

Determining the Test–Retest Reliability of a Comprehensive Talent Identification Model Based on the SHAHAK Program and the Renzulli Scale in Male Students

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ABSTRACT

Purpose: The present study aimed to determine the test–retest reliability of a comprehensive talent identification model based on the SHAHAK program and the Renzulli Scale among male upper secondary school students.

Methods and Materials: This applied descriptive-survey study was conducted using a field research design. The statistical population consisted of all male upper secondary school students enrolled in schools located in District 5 of Tehran during the 2025–2026 academic year. Using convenience sampling and based on the Morgan table, 385 students were selected as the final sample. Data were collected using the Comprehensive Talent Identification Questionnaire based on the Renzulli Scale, which evaluates 14 domains of talent, including learning, creativity, motivation, leadership, arts, music, drama, communication, planning, mathematics, reading, technology, and science. The instrument was translated and culturally adapted through forward–backward translation procedures and subsequently reviewed by a panel of experts to establish face validity. Data were analyzed using descriptive statistics, the Kolmogorov–Smirnov test, the Kaiser–Meyer–Olkin (KMO) index, Bartlett’s Test of Sphericity, and Intraclass Correlation Coefficients (ICC) for assessing temporal reliability. Statistical analyses were performed using SPSS version 25 and SmartPLS.

Findings: Test–retest reliability analysis revealed satisfactory temporal stability across all dimensions of the questionnaire. Intraclass Correlation Coefficients ranged from 0.700 to 0.832. The highest reliability coefficients were observed for Leadership Characteristics (ICC = 0.832), Communication Expression (ICC = 0.827), and Reading Characteristics (ICC = 0.803). The overall questionnaire demonstrated acceptable temporal reliability with an ICC of 0.732.

Conclusion: The findings indicate that the Comprehensive Talent Identification Model based on the SHAHAK Program and the Renzulli Scale possesses satisfactory temporal reliability among male upper secondary school students. The acceptable stability of scores across repeated administrations supports the use of this multidimensional instrument as a reliable tool for identifying and evaluating diverse student talents in educational settings.

Keywords: Talent Identification, SHAHAK Program, Renzulli Scale, Test–Retest Reliability, Temporal Reliability, Gifted Students, Psychometric Properties.

1. Introduction

Talent is widely recognized as one of the most valuable human resources for individual development and societal advancement. The identification and nurturing of talented students have become central concerns for educational systems because talented individuals contribute disproportionately to scientific innovation, economic growth, leadership development, and cultural enrichment. Educational policymakers increasingly emphasize the necessity of establishing comprehensive and scientifically grounded systems capable of recognizing diverse forms of talent at early stages of development. Early identification allows educational institutions to provide appropriate interventions, enrichment opportunities, and developmental support that maximize students' potential and facilitate long-term academic and professional success (Shaheen, 2025). As educational environments become increasingly complex and competitive, the demand for reliable and valid talent identification models has grown substantially.

Historically, talent identification was often limited to traditional measures of intelligence and academic achievement. However, contemporary perspectives have expanded the concept of giftedness beyond cognitive ability alone. Modern theories emphasize that talent is a multidimensional construct encompassing intellectual, creative, motivational, social, artistic, leadership, and domain-specific competencies. Research suggests that talent emerges through dynamic interactions among cognitive characteristics, environmental opportunities, motivation, and developmental experiences rather than being solely determined by innate ability (Kuznetsova et al., 2024). Consequently, educational systems require comprehensive assessment approaches capable of capturing the diverse manifestations of student potential.

The increasing complexity of talent conceptualization has led researchers to develop multidimensional models that consider a broad range of student characteristics. One of the most influential frameworks in the field is the work of Renzulli, who proposed that gifted behaviors emerge through the interaction of above-average ability, creativity, and task commitment rather than through intelligence alone (Renzulli & Reis, 2021). This perspective shifted the focus of talent identification from static intelligence measurement toward a broader evaluation of behavioral characteristics associated with high performance. Building upon this theoretical foundation, the Schoolwide Enrichment Model was developed to promote talent development by providing

enrichment experiences that foster creativity, motivation, and advanced learning opportunities for students with diverse strengths (Renzulli, 2021).

