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Psychometric analysis of underachievement tool for gifted students

Marilena Z. Leana-Taşçılar

Special Education, Istanbul Medeniyet University, Istanbul, Turkey

ABSTRACT

This study aimed to develop a comprehensive tool to assess underachievement in gifted students, incorporating input from parents, teachers, and students themselves. A total of 285 participants, including 95 gifted students, their parents, and teachers, were involved in the study. The results have revealed a four-factor structure for the Gifted Underachievement Tool, with strong evidence supporting its validity and reliability. The study discusses the limitations of using this tool for the identification of underachievement in gifted students and draws significant conclusions from the findings.

PUBLIC INTEREST STATEMENT

The underachievement syndrome delineates a disparity between students' abilities and their academic performance. It constitutes a significant concern within the gifted student population. Empirical investigations reveal that nearly 50% of gifted students may experience episodes of underachievement at various stages of their educational journeys. Discerning underachievement in gifted children has proven to be a complex task, necessitating the inclusion of viewpoints from parents and teachers for early detection. Thus, the principal aim of this study is to develop an integrated assessment tool derived from three distinct instruments. This amalgamated tool aims to pinpoint instances of underachievement in gifted students, incorporating insights from the perceptions of parents, teachers, and the students themselves.

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Introduction

Underachievement among gifted students is a significant challenge that has garnered increasing attention in educational research and practice. It is estimated that up to 50% of gifted students experience underachievement at some point in their academic careers despite their exceptional aptitude or potential in areas such as intellectual ability, creativity, or leadership (Siegle, 2018). This proportion is concerning as underachievement can have negative consequences for the academic and personal development of gifted students (Rimm, 2008). Underachievement in gifted students has been linked to a range of factors, including perfectionism, learned helplessness, social-emotional issues, cultural and familial factors, and dual exceptionalities (Clemons, 2005; Matthews & McBee, 2007; Siegle & McCoach, 2005). Given the potential impact of underachievement on the lives of gifted students, it is imperative that parents and educators work together to identify and address this issue.

Johnsen and VanTassel-Baska (2022) discuss the need for changing certain standards in the identification of gifted children. They emphasize that assessment modifications and accommodations that can be made to evaluate the learning process may be beneficial for students exhibiting underachievement. Therefore, it is important to have different assessment tools for underachievement. This study aims to develop a tool to assess underachievement in gifted students, considering the perspectives of parents, teachers, and students.

CONTACT Marilena Z. Leana-Taşçılar ✉ marilena.tascilar@medeniyet.edu.tr 📍 Special Education Department, Faculty of Education, Istanbul Medeniyet University, Göztepe Kampüsü, Istanbul, Turkey

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Emerick (1992) observed over 25 years ago that underachieving gifted students represent a significant societal loss, as well as a missed opportunity for personal growth and advanced educational experiences. According to Emerick, the failure of bright children to perform academically at a level that corresponds to their intellectual ability is one of the most puzzling and exasperating problems facing educators and society at large. In addition to the social costs associated with this issue, underachievement among gifted students results in personal waste as well, as these students are prevented from realizing their full potential (Emerick, 1992, p. 140).

Despite the significant amount of research that has been conducted on the topic of underachievement in gifted students, a consensus definition of underachievement has yet to be established. While some researchers have defined underachievement in terms of discrepancies between intellectual ability and academic performance, others have emphasized the importance of social-emotional factors, such as motivation and self-efficacy, in understanding underachievement (Fong et al., 2023; Mofield & Parker Peters, 2019; Reis & McCoach, 2002; Ryan & Coneybeare, 2013). Furthermore, there is a lack of agreement regarding the threshold at which academic performance can be considered 'underachieving' for gifted students. Some studies have suggested that a performance level below the 90th percentile may be indicative of underachievement, while others have proposed more stringent criteria (Siegle, 2018). The absence of a unified definition of underachievement poses a challenge for researchers and educators seeking to identify and address this complex phenomenon.

