimize the scale items. The three test samples were: 277 students in the initial test, 688 students in the re-test, and 366 students in the final test, all of whom were randomly selected from grades 3 to 6 in Beijing. After the analysis of the initial test results, the samples were updated according to the obtained data and the second test was carried out. Then, using the analysis results of the second test, the sample was updated again for the third test. Finally, a formal scale is formed, and the students who participated in the test before are used as test samples. In the process of analysis, the confirmatory factor analysis is first used to further analyze the project under the existing structural dimension hypothesis, and the following items are deleted according to the analysis results: items with factor load less than 0.4; Correcting items with large indices while allowing free loads on other elements of the item; Corrects items with large indices when allowing item special factors to be correlated. Every time an item is deleted, the analyzer is rerun to ensure that the deleted item can be explained in a reasonable sense[19]. At least three items are preserved on each dimension. This process is repeated until all correction indices in the model are less than 10. The final form of the primary school students' Resilience (short version) formal scale contains 20

items, including 6 items of self-confidence, 3 items of positive cognition, 5 items of problem solving and 6 items of social support. The Parent Rating Scale contains 14 items, including 5 items of self-confidence, 5 items of problem solving and 4 items of social support. The teacher rating Scale contains 14 items, including 5 items of self-confidence, 5 items of problem solving and 4 items of social support. The scale was scored on a scale of 1–5, with 1 being completely inconsistent and 5 being completely consistent. The test was conducted by a master's degree student in psychology.

2.3. Statistical Analysis

The study was analyzed using SPSS 21.0 for differentiation and reliability, and AMOS plug-in was used for validation factor analysis of the questionnaire structure.

3. Result

3.1. Reliability and Validity Analysis of Primary School Students' Resilience Table (Abbreviated Version)

Structural validity analysis tested the structural validity through confirmatory factor analysis. As shown in **Table 1**, the fitting indexes of the three-factor model were all within the acceptable range.

In the reliability analysis, Crombach α consistency coefficient was used to test the reliability of each scale. The reliability index is shown in **Table 2**.

Table 1. The overall fitting index of the validation factor analysis model.

	χ^2/df	*GFI*	*NNFI*	*CFI*	*RMSEA*
Self-rated version	1.733	0.927	0.882	0.898	0.046
Parent version	2.53	0.95	0.91	0.93	0.05
Teacher version	1.73	0.94	0.94	0.95	0.05

Table 2. Internal consistency reliability of the pupil resilience scale.

Cronbach's Alpha	Resilience Subscale	Self-Confident	Social Support	Problem-Solving
Self-rated version	**0.71**	0.68	0.52	0.71
Parent version	**0.82**	0.67	0.63	0.78
Teacher version	**0.88**	0.69	0.73	0.84

3.2. Confirmatory Factor Analysis of the Three-View Multi-Quality Multi-Method Model (MTMM)

After the confirmatory factor analysis, a multi-quality and multi-method model was constructed to evaluate the three characteristics of students from three different perspectives. This model covers three different assessment sources: student self-assessment, parent assessment and teacher assessment. Each scale contains three factors, forming a total of nine observed variables. These variables represent three factor scores from different rating sources. Specifically, the first three variables represent factor scores on the Student self-rating Scale, the next three variables represent factor scores on the parent Rating Scale, and the last three variables represent factor scores on the teacher rating scale. The model assumes that there is a correlation between different assessment methods and between different traits, but there is no correlation between assessment methods and traits.

Firstly, the correlation between the evaluation of different traits by the same evaluator is analyzed. According to the multi-quality multi-method (MTMM) correlation matrix with three perspectives and three factors (see **Table 3**), it is found that the evaluation correlation (that is, the average correlation coefficient between different traits) of the same evaluator for different traits is 0.443 for students, 0.343 for parents, and 0.577 for teachers, respectively. These values show a moderate degree of correlation and are statistically significant. This indicates that the validity of the scale in distinguishing different traits needs to be improved. Further, we analyze the consistency of evaluation among different raters. The numbers in bold in **Table 3** reveal the correlation of rat-

ings for the same trait among different raters. By averaging these correlations, it is found that the evaluation correlation between students and parents is 0.307, between teachers and parents is 0.21, and between students and teachers is 0.107. These results indicate a relatively high level of agreement between students and parents in evaluation.