The Renzulli Scales for Rating the Behavioral Characteristics of Superior Students have become one of the most extensively used instruments for talent identification in educational settings. These scales enable teachers to evaluate students across multiple domains, including learning, creativity, motivation, leadership, communication, arts, science, mathematics, and other areas of potential excellence (Renzulli & Reis, 2021). Teacher rating scales are particularly valuable because teachers observe students continuously in authentic educational contexts and can evaluate behaviors that may not be captured through standardized testing. Consequently, multidimensional teacher-based assessments have become important tools for identifying students whose talents might otherwise remain unrecognized.

The significance of comprehensive talent identification extends beyond academic achievement. Research demonstrates that identifying students' strengths contributes to more effective educational planning, career guidance, and personal development. The alignment of educational opportunities with students' talents facilitates the development of self-concept, motivation, engagement, and future career aspirations. According to career development theories, the recognition and cultivation of personal abilities play a critical role in shaping educational and occupational trajectories throughout the lifespan (Samiei, 2017). Therefore, talent identification serves not only educational purposes but also broader developmental and societal objectives.

Recent systematic reviews have highlighted the growing interest in evidence-based talent identification across multiple disciplines. In educational settings, researchers have emphasized the need for comprehensive frameworks that integrate cognitive, behavioral, physiological, and psychological indicators of giftedness (Kuznetsova et al., 2024). Similarly, in sports sciences, talent identification has evolved from reliance on isolated performance measures toward multidimensional models incorporating physical, psychological, technical, and environmental factors (Mendes et al., 2022; Simwanza & Paul, 2023). The emergence of machine learning and advanced analytics has further expanded opportunities for developing sophisticated identification systems capable of processing large amounts of data and generating more accurate predictions of future performance (Reyaz et al., 2022). These developments

collectively indicate that effective talent identification requires comprehensive and multidimensional approaches rather than reliance on single indicators.

Technological advances have also influenced contemporary talent identification practices. Digital assessment systems and web-based scoring platforms have improved the efficiency, accessibility, and standardization of talent evaluation procedures. The development of technology-supported talent identification systems allows educational institutions to manage large-scale screening programs while maintaining accuracy and consistency in assessment practices (Fadhili et al., 2024). Such innovations have strengthened efforts to create scalable models capable of identifying talent within diverse educational populations.

Despite significant advances in the field, several challenges continue to affect talent identification processes. One persistent concern involves the potential exclusion of talented individuals due to limitations in assessment methods, evaluator biases, or narrow conceptualizations of giftedness. Research on talent management and identification has demonstrated that inclusive approaches are necessary to ensure equitable opportunities for students from different social, cultural, and educational backgrounds (Mousa et al., 2021). Educational systems must therefore adopt assessment frameworks that minimize bias and recognize multiple forms of talent. Comprehensive models that incorporate diverse dimensions of student ability are more likely to identify hidden talents and provide equitable developmental opportunities.

Another challenge concerns the establishment of psychometrically sound instruments capable of producing valid and reliable measurements. The quality of talent identification decisions depends heavily on the measurement properties of assessment tools. Reliability is particularly important because inconsistent measurements can lead to inaccurate identification decisions and inappropriate educational placements. Among the various forms of reliability, temporal reliability or test–retest reliability is especially critical because it evaluates the stability of scores over time. If a talent identification instrument produces substantially different results across repeated administrations, confidence in its ability to accurately represent student characteristics becomes limited. Consequently, rigorous psychometric evaluation is an essential prerequisite for the implementation of any talent identification model.

Several studies have examined the psychometric characteristics of the Renzulli Scales in different cultural

contexts. Evidence from Jordan demonstrated that the instrument possesses satisfactory validity and reliability for identifying gifted students aged 12 to 18 years, supporting its applicability in educational settings beyond its original development context (Al-Momani & Al-Oweidi, 2020). Such findings suggest that the multidimensional structure of the Renzulli framework may be adaptable across diverse populations; however, further validation studies remain necessary whenever the instrument is translated, culturally adapted, or integrated into new educational systems.