Various factors contribute to underachievement among gifted students, with gender being one of the most significant. Gender plays a significant role in underachievement among gifted students. Studies have shown that males are more likely to underachieve than females (McCoach & Siegle, 2001; Matthews & McBee, 2007). Furthermore, a number of other factors may contribute to underachievement, including perfectionism (Siegle, 2013), learned helplessness, social-emotional issues (Blaas, 2014), cultural and familial factors (Rimm & Lowe, 1988), and dual exceptionalities. Gifted students with certain disabilities or exceptionalities, such as ADHD or dyslexia (Hands, 2009), are more vulnerable to underachievement. Additionally, environmental factors such as lack of challenge, insufficient support, or negative school experiences increase the risk of underachievement in gifted students (Fredricks et al., 2010). Parents and educators who are aware of these potential pitfalls can prevent or lessen their impact (Rimm, 1995).

Although underachievement is a familiar topic in gifted educational research, there is no consensus on how gifted underachievers should be recognized. Currently, several methods are commonly used to assess underachievement in gifted students (McCoach & Siegle, 2014; Steenbergen-Hu et al., 2020). These methods include the absolute split, nomination, simple difference, and regression methods. The absolute split method, such as the one used by Vlahovic-Stetic et al. (1999), identifies gifted underachievement when the level of expected achievement is above the threshold for giftedness (ie top 10%) and the level of actual achievement is below the threshold for poor achievement (ie below average). The nomination method, as used by Cavilla (2015), identifies gifted underachievement based on the observations of nominees (eg teachers) who nominate students exhibiting underachievement (Jackson & Jung, 2022). The simple difference method, as used by Lau and Chan (2001), identifies gifted underachievement when the actual achievement level is significantly lower than the expected achievement level (usually at least one standard deviation difference) for a student identified as gifted (ie the expected achievement level is above the threshold for giftedness). Finally, the regression method, like that used by Redding (1990), identifies gifted underachievement when the level of expected achievement, as predicted using the simple linear relationship between the expected and actual achievement scores for the cohort of interest (ie identified through regression analysis), is significantly lower than the level of actual achievement (usually at least one standard error difference) for a student identified as being gifted (ie the level of expected achievement is above the threshold for giftedness).

Several attempts have been made to compare the various methods used to identify gifted underachievement. In 1970, Annesley et al. investigated the simple difference method, regression method, and nomination method with a group of first-grade students and found that these methods do not identify the same group of students. In contrast, Lau and Chan (2001) concluded that the three statistical methods agreed when investigating them with a group of seventh-grade students. Most recently, Gilar-Corbi et al. (2019) compared the simple difference method, regression method, and the less common

Rasch method to identify gifted underachievement among seventh and eighth-grade students and found significant differences in the rates of identification according to the method that was used. Additionally, Cheung and Rudowicz (2003) compared six variations of the commonly used identification methods and concluded that these methods were far from identical. The inconsistent findings across these studies may be attributed to several factors, including small sample sizes, participant recruitment from different grade levels, restricted combinations of expected and actual achievement measurements, and differing statistical techniques to assess convergence among the different identification methods.

Jackson and Jung (2022) have highlighted that the literature lacks nomination instruments for the identification of gifted underachievement. Researchers typically ask teachers to observe and classify each student in their classes as exhibiting achievement or underachievement. This is a common practice as evidenced by studies by Annesley et al. (1970), Cavilla (2015), and White et al. (2018). Although Rimm (1995) developed scales for evaluating underachievement in gifted students, these scales are designed separately for students, parents, and teachers.

Identifying underachievement is challenging, but teacher observation is often the beginning of the process. In a traditional classroom setting, teachers can identify underachievement by noticing changes in classroom performance, such as a student beginning to sleep in class, becoming disruptive, being chronically late, unprepared for academic work, or failing to complete assignments and tests. In an online environment, teachers need to adapt their tools to identify underachieving yet high-potential students. For previously high-performing students who are beginning to underachieve, teachers might consider whether the student is not logging in for class, keeping their camera off, participating less in online lessons, or exhibiting negative emotions when their video is on. These behavioral indicators can help teachers identify students who are starting to perform below their potential compared to their past performance (Winsor & Mueller, 2024).

