Методы и методики | Methods and techniques

Development of the Short-Form Parent Rating Scale (SFPRS) for Screening Gifted Children

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The purpose of this paper was to develop a parent rating scale targeted at screening children in terms of giftedness. 292 parents of gifted and typical students participated in the study. Of the parents, 170 were female while 122 were male. In the study, parents were asked to indicate the prominent characteristics of their gifted children and 10 items were identified after the characteristics were examined by two experts. It was seen to that the items determined were compatible with the items in the parent rating scales in the literature. Content, construct and criterion-related validities were examined while the Cronbach alpha value as a sign of reliability was also examined. Content validity was approved by two experts, Kendall's coefficient of concordance was calculated to determine inter-expert agreement and found to be 0.80. Confirmatory factor analysis results also supported a one-factor solution for an 8-item instrument. A comparison of scores given by parents of gifted and typical students also revealed a significant difference between two groups of the parents in favor of the parents having gifted children. The Cronbach's alpha value was found to be 0.78, an acceptable value for internal consistency. Therefore, the Short-Form Parent Rating Scale (SFPRS) may be used to screen practically gifted children by the parents without using boring and long instruments. In addition, not checking convergent and divergent validity, test-retest reliability and measurement invariance are seen as the limitations of this paper.

Keywords: parent rating, gifted children, validity, reliability, scale development.

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Разработка краткой формы Шкалы оценки родителями одаренности детей (Short-Form Parent Rating Scale, SFPRS)

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Целью данной работы была разработка краткой формы шкалы, предназначенной для оценки родителями одаренности их детей. В исследовании приняли участие 292 родителя одаренных и обычных учеников. Среди опрошенных родителей 170 женщин и 122 мужчины. В ходе исследования родителей просили указать наиболее значимые характеристики их одаренных детей. На основании экспертной оценки выделенных характеристик были отобраны 10 пунктов. Было установлено, что определенные экспертами пункты сопоставимы с пунктами других оценочных шкал для родителей, приведенных в литературе. Были изучены содержательная, конструктная и критериальная валидность шкалы, показатель надежности определен с помощью расчета значения α-Кронбаха. Содержательная валидность подтверждена двумя экспертами, коэффициент согласия Кендалла составил 0,80. Конфирматорный факторный анализ подтвердил однофакторное решение для теста из 8 пунктов. Сравнение оценок, полученных от родителей одаренных и обычных учеников, также выявило значительную разницу между двумя группами родителей в пользу родителей, имеющих одаренных детей. Установленное значение α-Кронбаха = 0,78 является приемлемым значением внутренней согласованности. Таким образом, краткая форма шкалы оценки родителями одаренности детей (SFPRS) может применяться для оценки одаренных детей без использования утомительных и долгих для заполнения тестов. Ограничением данной работы является отсутствие проверки конвергентной и дивергентной валидности, тест-ретестовой надежности и инвариантности измерений.

Ключевые слова: родительская оценка, одаренные дети, валидность, надежность, разработка шкалы.

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Introduction

Screening tools for gifted children play fundamental roles in identification of gifted students [8; 27]. Teacher and parent rating scales are frequently used for screening purposes, teacher rating scales specifically are used more than parent rating scales for screening purposes [8]. Parents might not be experienced about evaluating children and they might not have the time for long instruments for screening purposes. Hence, the characteristics of teacher and parent rating instruments should be studied from a different approach. Parent rating instruments should be short and their content should be easily understandable. The development of short and understandable parent rating scales is necessary to make the screening process more effective and efficient. Clark [7] stated that screening should be effective and efficient screening means not determining high rates of children who are not gifted. To provide effective and efficient parent ratings for gifted children, there is a need for reliable and valid screening instruments [11].