In Iran, growing attention has been directed toward the development of indigenous talent identification frameworks capable of addressing the specific needs of the national educational system. Researchers have emphasized the importance of identifying the dimensions, components, and contextual factors associated with talent discovery and support among students (Bakhtiari Ramezani et al., 2022). Subsequent investigations proposed comprehensive models for discovering and nurturing student talents, particularly in underserved educational environments where talented individuals may face barriers to recognition and development (Bakhtiari Ramezani et al., 2020). These efforts reflect increasing recognition of the need for systematic and evidence-based approaches to talent identification within Iranian schools.

More recently, researchers have sought to integrate findings from diverse theoretical and empirical traditions to develop comprehensive conceptual models of student talent identification. Meta-synthesis studies have highlighted the multidimensional nature of talent and emphasized the importance of considering cognitive, motivational, social, creative, and environmental factors within integrated frameworks (Rahmani Barouji et al., 2024). Likewise, the development and validation of talent identification and academic guidance models have provided additional evidence supporting the necessity of multidimensional assessment systems for educational decision-making (Rajabian Dehzireh et al., 2025). These developments underscore the movement toward holistic models that reflect the complexity of human potential.

The SHAHAK program represents one such effort to establish a comprehensive framework for talent identification within the Iranian educational context. By incorporating the multidimensional structure of the Renzulli Scales, the program seeks to provide a systematic mechanism for identifying diverse student talents across educational domains. The framework aligns with contemporary perspectives emphasizing talent development

rather than merely talent selection. This developmental orientation is consistent with broader educational reform efforts that prioritize individualized learning pathways, student-centered instruction, and the cultivation of diverse strengths among learners (Hou et al., 2014).

The theoretical rationale for comprehensive talent identification is also supported by broader perspectives on human development and leadership. Contemporary approaches emphasize that educational systems should recognize and cultivate multiple forms of excellence, including creativity, communication, leadership, and innovation. Such perspectives align with humanistic approaches that value the holistic development of individuals and acknowledge diverse pathways to achievement and contribution (Vora & Kainzbauer, 2020). Similarly, educational models designed to foster thinking skills and creativity among all students emphasize the importance of recognizing latent talents that may emerge in different contexts and developmental stages (Schlichter, 2023).

Although previous studies have demonstrated the theoretical and practical value of comprehensive talent identification systems, evidence regarding the temporal stability of such models remains relatively limited, particularly within the Iranian educational context. Given that talent identification decisions often influence educational opportunities, enrichment programming, and academic guidance, it is essential to ensure that assessment instruments generate stable and consistent results over time. Establishing test–retest reliability provides critical evidence regarding the dependability of measurement outcomes and strengthens confidence in the use of the instrument for educational decision-making.

Therefore, the aim of the present study was to determine the test–retest reliability of the Comprehensive Talent Identification Model based on the SHAHAK Program and the Renzulli Scale among male upper secondary school students.

2. Methods and Materials

2.1. Study Design and Participants

This study was conducted using a descriptive-survey design with an applied objective. The research aimed to examine the temporal stability and test–retest reliability of a comprehensive talent identification model developed within the framework of the SHAHAK program and based on the Renzulli Scale among Iranian male students. Data were

collected through a field-based approach in natural educational settings. The target population consisted of all male students enrolled in upper secondary schools (grades 10–12) in District 5 of Tehran during the 2025–2026 academic year. This educational district was selected because of its diverse student population and the implementation of talent identification initiatives within the school system.

Participants were selected through convenience sampling from several upper secondary schools located in District 5 of Tehran. The sample size was determined based on the study objectives, recommendations for psychometric investigations, and the Morgan sampling table. Initially, 400 students were recruited to compensate for potential attrition and incomplete responses. Following data screening, 12 questionnaires were identified as incomplete or invalid and were therefore excluded from the analyses. Consequently, the final sample consisted of 385 male students whose data met the inclusion criteria and were retained for statistical analyses. To evaluate temporal reliability, the instrument was administered twice to the same participants with an appropriate interval between the first administration (test) and the second administration (retest). This procedure enabled the assessment of score stability over time and provided evidence regarding the consistency of the comprehensive talent identification model.