It is crucial for teachers to understand the factors contributing to underachievement in gifted students in order to develop effective interventions. Previous research has highlighted various influences, including motivational, social-emotional, and familial factors (Matthews & McBee, 2007; Siegle, 2018). Recent studies have further explored these dimensions, emphasizing the need for comprehensive assessment tools (Gilar-Corbi et al., 2019; Steenbergen-Hu et al., 2020).

Our study hypothesizes that underachievement in gifted students is influenced by multiple factors, including academic performance, motivation, social-emotional factors, and family environment. Recent research supports the multifaceted nature of underachievement, indicating that these factors interact in complex ways (Jackson & Jung, 2022; Mofield & Parker Peters, 2019). This study aims to create a tool for evaluating underachievement in gifted students from multiple perspectives, including parents, teachers, and students themselves. Therefore it is important to collect data from different people who already know the child. This tool, the Gifted Underachievement Tool, is essential for identifying underachievement and developing effective interventions. By providing a reliable and valid measure, this study will advance our understanding of underachievement in gifted students and provide practical benefits for parents, counselors, teachers, and other professionals working with these students. The use of this tool will facilitate the early identification and management of underachievement, ensuring that gifted students receive the necessary support and resources to achieve their full potential.

Method

Participants

A total of 285 participants took part in the study, including 95 gifted students, their parents, and teachers, participated in the study. The gifted students were identified based on specific criteria to ensure a representative sample. Students were selected from various public and private schools in Istanbul to encompass diverse socio-economic backgrounds, thus enhancing the generalizability of the findings. We made sure to include students from different grade levels, to represent the broader population of gifted students. Students were accepted as gifted since they attend BİLSEM (public science and art centres for gifted and talented students) and based on their intelligence scores from the Wechsler Intelligence Scale for Children-IV (WISC-IV) for those who didn't participate in BİLSEM.

Among the gifted students, 37 were girls (39.9%) and 58 were boys (61.1%). Of the students, 39 were in 3rd grade (41.1%), 44 were in 4th grade (46.3%), and 12 were in 5th grade (12.6%). 57 students (60%) attended public school, 33 (34.7%) attended private school, and 5 (5.3%) attended a special class at a private school. A total of 69 students (72.6%) attended BİLSEM, while 26 (27.4%) were identified as gifted but did not attend BİLSEM.

Among the parents, 88 (92.6%) were mothers and 7 (7.4%) were fathers. 92 (96.8%) were married, while 3 (3.2%) were divorced. Furthermore, 25 (26.3%) reported receiving psychological support for their children, while 70 (73.7%) did not. Additionally, 9 (9.5%) reported that their children had another diagnosis (mostly ADHD), while 86 (90.5%) did not.

Among the teachers, 27 (28.4%) were male and 68 (71.6%) were female. 54 (56.8%) taught in public schools, 34 (35.8%) taught in private schools, and 7 (7.4%) taught at BİLSEM. A clear majority of 79 (83.2%) were classroom teachers, while others were science, maths and guidance counselors. Furthermore, 84 (88.4%) worked at the first level, while 11 (11.6%) worked at the second level. Their general experience ranged from at least 4 to a maximum of 40 years, and they reported having at least 1 to a maximum of 15 years of experience in identifying gifted students.

Scales

To conduct validity and reliability studies of the Gifted Underachievement Tool (GUT), the GUT-Parent Form, GUT-Teacher Form, and GUT-Student Form, which were developed as part of a project, were applied together.

The GUT-Parent Form is a tool designed to evaluate underachievement in gifted students from parents' perspective. The scale, designed as a 5-point Likert scale, was found to have an internal consistency coefficient of .93 in validity and reliability studies and consists of 6 factors: Negative Attitude Towards School (PUschoolat), Self-Regulation Skills (PUselfreg), Self-Esteem (PUselfest), Anxiety (PUanxiety), Expectations (PUselfexp), and Learning Problems (PUlp). In this study, the internal consistency coefficient of the scale was determined to be .89. High scores on the scale indicate underachievement in children.