Screening instruments in literature might be classified into three different groups: Short forms of intelligence tests [1; 3], teacher rating scales [13] and parent rating scales [24]. However, parent rating scales are not taken into consideration as much as teacher rating scales and short-form intelligence tests [36]. Moreover, existent parent rating scales such as PGRS (72-item), the Characteristics of Giftedness Scale (25-item) [17; 40], the Gifted and Talented Evaluation Scales (50-item) [15] and the Scales for Identifying Gifted Students (84-item) [25] have a high number of items. In a recent study [36], it was revealed that only two parent rating scales are mentioned in the PsycINFO database. In this study, The Web of Science database was searched with the keywords "parent rating scale*" and "gifted*". Four different parent rating scales were determined and it was seen that they had a number of items over 25. Schmitt et al. [36] criticized the existent parent rating scales for gifted children from the position that these instruments do not ask questions appropriate to parents, since they involve the restatement of the same items in teacher rating scales. The authors also stated that the existent parent rating scales are near trating scales are near trating scales for June terms and the scales for June terms and the scales for gifted children from the position that these instruments do not ask questions appropriate to parents, since they involve the restatement of the same items in teacher rating scales. The authors also stated that the existent parent rating scales are near the scales for Identifying Gifted Students as an example, completing this instrument might take 1 hour.

A limited number of parent rating scales for gifted children in literature and a high number of items in them are the main rationales of this study. In this study, SFPRS will be developed to contribute to both research and screening purposes in gifted education. The main purpose of this study was to develop a short-form parent rating scale to assess children for giftedness. The hypotheses of the study were that (1) the SFPRS is a valid and reliable measurement tool and can be used for screening purposes in the identification of gifted students and (2) that parents with gifted children will rate their children higher than parents without gifted children.

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Theoretical Background of the SFPRS

The SFPRS was developed as a one-dimensional scale to measure parents' assessment of giftedness, this structure is based on the implicit theories of parents about giftedness. Implicit theories are the system of judgments that individuals form in their own minds as a result of their experiences [44]. These judgments continue to remain in the minds of individuals unless they are revealed as a result of an interaction. Sternberg [44] states that perhaps the most accurate way to reveal implicit theories is to ask people directly what the concept is. In this study, parents were asked about the prominent characteristics of gifted children in order to determine the scale items and to reveal parents' implicit theories. This is because parents' implicit theories reflect their deep observations about giftedness. Based on the studies of Dweck & Leggett [10] and Dweck [9], the implicit theories of parents about giftedness can be defined as parents' beliefs about the nature of giftedness, that is, the beliefs about the changeability and effort requirement of giftedness. It can be said that these beliefs interact with the performance and potential of children, so they are fundamental in assessing giftedness. This is due to the fact that screening gifted children by parent rating requires determining specific behaviors reflecting giftedness, which are determined by implicit theories of parents about giftedness. When the literature is examined, it is possible to come across many studies that examine parents' implicit theories of giftedness [2; 5; 31; 34; 38; 42]. These studies show that examining parents' implicit theories can help reveal the indicators of giftedness. Therefore, in this study, the items of the SFPRS were determined by asking the parents first, and then two experts examined them in terms of content validity. Beginning from the items involving behaviors associated with implicit theories of parents has advantages in this study. First of all, there is a theory underlying the existing parent rating scales in literature. However, these theories are not suitable for every culture or educational system. Therefore, it seems advantageous to start with the implicit theories of parents. Moreover, beginning from parents' implicit theories can provide a way to use the appropriate language and behaviors in the instrument. It may also alleviate the application of the instrument in terms of providing familiar and known content for evaluation (for example, using "reaction time is short" as an item might have a similar meaning for raters). Moreover, it may reflect culturally valuable behaviors in homes in terms of giftedness in the instrument. Therefore, the SFPRS is based on the implicit beliefs of parents about giftedness and it is composed of items suggested by the parents of gifted children.

Methods

Research Design

In this study, an instrument development approach involving the collection of validity and reliability evidence was used. Construct validity, criterion-related validity and content validity were examined and Cronbach's alpha reliability was calculated in the study.

Participants

The participants involved 292 parents of gifted and typical students. Of the parents, 170 were female while 122 were male. The number of parents with gifted children is 255. The gifted students were enrolled in a gifted program (after-school program) while the other students were in typical schools. The age of the children ranged from 5 to 17.

Procedure

The determination of the scale items started by asking parents (f = 22) about the prominent behaviors of their children. Then, ten of the behaviors mentioned by the parents (f=30) were selected by two giftedness experts. Hence, content validity was checked by two experts on gifted education. Kendall's coefficient of concordance was calculated to determine inter-expert agreement and was found to be 0.80. Kendall's coefficient of concordance is used to assess interexpert agreement in ordinal scales. Kendall W ranges from 0 "no agreement" to 1 "full agreement" [21]. According to this value, there is a high level of agreement between the experts.