2.2. Measures

Data were collected using the Comprehensive Talent Identification Questionnaire based on the Renzulli Scale. This instrument was adapted from the Renzulli Scales for Rating the Behavioral Characteristics of Superior Students developed by Joseph S. Renzulli in 2021. The scale is designed to be completed by teachers and provides systematic evaluations of students' observable talents and abilities across multiple domains. The instrument includes fourteen distinct dimensions comprising Learning Ability (11 items), Motivation (11 items), Creativity (9 items), Leadership (7 items), Artistic Ability (11 items), Music (7 items), Drama (10 items), Communication Accuracy (11 items), Communication Expression (4 items), Planning (15 items), Mathematics (10 items), Reading (6 items), Technology (7 items), and Science (7 items).

Each dimension assesses a specific set of behavioral characteristics associated with giftedness and talent development. The Learning dimension evaluates the speed and quality of learning, comprehension of new concepts, and

intellectual adaptability. Motivation assesses persistence, enthusiasm, commitment, and willingness to engage in educational activities. Creativity measures divergent thinking, originality, and innovative problem-solving abilities. Leadership evaluates interpersonal influence, responsibility, and the ability to guide others in group situations. The Artistic, Music, and Drama dimensions assess students' capacities for aesthetic appreciation, artistic expression, musical sensitivity, rhythm perception, performance skills, and creative presentation. The Communication dimensions examine both the ability to accurately receive and process information and the capacity to effectively express ideas and emotions. Planning evaluates organizational skills, goal setting, and time management. Mathematics measures quantitative reasoning and problem-solving abilities, while Reading assesses comprehension, interpretation, and interest in written materials. Technology examines proficiency in using technological tools and digital resources, and Science evaluates scientific curiosity, understanding of natural phenomena, and scientific reasoning.

The items included in the instrument were derived from the gifted education literature and from research addressing the characteristics of talented and creative individuals. Because the fourteen dimensions represent relatively distinct behavioral domains, scores are interpreted separately rather than being combined into a single overall score. Teachers evaluated each student individually using a six-point Likert-type scale ranging from 1 (Never) to 6 (Always). Higher scores within each dimension indicate a greater presence of the corresponding talent-related characteristics. Prior to data collection, the scale underwent a rigorous translation and cultural adaptation process. The original English version was independently translated into Persian by specialists in psychology and education. Subsequently, the Persian version was back-translated into English by bilingual experts. The translated versions were compared and revised to ensure conceptual equivalence with the original instrument. To establish face validity and linguistic appropriateness, the Persian version was reviewed by a panel of ten experts in psychology and educational sciences, all of whom confirmed the adequacy and clarity of the translated items.

2.3. Data Analysis

Data analysis was conducted using both descriptive and inferential statistical methods. Descriptive statistics, including means, standard deviations, frequencies, and percentages, were calculated to summarize participant characteristics and the distribution of scores across the dimensions of the talent identification model. Prior to factor analysis, sampling adequacy was assessed using the Kaiser–Meyer–Olkin (KMO) index, and the suitability of the correlation matrix was examined through Bartlett's Test of Sphericity.

To evaluate the construct validity of the comprehensive talent identification model based on the SHAHAK framework and the Renzulli Scale, confirmatory factor analysis (CFA) within the structural equation modeling framework was employed. This analysis was used to determine whether the hypothesized multidimensional structure of the instrument adequately represented the observed data and to verify the factorial validity of the model among Iranian male students. Internal consistency reliability was assessed using Cronbach's alpha coefficients for each dimension of the scale. Temporal reliability, which constituted the primary focus of the present study, was examined using the Intraclass Correlation Coefficient (ICC) by comparing test and retest scores obtained from the same participants across the two measurement occasions. Higher ICC values were interpreted as evidence of greater temporal stability and consistency of the talent identification model over time. All statistical analyses were performed using SPSS version 25 and SmartPLS software, and statistical significance was evaluated at an alpha level of 0.05.