The GUT-Teacher Form is a tool designed to evaluate underachievement in gifted students from the perspective of teachers. The scale, designed as a 5-point Likert scale, was found to have an internal consistency coefficient of .94 in validity and reliability studies and consists of 8 factors: Negative Attitude Towards School (TUschoolat), Anxiety (TUanxiety), Academic Achievement (TUachievement), Self-Esteem (TUselfest), Self-Regulation (TUselfreg), Negative Behavior (TUnegativebeh), Learning Problems (TUlpl), and Expectations (TUselfexp). In this study, Cronbach's alpha internal consistency coefficient of the scale was determined to be .92. High scores on the scale indicate underachievement in students.

The GUT-Student Form was developed to detect underachievement in gifted students. The main difference between the scale from other scales is that it consists of digital scenarios instead of a paper-pencil scale. The scale is designed as a 5-point Likert scale. The student is asked to watch 6 digital scenarios, each lasting only a few seconds, and rate the appropriateness of the situation for themselves. In validity and reliability studies, the internal consistency coefficient was found to be 0.70, and it was determined to consist of two factors: situations related to the individual (SUpersonal) and situations related to the school (SUschool). In this study, the internal consistency coefficient of the scale was determined to be 0.70.

Procedure

Participants were recruited through a stratified sampling method to ensure that the sample was representative of the target population of gifted students in Istanbul. Stratification was based on school type (public vs. private), grade level, and gender to avoid selection bias and ensure diversity within the sample. Parents, teachers, and students provided informed consent before participation. Data were collected through standardized questionnaires to reduce bias. The collected data were analyzed using exploratory factor analysis to determine the factor structure of the Gifted Underachievement Tool and to assess its reliability and validity.

Results

The scale's reliability and validity were analysed using Item-Total-Item Correlations, Cronbach Alpha reliability coefficient, and scope validity using the Content Validity Ratio (CVR) Index, as well as construct validity using factor analysis.

Item analysis

The calculation of the correlation between each item and the scale score is the first objective control suggested by Likert. In this direction, if the value is negative, zero or close to zero, it indicates that the item is insufficient in measuring the desired attitude with other items and these items should be removed from the scale.

As seen in Table 1, all the items have sufficient correlation with the total scale score. In the next step item correlations were examined and the results were given in Table 2.

In the final stage, all the analyses were performed based on these 16 items. As a result, according to the pilot application, the Cronbach's alpha coefficient of the 16-item scale was determined as 0.80.

Construct validity

Explanatory factor analysis

Factor analysis is a statistical technique that aims to explain measurement by combining variables that are moderately or highly related into a smaller number of independent sets. These dimensions or sets are called factors. Factor analysis is a technique that groups variables that measure the same structure or quality and explains measurement by a few factors. It is also defined as the process of uncovering new concepts (variables) called factorization or common factor or obtaining functional definitions of concepts using factor load values of items (Çokluk et al., 2012).

In this study, it is seen that the value of 0.772 calculated for KMO shows that the sample size is sufficient. The Barlett-Test result in this study is statistically significant at the 0.01 level. It has been proven that the variable used in the research is a multidimensional variable that comes from the universe determined in the scope of the research.

As seen in Tablo 3, factors are extracted according to the principal component method and the number of important principal components is determined as 4. The cumulative variance explained by the six factors amounts to 59.26% of the total variance (Table 3).

In Table 4, it can be observed that in this study, the factor load values range from 0.419 to 0.757. Therefore, the 4 factors that emerged as important factors in the analysis together explain most of the total variance and the variance related to the scale.

In Table 5, as can be seen, the rotation process is carried out with the Oblimin Method. Based on the findings from the Rotated Factor Matrix, the factors are labelled. Items with communalities (TUIp) are removed. As a result of the labelling, the first factor is Teacher's Perspective about Underachievement, the second factor is Parent's Perspective about Underachievement, the third factor is Kid's Perspective about Underachievement, and the fourth factor is Anxiety.

Table 1. Correlation of items with total scale score.

