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Development and Factorial Validation of the *Rapid Assessment Test* of Individual Misconceptions About Giftedness (RATIMAG)

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Abstract:
Given the prevalence of myths and misconceptions about giftedness among educators and the general population, this study aims to develop an economical and quick test to measure essential insights into giftedness. The items were developed, drawing on a collection of scientific articles dedicated to common misconceptions about giftedness, as well as subsequent input regarding the construct validity of the items from professionals in the field of giftedness. The final version of *R*apid *A*ssessment *T*est of *I*ndividual *M*isconceptions *a*bout *G*iftedness (RATIMAG) comprises 20 items. Three subscales measure (1) characteristics and needs of the gifted, (2) assessment and achievements, and (3) personality and social-emotional aspects of the development of giftedness. The RATIMAG was pilot-tested with 494 participants, including university researchers, preservice students in teacher education, and teachers. Exploratory and confirmatory factor analysis, along with parallel analysis, confirmed the factorial validity of the RATIMAG. The participants in this study considered a substantial proportion of the myths correct, even with milder scoring.

Keywords: Giftedness; Myths; Knowledge Test; Construct Validity; Factorial Validation; RATIMAG

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Introduction

Arguably, one of the most persistent barriers to providing appropriate educational services addressing giftedness is the negative impact of the myths and misconceptions about giftedness held by individuals, including those responsible for providing such services. Such myths often persist despite extensive research evidence that confirms their falsity. At their worst, myths can be dangerous (e.g., in the late nineteenth century, Lombroso argued that genius was akin to madness; see Mazzarello, 2011), but even at their most benign, they can lead to the neglect of appropriate educational services to develop giftedness. A key step in drawing attention to negative biases arising from myths about giftedness lies in raising stakeholders' awareness.

An initial attempt to raise awareness of myths and realities efficiently was by developing a (self-)test (Wilson, 1982), which allowed people to check whether they had a realistic understanding of giftedness. Wilson's test comprised twenty statements that test-takers had to evaluate dichotomously as either myth (13 items) or reality (7 items). The categorization as myth or truth was based on the current state of research at the time, which Wilson elaborated for each item. She referred to the proportion of correct answers achieved by the test-takers as the reality quotient. A survey utilizing the test was not conducted to determine how widespread these myths were as, according to Google Scholar, Wilson's work has been cited only twice.

Although Wilson's test did not resonate with educators or researchers, the problem of myths about giftedness still stirs interest, in 2024, as 33,900 entries with the combined search terms 'myth' and 'giftedness' on Google Scholar demonstrate. If you allow standard, related search terms to 'myth' — such as 'implicit theories', 'naive theories', 'beliefs', etc. — and 'giftedness' — such as 'talent', 'high ability', etc. — the number of hits increases substantially.

As further publications show, widespread myths about giftedness appear to be a marked problem among laypersons and academics. For example, the review by Ziegler and Raul (2000), published almost twenty years later and cited over 200 times according to Google Scholar, explores myths in empirical research on giftedness. The most important result from Ziegler and Raul (2000) which supports the present study is the observation that, although much research has been conducted on gifted students, the methodological approaches used are unsatisfactory, and the body of studies is scattered. In 2009, nearly a generation after Wilson's article, *Gifted Child Quarterly* published a special issue about myths about giftedness (Vol.53, Issue 4), in which 19 myths about giftedness were considered by leading academics, including Renzulli, Reis, Treffinger and among others. The researchers cited nineteen myths, thus even more than Wilson had included in her test. The problem of misconceptions about giftedness remains a severe current concern today. Indeed, there have been as many papers on myths about giftedness in the last five years, according to Google Scholar, as in all the preceding years. There is great concern in the scientific community that the

general population (Pérez et al., 2020), including teachers (Troxclair, 2013), parents (Huey et al., 2013), stakeholders (Hodges et al., 2022), and even scientists (Nakano et al., 2021), hold misconceptions about giftedness. Therefore, it seems highly desirable to investigate to what extent myths about giftedness are shared. However, this requires a reliable and valid test of fundamental insights into giftedness, as Wilson set out to do over 40 years ago.