In addition, AMOS plug-in was used to conduct confirmatory factor analysis on the MTMM model, and the model was set as a correlation method model with relevant traits. The analysis results are shown in **Table 4**. The data in **Table 4** show that all fitting indexes of the MTMM model constructed under three perspectives and three characteristics meet acceptable standards. This result validates the three trait structures of the three-perspective resilience table, and then validates the construct validity of the three factors.

Table 3. Correlations between the dimensions of the resilience subscales.

	S1	**S2**	**S3**	**P1**	**P2**	**P3**	**T1**	**T2**	**T3**
S1	1.00								
S2	0.46**	1.00							
S3	0.45**	0.42**	1.00						
P1	**0.39****	0.14*	0.22**	1.00					
P2	0.19**	**0.25****	0.11	0.35**	1.00				
P3	0.15*	0.12	**0.28****	0.39**	0.29**	1.00			
T1	**0.19****	0.01	0.09	**0.29****	0.07	0.19**	1.00		
T2	0.13*	***0.07***	0.13*	0.11	**0.15***	0.14*	0.51**	1.00	
T3	0.11	0.10	***0.06***	0.16*	0.15*	**0.19****	0.61**	0.61**	1.00

Note: 1 means confidence, 2 means social support, 3 means problem solving; S means student self-rating, P means parent rating, and T means teacher rating. Except for the italicized data (the dimensions of social support and problem solving rated by teachers were not significantly correlated with the results of student self-assessment), the rest reached a significant level.

Table 4. Model fitting index of resilience subscale.

	χ^2/df	*GFI*	*NNFI*	*CFI*	*RMSEA*
Fitting index	1.10	0.99	0.99	1.00	0.02

4. Discussion

First of all, the research results revealed that the resilience rating scale of primary school students showed high internal consistency reliability in the three evaluation subjects of student self-evaluation, parent evaluation and teacher evaluation, and the reliability value was more than 0.7, indicating a high consistency among the scale items. At the same time, the non-standardized factor load of all items in the confirmatory factor analysis reached a significant level, which further verified the good reliability of the scale items. In terms of validity, confirmatory factor analysis tested the construct validity of the resilience table from three perspectives, and the results showed that the construct validity indexes were all at a high level, which verified the rationality of the theoretical framework of the scale.

Secondly, the multi-method and multi-index model (MTMM) of the resilience table of primary school students from three perspectives is constructed, and the correlation matrix is analyzed. The results of the analysis support the existence of these three traits and reveal the possible bias of different evaluation perspectives, which highlights the need for multi-perspective assessment of resilience. With the maturity of self-awareness, elementary school students began to shift from concrete external characteristics to the understanding of abstract psychological traits, which not only changed their interaction pattern with adults, but also affected the accuracy of their self-evaluation. Since pupils may not be able to objectively assess their own abilities, this subjectivity further affects the correlation between self-assessment and other assessment. Third, when analyzing the correlation of different evaluation methods, the research finds that the correlation between student self-evaluation and parent evaluation is higher than that between student self-evaluation and teacher evaluation. This may be because parents and teachers view students differently. Parents pay

more attention to their children's performance at home, while teachers pay more attention to their children's performance at school, which may lead to bias in evaluation[20]. Since elementary school students interact with their parents more frequently and intimately, parents have more direct observation and understanding of their children's daily behavior and emotional changes. In contrast, teachers' interactions with students are more focused on teaching and learning and may not be as comprehensive and in-depth as those of parents. In addition, teachers need to pay attention to multiple students in the class at the same time, which may lead to their attention being distracted in social support and problem solving, and thus the correlation between teacher evaluation and student self-evaluation is not significant. Still, teacher evaluations have significant value because they provide a unique perspective that complements information that parent and student self-evaluations may miss.

Author Contributions

Y.K.: Responsible for literature review, data collection, data analysis and thesis writing. S.M.: Responsible for literature review, data analysis and thesis writing. S.L.: Responsible for overall design and thesis writing. All authors have read and agreed to the published version of the manuscript.

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Informed Consent Statement

We confirm that written consent was obtained from all participants prior to the study.

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Conflicts of Interest

There is no conflict of interest.

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