Item	Total	Item	Total
PUschoolat	0.500**	TUschoolat	0.555**
PUselfreg	0.620**	TUanxiety	0.563**
PUselfest	0.525**	TUachievement	0.649**
PUanxiety	0.401**	TUselfest	0.656**
PUselfexp	0.531**	TUselfreg	0.693**
PUIp	0.385**	TUnegativebeh	0.574**
SUpersonal	0.256*	TUIp	0.474**
SUschool	0.291**	TUselfexp	0.480**

* $p < .05$. ** $p < .01$.

Table 2. Correlations of scale items with total score after item analysis.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PUschoolat																
PUselfreg	0.296**															
PUselfest	0.227*	0.377**														
PUanxiety	0.101	0.428**	0.307**													
PUselfexp	0.304**	0.585**	0.612**	0.312**												
PUlp	0.253*	0.406**	0.417**	0.042	0.424**											
TUSchoolat	0.301**	0.08	0.042	-0.005	0.1	-0.053										
TUanxiety	0.107	0.228*	0.199	0.221*	0.175	0.059	0.264**									
TUachievement	0.230*	0.212*	0.227*	0.141	0.214*	0.179	0.356**	0.358**								
TUselfest	0.251*	0.184	0.201	0.224*	0.102	0.18	0.385**	0.292**	0.523**							
TUselfreg	0.104	0.272**	0.199	0.118	0.107	0.191	0.442**	0.321**	0.570**	0.580**						
TUnegativebeh	0.252*	0.118	0.136	0.045	0.091	0.182	0.545**	0.260*	0.394**	0.531**	0.554**					
TUselfexp	0.226*	0.212*	0.109	0.012	-0.001	0.373**	0.362**	0.262*	0.239*	0.454**	0.480**	0.479**				
TUlp	0.107	0.162	0.101	0.029	0.063	0.092	0.365**	0.206*	0.351**	0.393**	0.538**	0.262*	0.217*			
SUPersonal	0.047	0.098	-0.029	0.072	-0.031	-0.093	0.193	0.098	0.105	0.164	0.249*	0.205*	0.265**	0.17		
SUSchool	0.191	0.115	0.073	-0.009	0.104	0.105	0.144	0.019	0.217*	0.143	0.142	-0.037	0.045	0.273**	0.256*	
TOTAL	0.500**	0.620**	0.525**	0.401**	0.531**	0.385**	0.555**	0.563**	0.649**	0.656**	0.693**	0.574**	0.474**	0.480**	0.256*	0.291**

* $p < .05$. ** $p < .01$.

Table 3. Common variance.

Factors	Eigenvalue	% Variance	% Cumulative
1	4.260	28.397	28.397
2	2.252	15.011	43.408
3	1.228	8.189	51.597
4	1.151	7.671	59.268

Table 4. Factor loads of items.

Item	Factor Load	Item	Factor Load
SUschoolat	0.419	TUschoolat	0.533
PUselfreg	0.643	TUanxiety	0.449
PUselfest	0.584	TUachievement	0.523
PUanxiety	0.699	TUselfest	0.599
PUselfest	0.711	TUselfreg	0.684
PULp	0.617	TUnegativebeh	0.667
SUpersonal	0.542	TUselfexp	0.463
SUschool	0.757		

Table 5. Distribution table of the items constituting the main factors.

	1	2	3	4
TUselfreg	0.816			
TUnegativebeh	0.785			
TUselfest	0.766			
TUschoolat	0.71			
TUachievement	0.701			
TUselfest	0.586			
PUselfexp		0.811		
PULp		0.749		
PUselfest		0.726		
PUselfreg		0.678		
PUschoolat		0.545		
SUpersonal			0.832	
SUschool			0.662	
PUanxiety				0.815
TUanxiety				0.51

Table 6. Fit indices of GUS - Battery.