An Assessment Test of Individual Misconceptions about Giftedness

After Susan Wilson's pioneering work, to the best of our knowledge, there have been no further attempts to develop a standardized assessment test of individual misconceptions about giftedness. The closest was the recent work of Sak (2011). He used a questionnaire of 12 forced-choice items about misconceptions, dogmatic beliefs, and popular views about giftedness and intelligence. Among other things, he found in his sample that high percentages of the participants in the study – including professionals in the field of giftedness – held misconceptions. Examples included the omniscient belief (Winner, 1996) that gifted students are gifted in all subjects and the entity belief (Cross, 2005; Dweck, 1986) that once an individual is born gifted, they are gifted for life.

Although Sak (2011) reported a KR-21 reliability of 0.67, the individual items formed his unit of analysis. We can only speculate why he did not analyse at the scale level. Thus, the question arises as to whether his questionnaire would be an appropriate starting point for assessing individual misconceptions about giftedness. Despite the undoubted quality of his questionnaire, the following three reasons mitigate against our utilization of such an approach:

1. The number of test items in Sak (2011) seems relatively low. For example, Nunnally and Bernstein (1994) argue that a sufficient number of items is necessary to ensure the internal consistency of a test. This generally leads to the recommendation that at least 20 items be used to achieve good measurement accuracy.
2. The items are partly tailored to the Turkish context and are therefore not suitable for an international test (e.g., one item reads: "A hafiz who memorizes and recalls the entire Koran but cannot interpret and make deductions from it is more intelligent than an analyst who interprets and makes deductions from the Koran but cannot memorize it.")
3. Items in an assessment test of individual misconceptions about giftedness should refer exclusively to scientific findings. Although Sak (2011) thoroughly analyses the items' scientific content, some are derived from popular views, usually propagated by mass media and politics for mass consumption.

Therefore, an alternative approach was decided. The winter 1982 issue of *Gifted Child Quarterly* (Volume 26, Number 1) was dedicated to the

"Demythologizing of Gifted Education." Fifteen myths were addressed. At the NAGC conference in 2007, myths about giftedness were again discussed in a panel. Subsequently, Treffinger conducted an informal poll and held a colloquium with faculty, graduate students, and area gifted program educators at the University of Virginia in October 2008. The poll, panel, and colloquium formed the basis for a new list of myths. Interestingly, it included all fifteen myths from 1982 and four new ones. Treffinger (2009) contacted the authors of the first myth articles along with experts on the new myths and edited another special issue of *Gifted Child Quarterly* (2009, Volume 53 Number 4) devoted to myths. The complete list of 19 myths can be found in Table 1.

Table 1
The 19 Myths About Giftedness, According to Treffinger (2009)

Myth Number	Original Myth Description (Literature Source)	Reference	Regarding Subheading (from Questionnaire)
1	The gifted and talented constitute one single homogeneous group, and giftedness is a way of being that stays in a person over time and experiences.	Reis & Renzulli (2009)	1
2	The gifted constitute 3% to 5% of the population. Moreover, giftedness equals high IQ, which is a stable measure of aptitude: spinal tap psychometrics in gifted education.	Borland (2009)	1
3	A family of identification myths: your sample must be the same as the population. There is a "silver bullet" in identification. There must be "winners" and "losers" in identification and programming.	Callahan (2009)	1
4	A single test score or indicator tells us all we need to know about giftedness.	Worrell (2009)	3
5	Creativity is too difficult to measure.	Treffinger (2009)	3
6	Cosmetic use of multiple selection criteria.	Friedman-Nimz (2009)	1
7	Differentiation in the regular classroom is equivalent to gifted programs and sufficient: Classroom teachers have the time, the skill, and the will to differentiate adequately.	Hertberg-Davis (2009)	1

Myth Number	Original Myth Description (Literature Source)	Reference	Regarding Subheading (from Questionnaire)
8	The “patch-on” approach to programming is effective.	Tomlinson (2009)	3
9	There is a single curriculum for the gifted.	Kaplan (2009)	3
10	Examining the ostrich: gifted services do not cure a sick regular program.	Robinson (2009)	2
11	A comprehensive continuum of gifted education and talent development services: discovering, developing, and enhancing young people’s gifts and talents.	Gentry (2009)	1
12	Gifted programs should stick out like a sore thumb.	VanTassel-Baska (2009)	2
13	The regular classroom teacher can “Go it alone.”	Sisk (2009)	2
14	Waiting for Santa Claus.	Adams (2009)	1
15	High-ability students don’t face problems and challenges.	Moon, S. (2009)	2
16	High-stakes tests are synonymous with rigor and difficulty.	Moon, T. R. (2009)	1
17	Gifted and talented individuals do not have unique social and emotional needs.	Peterson (2009)	2
18	It is fair to teach all children the same way.	Cooper (2009)	1
19	Is advanced placement an adequate program for gifted students?	Gallagher (2009)	2

Note. Regarding subheadings, 1 = Characteristics and needs of the gifted, 2 = Assessment and achievements, and 3 = Personality and social-emotional aspects of development of giftedness.