3. Findings and Results

Descriptive statistics were used to summarize the characteristics of the participants and the main research variables before conducting inferential analyses. The participants were male upper secondary school students from District 5 of Tehran. The mean age of the participants was 16.56 years with a standard deviation of 1.12. The youngest participant was 15 years old and the oldest participant was 18 years old, indicating that the sample represented the expected age range of upper secondary school students.

Table 1

Descriptive Statistics of the Study Variables (N = 385)

Variable	Mean	SD	Variance	Minimum	Maximum
Learning Characteristics	4.86	0.90	0.81	1.00	6.00
Creativity Characteristics	4.91	0.83	0.69	2.00	6.00
Motivational Characteristics	4.88	0.90	0.82	2.18	6.00
Leadership Characteristics	4.90	0.86	0.74	1.00	6.00
Artistic Characteristics	4.91	0.83	0.69	2.36	6.00
Musical Characteristics	4.48	0.98	0.97	1.71	6.00
Dramatic Characteristics	4.71	0.94	0.89	1.40	6.00
Communication Accuracy	4.73	0.92	0.85	1.36	6.00
Communication Expression	4.59	0.84	0.70	1.75	6.00
Planning Characteristics	4.81	0.86	0.74	2.20	6.00
Mathematical Characteristics	4.98	0.84	0.71	2.20	6.00
Reading Characteristics	4.64	0.90	0.82	1.00	6.00
Technology Characteristics	4.61	0.93	0.88	1.00	6.00
Science Characteristics	4.96	0.85	0.72	1.86	6.00

As shown in Table 1, the mean scores of all dimensions were higher than the midpoint of the six-point response scale (3.50). This indicates that teachers generally assigned relatively high ratings to students across the talent-related domains. The highest mean score belonged to Mathematical Characteristics ($M = 4.98$, $SD = 0.84$), followed by Science Characteristics ($M = 4.96$, $SD = 0.85$), while the lowest mean score was observed for Musical Characteristics ($M = 4.48$, $SD = 0.98$). Overall, the descriptive findings show that all

dimensions of the comprehensive talent identification model were above the moderate level.

Inferential analyses were conducted to examine the assumptions of data analysis and evaluate the psychometric properties of the instrument, particularly its temporal reliability.

The Kolmogorov–Smirnov test was used to examine the normality of the distribution of the study variables. The results are presented in Table 2.

Table 2

Results of the Kolmogorov–Smirnov Test for Normality

Variable	K–S Statistic	p-value	Result
Learning Characteristics	0.104	<0.001	Non-normal
Creativity Characteristics	0.098	<0.001	Non-normal
Motivational Characteristics	0.109	<0.001	Non-normal
Leadership Characteristics	0.102	<0.001	Non-normal
Artistic Characteristics	0.095	<0.001	Non-normal
Musical Characteristics	0.092	<0.001	Non-normal
Dramatic Characteristics	0.103	<0.001	Non-normal
Communication Accuracy	0.090	<0.001	Non-normal
Communication Expression	0.106	<0.001	Non-normal
Planning Characteristics	0.084	<0.001	Non-normal
Mathematical Characteristics	0.118	<0.001	Non-normal
Reading Characteristics	0.082	<0.001	Non-normal
Technology Characteristics	0.070	<0.001	Non-normal
Science Characteristics	0.113	<0.001	Non-normal

As shown in Table 2, the significance level for all variables was less than 0.05. Therefore, the null hypothesis of normal distribution was rejected for all study variables, indicating that the data did not follow a normal distribution.

Accordingly, subsequent analyses were interpreted with attention to the non-normal distribution of the data.

The Kaiser–Meyer–Olkin index and Bartlett’s Test of Sphericity were used to determine the suitability of the data for factor analysis. The results are shown in Table 3.

Table 3

Results of the KMO Index and Bartlett's Test of Sphericity

KMO	Bartlett's Chi-Square	df	p-value
0.960	53,025.50	7,875	<0.001

As presented in Table 3, the KMO value was 0.960, indicating excellent sampling adequacy for factor analysis. Moreover, Bartlett's Test of Sphericity was statistically significant ($\chi^2 = 53,025.50$, $df = 7,875$, $p < 0.001$), confirming that the correlation matrix was appropriate for factor analysis and that the relationships among the items

were sufficient for examining the factorial structure of the instrument.