A ten-item scale as a short-form was chosen to develop in this study, since parents generally prefer not to use long versions of evaluation instruments or they can find the long version of the instruments boring and complex. The items in the scale and the scaling range are represented in table 1.

Table 1

| Scaling Range |
|---------------------|
| 1 (never)5 (always) |
| |

The items of the scale and the scaling range

Note. The items highlighted in bold were later removed from the measurement tool because they did not meet the assumptions.

The characteristics expressed in the items are among the characteristics mentioned in literature as the characteristics of gifted individuals. It is emphasized in literature that gifted individuals are of fast learning [7; 40], have a strong memory [23; 40], effective problem solving [7], a long attention span [23; 40; 45], ask questions out of curiosity [33; 40], are effective observers [45], creative thinkers [6], show high mathematical ability [18; 23], are curious [7; 46], are quick at adapting to new situations [7].

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After determining the items, two researchers (doctoral students in the gifted education program) reached the parents through the after-school program coordinator after taking formal permissions. Then, they informed the parents and took informed-consent for the research through the help of the coordinator. The form involving the descriptive information part and rating part for giftedness was shared with the parents via e-mail. After taking the forms from the parents, they were recorded into an excel file by using codes for the parents. The cut-off score of 2.5 was determined to distinguish gifted and non-gifted children. Scores of 2.5 and above indicate gifted children.

Data Analysis

In the analysis of the data, descriptive statistics, reliability analysis and validity analysis were done by SPSS 20 and AMOS 22. In descriptive statistics, the minimum and maximum values, the mean and standard deviations of scores on each item were calculated. In reliability analysis, Cronbach's alpha value for one-factor scale was calculated while confirmatory factor analysis for construct validity was done for the one-factor solution. In reliability analysis, Cronbach's alpha for the observed responses over 0.7 was accepted as good [4; 29]. Kendall's W test was used to examine content validity. Also, criterion-related validity was examined by comparing the scores given by the parents for the identified gifted students and typical students. The F-test was used for intergroup comparisons.

In construct validity anlaysis, different goodness-of-fit indices were used to check the fit of the one-factor solution. The first index was chi-square/degrees of freedom (χ^2 /df) ratio [37]. For an acceptable fit value, this ratio should be less than five [37]. Also, the model fit was evaluated using four other fit indices, including the root mean square error of approximation (RMSEA), the goodness-of-fit index (GFI), the comparative fit index (CFI), and the normed fit index (NFI). Literature reveals that good fit was achieved for CFI, NFI and GFI when they were higher than 0.90, but the RMSEA value should be less than 0.08 [16; 19; 22; 35].

Results

In the study, the multivariate normality and existence of outliers were checked before the confirmatory factor analysis and the data was found appropriate to go further with the analysis after the exclusion of item 1 and 9 due to their violation of the univariate normality assumption. The correlation matrix for data analysis with an eight-item instrument was examined and it was found that multicollinearity was not the case and all of the scores on the items were significantly associated with each other (p < 0.05). The matrix can be seen in Table 2.

Based on the correlation evidence among the scores on the instrument, confirmatory factor analysis (maximum likelihood method) for the one-factor solution was conducted. Values for the indices of χ^2 /df ratio, RMSEA, RMR, GFI, CFI and NFI were 3.17, 0.08, 0.04, 0.95, 0.93 and 0.93, respectively. The results revealed that all of the fit values (χ^2 /df ratio, RMSEA, RMR, GFI, CFI and NFI were in acceptable ranges [16; 19; 22; 35]. The factor loadings of the items ranged from 0.494 to 0.73. Cronbach's alpha value for the one-factor scale was found to be 0.78 and it was found acceptable [14]. Figure 1 represents the factor structure of the scale and related unstandardized regression weights.

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Table 2

| Correlation matrix table | (Pearson correlation) |
|--------------------------|-----------------------|
|--------------------------|-----------------------|

| Items | | | Items | | | | | |
|-------|------|------|-------|------|------|------|------|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 1 | - | | | | | | | |
| 2 | 0.43 | - | | | | | | |
| 3 | 0.35 | 0.47 | - | | | | | |
| 4 | 0.34 | 0.22 | 0.27 | - | | | | |
| 5 | 0.35 | 0.36 | 0.26 | 0.49 | - | | | |
| 6 | 0.28 | 0.36 | 0.23 | 0.34 | 0.46 | - | | |
| 7 | 0.28 | 0.44 | 0.47 | 0.17 | 0.22 | 0.24 | - | |
| 8 | 0.33 | 0.38 | 0.31 | 0.32 | 0.30 | 0.31 | 0.18 | - |



Fig. 1. Factor structure of the scale and related unstandardized regression weights

Criterion-related Validity

The scores on the instrument were also compared in terms of previous history of being identified or not. In the sample, there were 37 parents that have typical children while there were 255 parents that have gifted children. As validity evidence, the parents that have gifted children should give higher scores to their children than the parents that have typical children.