The Current Research

This research aimed to develop knowledge-based questionnaire for individual misconceptions about giftedness that would be quick and simple to administer. Given the practical success of Wilson’s 20-item test in university courses and teacher training

settings, we considered a similar item range (20–25) appropriate for a rapid assessment format. This decision was based on feasibility and tradition, not on psychometric properties. The minimum acceptable number of 20 items also fulfills the minimum requirement proposed by Nunnally and Bernstein (1994).

It is recognized that a 20- to 30-item test does not provide a comprehensive and representative test of the current knowledge about giftedness. The aim of the present study was to develop a rapid knowledge-based test that would allow an initial assessment of how much a person's knowledge of giftedness is still based on myths and everyday knowledge. This study`s questionnaire assessment test should also address the typical myths identified by internationally renowned experts (Treffinger, 2009). Therefore, the composition of the final test items was intended to be broadly similar to those identified by the experts in the informal survey.

The pilot application of the questionnaire was conducted with a sample group similar to the target sample on the 19 myths (Treffinger, 2009): people who have sufficient education to potentially have already come into contact with the myths about giftedness and whose professional performance would be improved by a sound knowledge of giftedness or conversely would be impaired by misconceptions. The pilot application not only tested feasibility but also informed final refinements to item phrasing and selection, ensuring empirical as well as theoretical alignment.

Method

Participants

A total of 494 people completed the questionnaire. Of these, 301 were women and 193 men. They were distributed across the three occupational groups of pre-service teachers (N=162), teachers (N=306), and university lecturers (N=26). The genders were not equally represented ($\chi^2(2)=30.70$, $p<0.001$, 2-tailed) but broadly reflected the typical distribution in the target populations. Among pre-service teachers, females were clearly in the majority with 76.5%, while with 55.2%, only slightly more than half of the teachers were female. Males were the majority among university lecturers at 69%. The exact age was not recorded for data protection; only age groups were used. There was a significant age difference in the occupational groups ($\chi^2(8)=326.02$, $p<0.001$, 2-tailed). The modal value for teachers and university lecturers was 33-40 years (33.0 % and 30.8 %, respectively). The second most frequent age bracket was 26-32 years for 23 % of teachers and 41-48 years for 23.1 % of university lecturers. On the other hand, the pre-service teachers were significantly younger, as 84.0% fell into the modal age bracket of 18-25 years.

Instrument Development

One problem with the list of 19 myths was that they were meaningful titles for the 19 articles in the special issue. However, each article usually described several myths. When converting the articles on the 19 myths into corresponding items, the problem arose that some topics could be overrepresented due to the differing number of 'sub-myths.' Thus, in the first step, the 19 myths into five broad topics was grouped: Characteristics of the gifted; Needs of the gifted; Assessment of giftedness, achievements; Personality; and Social-emotional aspects of development of giftedness. Then was conducted an informal (and unsystematic) survey with six colleagues who had published at least two peer-reviewed papers on giftedness (*max*.=114). After reading the articles, the central question was whether they could categorize the myths into these five topics. Discussions with the colleagues led the authors to reduce the list to three topics: (1) Characteristics and needs of the gifted, (2) Assessment and achievements, and (3) Personality and social-emotional aspects of development of giftedness. Except for Myth 7, each myth could be unequivocally categorized.

Rapid Assessment Test of Individual Misconceptions about Giftedness (RATIMAG). The first step in developing the Rapid Assessment Test of Individual Misconceptions about Giftedness (RATIMAG) was to analyse the 19 articles on the myths (Table 1) and generate potential items for a rapid assessment test. Several myths were described in the individual articles, resulting in an initial pool of 103 items.

These preliminary items were subjected to a rigorous vetting process consisting of several steps. In the second step, colleagues who had written an article on one of the 19 myths were contacted personally, if available. A total of ten colleagues assessed the items condensed from their articles according to their validity, relevance, and accuracy.[1] For the remaining items, the opinion of three more colleagues with at least two peer-reviewed publications on giftedness was sought. This collaborative effort with the original authors and giftedness experts ensured that each item aptly captured the intricacies and subtleties associated with giftedness, as elucidated in scholarly discourse. The feedback led, on the one hand, to a refinement of items and, on the other hand, to the exclusion of suboptimal items. The item pool after the second step still comprised 71 items.