The temporal reliability of the Comprehensive Talent Identification Questionnaire was examined using the Intraclass Correlation Coefficient between test and retest scores. The results are presented in Table 4.

Table 4

Intraclass Correlation Coefficients for Test-Retest Reliability

Dimension	Number of Items	ICC
Learning Characteristics	11	0.700
Creativity Characteristics	9	0.713
Motivational Characteristics	11	0.720
Leadership Characteristics	7	0.832
Artistic Characteristics	11	0.752
Musical Characteristics	7	0.754
Dramatic Characteristics	10	0.725
Communication Accuracy	11	0.700
Communication Expression	4	0.827
Planning Characteristics	15	0.700
Mathematical Characteristics	10	0.700
Reading Characteristics	6	0.803
Technology Characteristics	7	0.737
Science Characteristics	7	0.752
Total Questionnaire	126	0.732

As shown in Table 4, the ICC values ranged from 0.700 to 0.832 across the questionnaire dimensions. The highest temporal reliability was observed for Leadership Characteristics (ICC = 0.832), followed by Communication Expression (ICC = 0.827) and Reading Characteristics (ICC = 0.803). The total questionnaire also demonstrated acceptable temporal reliability (ICC = 0.732). These findings indicate that the comprehensive talent identification model based on the SHAHAK program and the Renzulli Scale has satisfactory stability over time among male upper secondary school students.

4. Discussion and Conclusion

The primary objective of the present study was to determine the test-retest reliability of the Comprehensive Talent Identification Model based on the SHAHAK Program and the Renzulli Scale among male upper secondary school

students. The findings demonstrated that all dimensions of the instrument exhibited acceptable to excellent levels of temporal reliability, with Intraclass Correlation Coefficients ranging from 0.700 to 0.832. Furthermore, the overall questionnaire yielded an ICC of 0.732, indicating satisfactory stability across repeated administrations. These findings provide empirical support for the temporal consistency of the SHAHAK-based talent identification model and suggest that the instrument can reliably assess students' talent-related characteristics over time.

Before examining temporal reliability, the descriptive findings indicated that all dimensions of the questionnaire obtained mean scores above the midpoint of the six-point scale. This result suggests that teachers generally perceived students as demonstrating relatively high levels of talent-related behaviors across learning, creativity, motivation, leadership, communication, planning, mathematics, science, and other domains. Particularly notable were the high mean

scores observed for mathematical and scientific characteristics. These findings may reflect the increasing emphasis placed on academic achievement and science-oriented educational activities within contemporary educational systems. Similar observations have been reported in studies emphasizing the importance of recognizing domain-specific strengths and providing differentiated educational opportunities for students with diverse abilities (Rahmani Barouji et al., 2024; Rajabian Dehzireh et al., 2025). The presence of above-average scores across all domains further supports the multidimensional perspective of talent, which assumes that students possess varying combinations of strengths rather than a single generalized form of giftedness.

The findings related to the normality assessment revealed that all study variables deviated significantly from a normal distribution. Such results are not uncommon in talent identification research, particularly when teacher-rating instruments are used. Teachers often identify and evaluate students who exhibit relatively strong abilities and positive educational behaviors, resulting in distributions skewed toward higher scores. Similar distributional patterns have been reported in research involving giftedness assessment and talent screening instruments (Al-Momani & Al-Oweidi, 2020). Although non-normality may influence certain statistical procedures, the large sample size and the use of analytical methods appropriate for psychometric evaluation support the robustness of the present findings.

The KMO index and Bartlett's Test of Sphericity provided strong evidence regarding the suitability of the data for factor analytic procedures. The KMO value of 0.960 indicated excellent sampling adequacy, while the significant Bartlett's test confirmed that the correlations among questionnaire items were sufficiently strong for evaluating latent constructs. These findings indirectly support the structural coherence of the instrument and are consistent with previous investigations that reported favorable psychometric properties for multidimensional talent identification scales based on the Renzulli framework (Al-Momani & Al-Oweidi, 2020; Renzulli & Reis, 2021). High KMO values are particularly important in multidimensional instruments because they indicate that the items collectively capture meaningful underlying constructs rather than unrelated behavioral observations.