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For comparison, the F-test was applied to the data and the analysis showed that there was a statistically significant difference between the scores given by the parents in favor of the parents that have gifted children (\bar{X}_1 = 4.38, \bar{X}_2 = 4.20, *F* = 4.31, *df* = 1.290, *p* = 0.03, Partial η^2 = 0.02).

Descriptive Findings

The descriptive analysis showed that parents rated their children over 3.90 in general. This means that the parents saw their children as gifted if the behaviors in the scale were shown frequently. Table 3 represents the descriptive findings of the study.

Table 3

| Items | Min. | Max | Mean | SD | r _{tot} | Alpha if item deleted |
|------------------------------------|------|-----|------|------|------------------|-----------------------|
| Strong memory | 2 | 5 | 4.58 | 0.64 | 0.54 | 0.76 |
| Effective problem solving | 2 | 5 | 4.27 | 0.72 | 0.73 | 0.74 |
| Long attention span | 1 | 5 | 3.96 | 0.91 | 0.69 | 0.75 |
| Asking question out of curiosity | 2 | 5 | 4.65 | 0.62 | 0.57 | 0.77 |
| Being an effective observer | 2 | 5 | 4.58 | 0.68 | 0.62 | 0.76 |
| Being a creative thinker | 2 | 5 | 4.44 | 0.67 | 0.62 | 0.76 |
| Showing high mathematical ability | 1 | 5 | 4.26 | 0.78 | 0.61 | 0.77 |
| Quick adaptation to new situations | 1 | 5 | 4.09 | 0.94 | 0.63 | 0.77 |

Descriptive findings on the items

The mean of the total scores given by the parents on the instrument was 4.37 (the standard deviation is 0.47.) in a range between 2.50 and 5.00.

Discussion

In this study, the aim was to develop a short-form parent rating scale that aims to evaluate children in terms of giftedness. The items of the instrument were determined by asking the parents of gifted children about the manifest characteristics of their children in terms of giftedness. In this way, it is aimed to find items based on the implicit theories of parents. Implicit theories express the judgments that individuals form in their minds as a result of their lives and experiences [44]. Sternberg [44] stated that the shortest way to reveal implicit theories is to directly ask individuals what the characteristics related to giftedness are. Therefore, to determine the items that should be included in this study, data was collected by asking the parents about the implicit theories in their minds about giftedness, and it was considered important to collect data from the parents since the developed scale was a parent rating scale. It is an important contribution to developing the gifted rating scale since beginning to find items by using the jargon of the parents alleviates the establishing of a common parent language for the parents of gifted children. Another contribution of this study is that the instrument has lesser number of items and short phrases for gifted characteristics. As it is

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known, parents are not as acquainted as teachers in assessing their children's giftedness and they cannot spare a long time for rating their children [36]. Hence, the 8-item instrument with short phrases was validated in this study.

In literature, it is frequently said that the participation of parents in the identification process is as important as the participation of the teacher [28; 47]. When the literature is examined, it is seen that there are studies stating that parents are an excellent resource for getting information about the giftedness of children [26; 39; 41] and that parents' ability to recognize giftedness is seen as the most reliable source by many researchers [20; 48]. In this study, it was also seen that the parents provided consistent and reliable information about their gifted children. In line with this finding, Loeber et al. [25] also found that mothers provided more useful information than teacher ratings or children's self-reports.

Based on the findings of this study, it can be said that the validity and reliability of the parent rating scale were found acceptable and the instrument might be used for screening purposes in gifted education. According to the results, the Cronbach's Alpha (reliability) value of the SFPRS was found to be 0.78. Considering that there are 8 items in the assessment scale developed, it can be concluded that the reliability of the test is high [4; 29]. When the literature is examined, it is stated that the reliability will increase as the number of items increases [12; 43]. When the reliability values of existing parent rating scales [24; 30] were examined, it was seen that although the number of items was higher than SFPRS, Cronbach's Alpha was close to SFPRS. This finding can be interpreted as SFPRS being a reliable measurement tool.