In step 3, expert consultation was re-engaged for the remaining 53 questions. Feedback led to removing redundant items, resulting in a 25-item pool.

Two critical decisions involved the direction of the item wording and the response format. Regarding the direction of item wording, the problem was that myths were mentioned in the 19 items, that is, false statements which, in the authors' opinion, would be affirmed by a substantial proportion of the population. However, the authors

[1] One of the authors, Dr. Marcia Gentry, passed away on 31 August 2022. Dr. Jennifer C. Richardson, Professor of Learning Design and Technology at Purdue University, who handled her emails, answered our inquiry instead.

presented the explanations of the myths in their articles in a negative form, which led to a contrary and uniform response direction of the items to the myths. This can be a source of response bias, often mitigated by including reversed items (Podsakoff et al., 2003). However, reversed items also pose problems (Sonderen et al., 2013; Weijters et al., 2013). Therefore, it was decided to adopt the original formulations of the authors, as they were approved by the authors in this survey while accepting a potential acquiescence bias (Cronbach, 1950; Schuman & Presser, 1981).

Regarding the response format, it was initially assumed that the statements would be assessed dichotomously because authors had to deal with false myths. For example, some colleagues do not necessarily reject statements such as 'the gifted constitute a small percentage of the population' (Pezzuti et al., 2022). Therefore, the authors decided to favor a a 5-point rating scale with the poles of *strongly disagree* and *strongly agree*, which allowed graduated answers. The questionnaire is designed as a knowledge test to assess educators' understanding of the characteristics and needs of gifted, assessment and achievements, and personality and social-emotional aspects of development of giftedness. Each item has one correct answer, and higher response values reflect a higher level of knowledge.

Personal data. The RATIMAG also requested some personal data, with this work focusing on occupational status, gender, and age group.

Procedure

To recruit the sample, representatives of Turkish schools and university education faculties were contacted. They were asked to distribute a link to an online questionnaire to teachers, pre-service teachers, and university lecturers. The final version of the RATIMAG was administered online via Google Forms. Participation was voluntary and anonymous, with informed consent obtained at the beginning of the questionnaire. Completion time was approximately 10 minutes.

Data Analysis

The psychometric properties of the questionnaire have been evaluated using various analyses. In the first step, the data set was randomly split into two groups using the Statistical Package for Social Sciences (SPSS) 29.0 application. Exploratory factor analysis (EFA) analysis was performed on the first group, and confirmatory factor analysis (CFA) was performed on the second group to validate the factor structure identified in EFA. Sampling adequacy measure and Barlett`s sphericity Kaiser-Meyer-Olkin (KMO) test were performed to examine the suitability of the data for factor analysis. In this study, assuming that the factors are correlated in some way, the direct oblimin method is applied (Buyukozturk, 2002). Then, exploratory factor analysis (EFA) was done, the number of factors to keep was decided using a scree plot,

and this was confirmed with confirmatory parallel analysis using Jamovi (version 2.6.26). Following EFA, the internal consistency of the subdimensions and the overall questionnarie was assessed using Cronbach's alpha.

Then, CFA was performed on the second group using the maximum likelihood (ML) estimation method with AMOS (version 29). The questions used in this research are 5-point rating scale items. Although studies indicate that the WLSMV method may be more suitable for ordinal categorical data (Brauer et al., 2023) , a study by Rhemtulla et al.(2012) indicates that the maximum likelihood estimator can be used when items contain five or more responses, and the number of participants is at least 100.

Since the data did not show a normal distribution, the Friedman test—a non-parametric alternative—was applied. To evaluate performance at the item level, both mild scoring (where responses of 4 or 5 were coded as "correct") and strict scoring (only 5 = correct) were applied. While the labels 'strict' and 'mild' are not psychometric standards, they reflect two commonly used dichotomization strategies in knowledge-based rating contexts. We acknowledge that both approaches involve information loss, particularly around midpoint responses, and suggest interpreting the scores with appropriate caution.