The most important finding of the present study concerns the temporal reliability of the instrument. The overall ICC value of 0.732 demonstrates that the questionnaire produces stable measurements across repeated administrations. This

level of reliability is generally considered satisfactory for educational assessment instruments and suggests that the observed scores reflect relatively enduring characteristics rather than temporary fluctuations or measurement error. Because talent identification often serves as the basis for educational decisions, enrichment programming, and academic guidance, the demonstration of temporal stability is essential. An instrument that yields inconsistent results across time may lead to inaccurate identification decisions and consequently reduce the effectiveness of talent development programs.

The strongest temporal stability was observed in the dimensions of leadership, communication expression, and reading characteristics. Leadership characteristics achieved the highest ICC value (0.832), indicating a particularly stable pattern of teacher observations over time. One explanation for this finding is that leadership behaviors are often highly visible within classroom and school environments. Students who demonstrate responsibility, initiative, influence, and social competence tend to display these behaviors consistently, allowing teachers to make stable evaluations across repeated observations. This interpretation aligns with contemporary views emphasizing leadership as a relatively enduring personal characteristic that develops gradually through sustained social interactions and educational experiences (Vora & Kainzbauer, 2020). The stability of leadership ratings also supports the inclusion of leadership as an essential dimension within comprehensive talent identification frameworks.

Similarly, communication expression demonstrated a high level of temporal reliability. Communication skills are frequently observable in classroom discussions, presentations, collaborative activities, and everyday interactions. Because teachers encounter repeated opportunities to evaluate students' expressive abilities, their ratings are likely to remain stable across measurement occasions. This finding is consistent with educational models that emphasize communication as a critical component of talent development and student success (Schlichter, 2023). The stable assessment of communication skills is particularly valuable because these abilities contribute significantly to academic achievement, leadership development, and future occupational success.

Reading characteristics also exhibited strong temporal stability. Reading-related behaviors often represent long-term academic habits and competencies rather than temporary states. Students who consistently demonstrate interest in reading, strong comprehension skills, and

engagement with written materials are likely to maintain these characteristics over time. The stability observed in this domain supports theories suggesting that literacy-related talents emerge through sustained interactions among cognitive ability, motivation, and educational experiences (Samiei, 2017). Consequently, reading ability appears to be a reliable indicator of academic potential within comprehensive talent identification systems.

Although some dimensions yielded slightly lower ICC values, all coefficients remained within acceptable ranges. Learning characteristics, communication accuracy, planning characteristics, and mathematical characteristics each demonstrated ICC values of 0.700. While lower than the highest-performing dimensions, these coefficients nevertheless indicate satisfactory stability. The relatively moderate stability observed in these domains may reflect the dynamic nature of educational development. Learning strategies, planning behaviors, and mathematical performance can be influenced by instructional experiences, environmental conditions, and developmental changes that occur between assessment occasions. Therefore, modest fluctuations in these domains may not necessarily indicate measurement weaknesses but rather reflect genuine developmental processes.

The acceptable temporal reliability observed across creative, motivational, artistic, musical, dramatic, technological, and scientific characteristics further supports the multidimensional structure of the SHAHAK-based model. Contemporary theories increasingly recognize that talent manifests in diverse domains and that effective identification systems must account for variability in individual strengths (Kuznetsova et al., 2024). The present findings suggest that teachers can reliably evaluate students across these diverse domains, thereby strengthening the practical utility of the instrument for educational decision-making.

The results of this study are highly consistent with the theoretical assumptions underlying the Renzulli model. According to Renzulli's conception of giftedness, superior performance emerges through the interaction of above-average ability, creativity, and task commitment rather than through intelligence alone (Renzulli & Reis, 2021). The satisfactory reliability coefficients obtained across multiple dimensions indicate that these behavioral characteristics can be assessed consistently over time. Furthermore, the findings support the broader objectives of the Schoolwide Enrichment Model, which emphasizes talent development through the identification and nurturing of diverse student

strengths (Renzulli, 2021). Reliable assessment is a prerequisite for implementing enrichment programs effectively because educational interventions must be based on dependable information regarding students' abilities and interests.