Fit indices	GUS – BATTERY	Expected values
χ^2/df	1.31	≤ 3
RMSEA	0.058	≤ 0.08
CFI	0.92	≥ 0.90
IFI	0.95	≥ 0.90
NFI	0.90	≥ 0.90

Confirmatory factor analysis

Kline (2011) states that for the model to have a good fit, the ratio of chi-square to the degree of freedom should be less than 3 and GFI, NFI, NNFI, and CFI values should be greater than 90, and AGFI value should be greater than 80. Kelloway (1998) states that for absolute fit, RMSEA should be less than 0.05 and AGFI and GFI should be greater than 0.90. The results of the DFA in this study were found to be $\chi^2 = 139.37$, $df = 83$, $RMSEA = 0.058$, $CFI = 0.92$, $IFI = 0.95$, $NFI = 0.90$. The ratio of chi-square to the degree of freedom was found to be 1.31, indicating that the scale has an excellent fit. Additionally, the RMSEA, CFI, IFI, and NFI values indicate a good fit, which can be considered as important evidence for validation. In conclusion, it is found that the four-factor structure has a good fit.

Reliability analysis

Test Half Correlation. Test-half analysis was conducted to assess the internal consistency of the measure. The correlation coefficient between the two halves of the measure was $r = 0.673$, which was statistically significant ($p < .01$). The reliability estimates for the full measure, as assessed by Cronbach's alpha, was 0.79. The Cronbach's alpha of the factors was 0.81 for the teacher perspective, 0.70 for parents'

perspective, 0.65 for the student perspective and 0.81 for anxiety. This suggests that the measure has good internal consistency and that the items are measuring a similar construct.

Results have shown that the GUT – Tool consists of 15 items. The items are rated on a 5-point Likert scale ranging from 1 Definitely Disagree to 5 Definitely Agree. The possible scores on the scale range from 15 to 75. An increase in the scores obtained from the GUT – Tool means that, from the perspective of the parents, the likelihood of having underachievement in gifted students is higher.

Conclusion

The findings provide evidence for the validity and reliability of the Gifted Underachievement Tool (GUT). The multi-perspective approach, incorporating input from parents, teachers, and students, provides a comprehensive assessment of underachievement in gifted students. The four distinct factors highlight the multifaceted nature of underachievement, emphasizing the importance of addressing academic, motivational, social-emotional, and familial influences. These results align with previous research indicating that underachievement in gifted students is influenced by a complex interplay of factors (Matthews & McBee, 2007; McCoach & Siegle, 2014; Siegle, 2018; Steenbergen-Hu et al., 2020).

The meta-analytic findings from Fong et al. (2023) clarify that motivational and self-regulated learning factors are crucial in understanding underachievement. Underachieving students exhibited higher external locus of control and lower levels of competence beliefs, autonomous motivation, task values, self-regulated learning strategies, and mastery goals compared to non-underachieving students. These differences suggest that interventions targeting these areas may be particularly effective in addressing underachievement. The issue of underachievement in gifted students is not confined to any single country; it is a global phenomenon. Research from various countries highlights similar challenges and factors contributing to underachievement. For example, studies in the United States and China have identified the role of social-emotional factors and family environment in gifted students' underachievement (Lau & Chan, 2001; Reis & McCoach, 2002). A study by Jackson and Jung (2022) in Australia emphasized the importance of motivation and self-regulation, consistent with our findings.

The Gifted Underachievement Tool developed in this study has potential applications in diverse cultural and educational settings. By adapting the tool to different contexts, educators and researchers will gain a deeper understanding of underachievement in gifted students globally. Future research must explore the applicability of this tool in different countries and compare the prevalence and factors associated with underachievement in gifted students across various educational systems.

International studies have shown that interventions tailored to the specific cultural and educational context can significantly reduce underachievement in gifted students. For instance, a meta-analysis by Steenbergen-Hu et al. (2020) demonstrated the effectiveness of acceleration programs for high-ability learners in various countries. These findings underscore the importance of considering cultural differences when developing and implementing interventions for gifted students.