Results

Table 2 shows the Kaiser-Meyer-Olkin (KMO) test results. The KMO measure of .947 indicates that the sample was factorable (Field, 2013). Additionally, Bartlett's test of sphericity was significant ($\chi 2(300) = 4575.984$, $p < .05$), further supporting the appropriateness of the data for factor analysis.

Table 2
Results of the KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.947
Bartlett's Test of Sphericity	Approx. χ^2	4575.984
	df	300
	p	<.001

A combination of statistical analyses was used to determine the number of factors. First, confirmatory factor analysis was performed with SPSS. Factor loadings and item clustering were assessed to determine the clarity of the structure (see Table 3). The three postulated factors after removing five items with low or double loadings were obtained. All factor loadings were above .45 (Buyukozturk, 2002). The three

factors explained more than 63% of the variance, which is acceptable (Field, 2013; Hair et al., 2014). Furthermore, the correlations between the items were not excessively low ($r < .10$) or excessively high ($r > .90$). Then, parallel analysis was performed with Jamovi to confirm the number of factors. The results of the parallel analysis and the scree plot[2] obtained from the parallel analysis supported the three-factor structure obtained from the first analysis.

Table 3
Results of The Exploratory Factor Analysis.[3]

Item	Factor loadings			Eigenvalue	% of Variance
	Characteristics and needs of the gifted	Assessment and achievements	Personality and social-emotional aspects of development of giftedness		
1	.662			11.786	47.145
2	.856				
3	.893				
4	.852				
5	.842				
6	.673				
7	.574				
10	.834				
11	.800				
17	.674				
19	.607				
25	.514				
21		.763		2.804	11.216
22		.589			
23		.728			
9			.703	1.214	4.856
12			.493		
13			.815		
14			.536		
15			.748		
Total Variance					63.217
Excluded items:					
8		.471	.436		
16	.510	.528			
18		.454	.392		
20	.337		.392		
24	.559		.485		

Table 4 shows the Cronbach's α coefficients. The reliability of the scale was high, with α = .931. However, reliability analyses show that the three subscales are also acceptable, with Characteristics and needs of the gifted α = .949, Assessment and Academic Achievement with α = .855, and Personality and social-emotional aspects of development of giftedness with α = .747 (Ozdamar, 2002).

Table 4
Cronbach's α Coefficients of the 20-item Scale and the Sub-scales.

	Cronbach's α	N of Items
Characteristics and needs of the gifted	.949	12
Assessment and achievements	.855	3
Personality and social-emotional aspects of development of giftedness	.747	5
All items	.931	20

Factorial validity was checked with a confirmatory factor analysis using AMOS 29. The use of a second-order factor model allows for the conceptualization of a general underlying construct—here, a global "misconceptions about giftedness" factor—that explains the covariation among the three first-order subdimensions (i.e., characteristics and needs, assessment and achievements, and personality and social-emotional aspects). Suppose this higher-order model demonstrates an acceptable fit and meaningful loadings of the subfactors onto the second-order factor. In that case, this provides empirical support for using a total score as a valid, albeit broad, indicator of overall misconceptions. Such a model is advantageous when the subdimensions are moderately correlated, as it reflects the hierarchical nature of the construct and justifies the use of both subscale and total scores (Reise et al., 2010).

Figure 1 depicts the second-order CFA model with standardized values. CMIN/df ≤3 is considered an acceptable data fit, and CMIN/df ≤2 is a good data fit (Schermelleh-Engel et al., 2003). In the CFA, CMIN/df=1.995. AGFI should be above .85 (Schermelleh-Engel et al., 2003), GFI, NFI, CFI, IFI, and TLI above .90 (Hu & Bentler, 1999; Hooper et al., 2008). However, research shows that a GFI = 0.85 is also acceptable in CFA. Schermelleh-Engel et al. (2003) suggest that a GFI value of .90 signifies a good fit, while a value of .85 is still considered acceptable. An RSMEA < .08 indicates a good model fit, and .08 - .10 indicates an acceptable model (Buhner, 2011; Hu & Bentler, 1999). The fit indices in Figure 1 indicate a satisfactory model fit.