The findings are also consistent with recent international research emphasizing comprehensive approaches to talent identification. Systematic reviews in both education and sports have concluded that multidimensional assessment frameworks outperform narrow identification methods because they capture a broader range of talent indicators and developmental potential (Mendes et al., 2022; Simwanza & Paul, 2023). Similarly, studies investigating technological and machine-learning approaches to talent identification emphasize the importance of reliable input data for generating accurate predictions and developmental recommendations (Fadhili et al., 2024; Reyaz et al., 2022). The present findings contribute to this growing body of literature by demonstrating that a multidimensional talent identification instrument can maintain acceptable stability across time.

The results further support recent efforts to develop comprehensive talent identification models within the Iranian educational context. Researchers have emphasized the necessity of integrating cognitive, motivational, social, and contextual dimensions into talent identification systems rather than relying exclusively on academic performance indicators (Bakhtiari Ramezani et al., 2020, 2022). More recent conceptual and validation studies have similarly advocated for holistic frameworks capable of identifying diverse forms of student potential (Rahmani Barouji et al., 2024; Rajabian Dehzireh et al., 2025). The present study extends these efforts by providing evidence that such a comprehensive model possesses acceptable temporal reliability and therefore can serve as a dependable assessment tool in educational settings.

Another important implication concerns educational equity and inclusiveness. Research has shown that traditional talent identification systems may overlook students whose strengths do not align with conventional academic measures (Mousa et al., 2021). By assessing multiple domains of talent, the SHAHAK-based model increases opportunities for recognizing diverse student capabilities. The demonstration of temporal reliability further strengthens confidence that identification decisions derived from the instrument are based on stable characteristics rather than transient behaviors. This is particularly important when talent identification outcomes

influence access to specialized educational programs and developmental opportunities.

Finally, the findings support evidence indicating that early and accurate identification of talent contributes positively to long-term educational outcomes. Students whose abilities are recognized and nurtured at appropriate developmental stages are more likely to experience academic success, sustained motivation, and positive developmental trajectories (Shaheen, 2025). Consequently, establishing reliable talent identification procedures represents an important step toward maximizing student potential and enhancing educational effectiveness.

Several limitations should be considered when interpreting the findings of this study. First, the sample was restricted to male upper secondary school students from District 5 of Tehran, which may limit the generalizability of the findings to female students, younger age groups, or students from other geographical regions. Second, the study relied exclusively on teacher ratings, which may be influenced by subjective perceptions and individual differences among raters. Third, although temporal reliability was examined, other forms of reliability and validity could be investigated further using additional methodologies. Finally, the study employed a convenience sampling approach, which may reduce the representativeness of the sample.

Future studies should examine the temporal reliability of the SHAHAK-based talent identification model across different educational levels, regions, and demographic groups. Comparative investigations involving female students and culturally diverse populations would provide additional evidence regarding the generalizability of the model. Researchers may also evaluate longitudinal stability over longer time intervals and explore predictive validity by examining the relationship between identified talents and subsequent educational achievements. Furthermore, future research could integrate multiple assessment sources, including self-reports, parent evaluations, peer nominations, and objective performance measures to obtain a more comprehensive understanding of student talent.

Educational authorities and school administrators may utilize the SHAHAK-based comprehensive talent identification model as a reliable screening instrument for recognizing diverse student talents. Teacher training programs should be developed to enhance the accuracy and consistency of behavioral evaluations. Schools may integrate the model into talent development initiatives, enrichment programs, and academic guidance services to

ensure that students with different strengths receive appropriate support. Educational policymakers should also consider incorporating multidimensional talent assessment frameworks into broader educational planning efforts to promote equity, maximize student potential, and foster the development of future human capital.

Authors' Contributions

All authors significantly contributed to this study.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

In this study, to observe ethical considerations, participants were informed about the goals and importance of the research before the start of the interview and participated in the research with informed consent.

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