In the study, different goodness-of-fit indices such as NFI, RMSEA, RMR, GFI, and CFI were used to check the suitability of the one-factor solution in the construct validity analysis. The first index was the chi-square/degrees of freedom (χ^2 /df) ratio. For an acceptable fit value, this ratio should be less than five [37]. In literature, it is revealed that good fit index is achieved for CFI, NFI, and GFI when it is higher than 0.90, but the RMSEA value should be less than 0.08 [16; 19; 22; 35]. This situation can be interpreted as SFPRS being a valid instrument.

As a result of the descriptive analysis of the research, it was determined that the parents generally rated their children above 3.90. This shows that parents see their children as gifted when they frequently display behaviors on the scale. However, as proof of validity, parents with gifted children were expected to give their children higher scores than parents with non-gifted children. When the data obtained from the parents of gifted and non-gifted children was compared, it was concluded that the scores given to their children by the parents with gifted children were higher. Similarly, Schmitt et al. [36], revealed that there were significant differences between students who were identified as gifted students, and gifted children were rated with higher scores by parents than non-gifted children.

In the study conducted by Schmitt et al. [36], it is stated that parents will not complete these scales due to a large number of items and the long response time in the parent rating scales in literature. Considering the Scales for Identifying Gifted Students [32] parent form, it is seen that the response time can be up to 1 hour. The average response time of the developed SFPRS is around 10 minutes, which is one of the strengths of this rating scale. Having a theoretical background based on the work of Silverman [40] is another strength of SFPRS compared to other scales in literature. In addition, a predictive evaluation was made with 8 items in the SFPRS and this can be considered as one of the strengths of the measurement tool.

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It is thought that the SFPRS developed within the scope of this research can be used by parents to ask themselves questions when they have doubts about their children's giftedness, and can be integrated into the identification models of schools or districts, or integrated into other measurement tools. In addition, measurements can be provided in a way that qualitative elements can be easily integrated by using SFPRS.

Limitations and Prospects of the Study

292 parents with gifted and non-gifted children participated in this study and an 8-item short-form parent rating scale was used. The number of participants and the number of items in the scale can be considered as a limitation of this research. Although this research was developed as a scale that parents can answer in a short time and easily, it can be recommended to increase the number of participants and the number of items in the parent rating scales to be developed in future studies. In this study, a 5-point Likert scale was used to provide optimum variance. Because Likert-type scaling does not have the same function for every culture, it may be suggested to use different scaling methods instead of Likert-type scaling in future parent rating scales to provide more detailed data about the student. In this study, construct validity was examined to test the validity of the scale. A limitation of this study is that convergent and divergent validity, test-retest reliability and measurement invariance were not verified. In addition, researchers may be advised to use concurrent validity and divergent validity. Since the indicators of giftedness may differ in different cultures, it may be recommended to compare the SFPRS with different cultures for future research. It is recommended that a similar study be conducted to develop short forms of teacher rating scales. Additionally, future studies might investigate the correlations of this scale with teacher ratings of similar constructs and other criterion measures, like standardized tests of IQ, academic achievement, and other talents.

The findings suggest that this scale may be a suitable assessment tool for school-based use. This study provides preliminary evidence that the SFPRS offers a promising short-parent rating scale for use by school systems and researchers. As a result of the study, it is recommended to increase data sources by including parent rating scales in screening processes.

Conclusions

The aim of this study was to develop a short-form measurement tool for parents to rate giftedness. The study group consisted of parents of gifted and typical students. In order to determine the items of the scale, parents were asked questions about the prominent characteristics of their gifted children and the opinions of two field experts were obtained. After the expert opinions, 10 items were determined. While examining the content, the construct and criterion-related validity of the scale, Cronbach's alpha value was also examined as an indicator of reliability. As a result of the analysis, a one-factor solution was supported for the 8-item instrument. According to the results of the analyses, the instrument was found to be valid and reliable. The comparison of the scores given by the parents of gifted and normal students revealed that there was a significant difference between the two groups of parents in favor of parents with gifted children. Therefore, the SFPRS can be practically used by parents to screen for gifted children without using tedious and lengthy instruments.

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