Figure 1
Second-order CFA model with standardized values

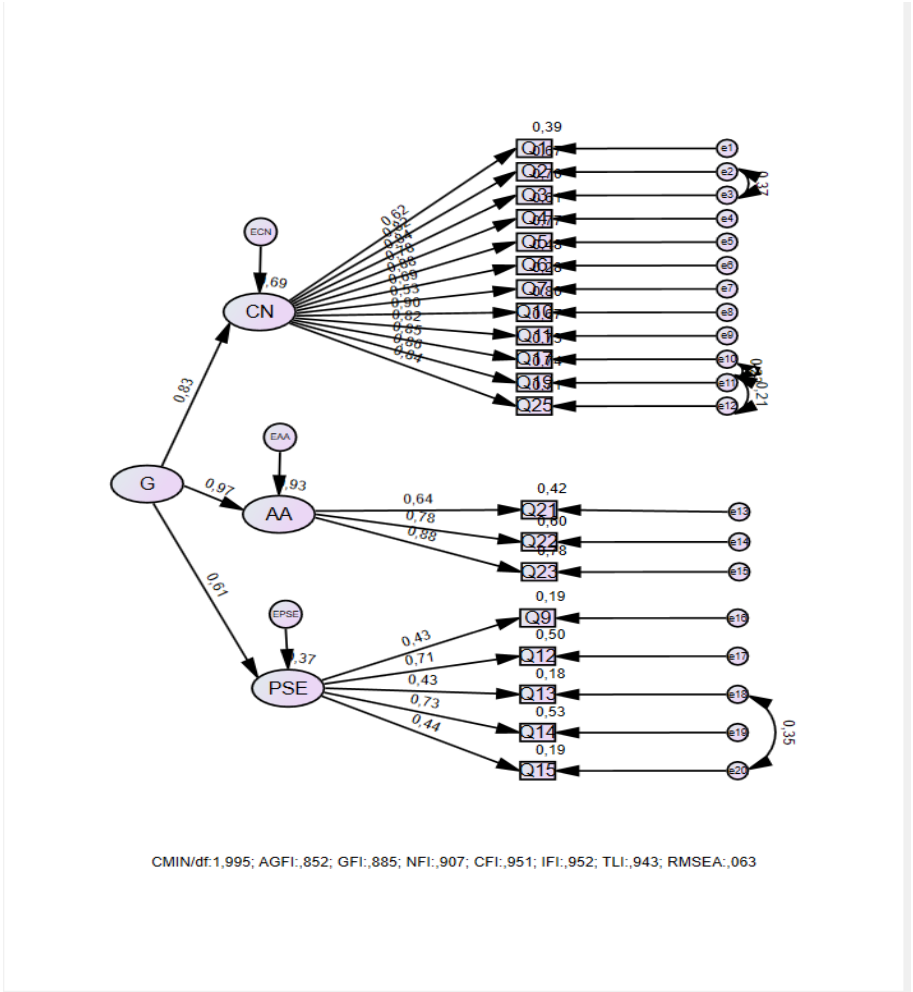

Table 5 shows the percentage of correct answers (and cumulative percent) for two alternative scoring methods. Strict scoring means that only the entire agreement with the correct answers or complete rejection of an incorrect answer was scored as correct. In the case of mild scoring, the correct answer tendency was counted, that is, any value beyond the scale mean, provided it was in the right direction. With both scorings, perfect scores were scarce (0.4 % and 2.6 % respectively). With strict coding, around 50 % had only four correct answers, which corresponds precisely to chance. Although the median with milder coding was around 13 points, well above the random level, it was far from perfect.

If the three subscales are examined, the Friedman test reveals apparent differences in the frequency of solutions for both strict ($\chi 2$ (2) = 360.011, $p < 001$) and mild scoring ($\chi 2$ (2) = 410.78, $p = 0.001$). Of the items in the Characteristics and needs of the gifted subscale, 35.6 % were solved correctly in the strict coding and 76.8 % in the mild coding. The percentages were 19.5 % and 60.5 % for the Assessment and achievements subscale and 6.7 % and 28.1 % for the Personality and social-emotional aspects of development of giftedness subscale.

Table 5
Percentages and Cumulative Percentages of Correct Answers

Correct answers	%	Cumulative %	%	Cumulative %
0	24.7	24.7	9.1	9.1
1	5.9	30.6	0.8	9.9
2	5.9	36.5	0.4	10.3
3	7.5	44	0.2	10.5
4	6.5	50.5	0.6	11.1
5	7.5	58	0.8	11.9
6	6.1	64.1	0.2	12.1
7	6.7	70.8	0.8	12.9
8	3.4	74.2	1.4	14.3
9	4.0	78.2	2.0	16.3
10	5.9	84.1	2.8	19.1
11	5.1	89.2	5.5	24.6
12	3.6	92.8	12.1	36.7
13	2.8	95.6	13.0	49.7
14	1.2	96.8	13.4	63.1
15	1.0	97.8	11.9	75
16	0.4	98.2	11.1	86.1
17	0.6	98.8	4.9	91
18	0.4	99.2	3.2	94.2
19	0.4	99.6	3.0	97.2
20	0.4	100	2.6	99.8