The results of this study provide evidence of the reliability and validity of the GUT as a tool for assessing different perspectives on underachievement in gifted students. The item analysis revealed that all 15 items had sufficient correlation with the total scale score, confirming that all items were contributing to the measurement of the desired attitude. Furthermore, the Cronbach's alpha coefficient of 0.79 suggests good internal consistency of the scale. The GUT demonstrated strong construct validity through both exploratory and confirmatory factor analyses, which revealed four factors: The Teacher's Perspective about Underachievement, the Parent's Perspective about Underachievement, the Kid's Perspective about Underachievement, and Anxiety. The test-half analysis also confirmed the internal consistency of the measure.

In the educational context, parents and teachers play a crucial role in facilitating the learning and talent development of their children and pupils. According to Ziegler and Stoeger (2003), they act as gatekeepers by making decisions regarding the identification and support of talents, provision of suitable learning materials, and seeking professional assistance when required. In addition, it is equally important for them to be aware of any struggles their students may be facing. The combination of information

from various sources allows for the generation of more reliable data. Therefore, the GUT provides an opportunity to achieve this (Table 6).

The factor related to the teacher's perspective of the Gifted Underachievement Tool in gifted students provides information about the student's attitude towards school, learning problems, negative behaviors, self-expectations, self-perception and academic achievement. The views of teachers, who may be in a position to observe students more frequently than even their parents, are of great importance in this matter. They can help us make important inferences about underachievement in gifted students. Getting the perspective of teachers is also in line with Rimm's (2008) Trifocal Model recommendations.

Obtaining the perspectives of underachieving gifted students through digital scenarios may lead to more intimate responses compared to paper-pencil scales regarding their own situations. In this dimension, students were asked to comment on their personal and school-related situations, which may include personal issues such as self-esteem and depression tendencies, as well as more school-related issues such as attitudes towards school and self-regulation skills. A review of the literature on underachieving students reveals that there are problems in these areas (McCoach & Siegle, 2001, 2014). It is therefore important to consider the opinions of gifted underachievers on these topics.

These findings have important implications for both researchers and practitioners. The GUT provides a reliable and valid tool for assessing parental perspectives, teachers' opinions, and the child's own views on underachievement in gifted students, which can be used to inform interventions and support services. The identification of four factors provides a more nuanced understanding of the different perspectives and factors contributing to underachievement, allowing for more targeted interventions. Furthermore, the findings of this study contribute to the growing body of research on underachievement in gifted students and provide further support for the importance of considering multiple perspectives in understanding this phenomenon.

The early detection of the possible underachievement syndrome, which is highly prevalent among gifted children, and the consideration of the opinions of parents and teachers are crucial tools to prevent these children's challenges from being overlooked. In this context, conducting comparative research with other countries, testing the validity of the scale in different languages, and expanding its reach to a broader audience are necessary steps. These methods facilitate the involvement of gifted children who are likely to play a significant role in the resolution of many important global issues.

Finally, while this study provides valuable insights into the assessment of underachievement in gifted students, there are some limitations to consider. First, the sample size is relatively small, which may limit the generalizability of the findings. Secondly, the utilization of digital scenarios may have influenced the responses of the participants, as they may have felt more at ease disclosing personal information compared to paper-and-pencil assessments. Thirdly, the study was limited to the examination of primary school students and their parents and teachers. Consequently, it is essential to conduct further studies with older students and their parents and teachers in order to gain more comprehensive understanding. Future research should address these limitations to further advance our understanding of the experiences and perspectives of underachieving gifted students.

The implications of this tool are of global significance. The provision of a reliable measure of underachievement enables the tool to be adapted for use in diverse cultural and educational contexts. Future research should investigate the applicability of this tool in different countries and compare the prevalence and factors associated with underachievement in gifted students on a global scale. Longitudinal studies are required to assess the long-term outcomes of interventions based on the identification of underachievement using this tool.

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About the author



Marilena Z. Leana-Taşçılar, is working in Istanbul Medeniyet University (Turkey), Faculty of Education, Special Education Department. Her master and PhD thesis were about the executive functions and planning abilities of gifted students. Identification of gifted children, twice-exceptional students, underachievement, bibliotherapy for gifted children, and self-regulated learning are some of her interests. She has presented at several national and international conferences. She is one of the Turkish Delegates in the World Council for Gifted and Talented Children, since 2002.

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