Discussion

Understanding educators' knowledge of gifted students is essential for evaluating their ability to make informed decisions in an educational context. In the field of gifted education, this knowledge is important for educators and other educational stakeholders in identifying and supporting the special needs of gifted students. Gifted education is no exception. In its 150-year history, much knowledge and expertise has been accumulated through scientific studies and practical experience, indispensable for successful gifted education (Heller et al., 2000; Shavinina, 2009; Pfeiffer et al., 2018). The ballast of everyday concepts and myths in gifted education (Pérez et al., 2020) and even in giftedness research (Nakano et al., 2021) seems particularly high. This is critical for many reasons. For example, although many children are identified as gifted and receive some educational support, studies show that very few are still recognized as gifted in adulthood (Dai, 2010). This raises the question of whether this is due to how we identify gifted students or the appropriateness of the educational opportunities we have offered to these children (Subotnik et al., 2011). On the other hand, many gifted individuals are not identified because they do not fit the gifted stereotype (Jordan & Vancil, 2006). For example, teachers can act as gatekeepers, which comes with great responsibility (Golle et al., 2023). It can be assumed that every teacher and, indeed, every pre-service teacher has an intrinsic need to know to what extent they are affected by misconceptions about giftedness. An instrument to determine the extent to which myths permeate a person's knowledge about giftedness is highly desirable, the urgency of which had been pointed out by Susan Wilson (1982) over 40 years ago.

The RATIMAG is the first rapid assessment test that measures individual misconceptions about giftedness economically and quickly. The construct validity of the items measuring the common myths about giftedness identified by the panel of renowned scholars (Treffinger, 2009) was endorsed in several feedback loops with experts, including many original authors. The factorial validity check also ensured that the items corresponded to the themes of the collection of 19 myths. Although the sample of the pilot study consisted exclusively of people who may come into professional contact with the topic of gifted education in one form or another and are then expected to give a competent answer, their knowledge could have been better. Only a fraction had a perfect score, and even with mild scoring, more than a third of the items were answered incorrectly in the median of this sample. It is plausible to assume that the result is no better in the overall population.

Wilson (1982) referred to the proportion of correct answers achieved by the test-takers as the reality quotient. It is indeed tempting to summarise the RATIMAG results in a similar way using total and sub scores. Looking only at the reliabilities, which were all acceptable, this would be perfectly possible. While these scores can be informative as an initial guide, we caution against over-interpreting them for several reasons.

A crucial argument against the overall score as a reality quotient is that although the 20 items thematically reflect the three topics of the 19 myths about giftedness compiled by the internationally leading scholars on giftedness quite well (Treffinger,

2009), some topics were covered more frequently in the myths and therefore also in the items. Just as the editor of the special issue on the myths does not do this for the myths, consequently, there is no claim of any form of representativeness for the items of the RATIMAG: neither that the items as a whole are representative of myths about giftedness nor that the items of the subscales are representative of the three subject areas. The items are unlikely to meet criteria such as those required by Rasch modelling. These would require, for example, that the items measure a single latent variable (unidimensionality; Linacre, 1998), which would not be plausible. Requirements such as local independence (Wright & Stone, 1979), monotonicity (Andrich, 1988), or invariance (Engelhard, 2013) can also not be expected for individually compiled myths and their translation into items. Thus, although a direct comparison was reported of which of the three topics has a higher proportion of myths, they must be viewed critically. Notwithstanding, the percentages of correct answers, even when subjected to mild scoring, and the pronounced disparities in the percentages of correct answers between the three subscales are noteworthy. If these results are replicated in future studies, it will become evident that there is a significant lack of knowledge regarding the personality and social-emotional aspects of development of giftedness. Interestingly, this field's current state of research has recently been subjected to considerable criticism (Rinn, 2024a, 2024b). The research deficit is possibly reflected in a knowledge deficit of people from whom professional in giftedness expects a profound knowledge of giftedness. However, there also seems to be a significant requirement for elucidation regarding the characteristics and needs of the gifted, and even more so regarding assessment and achievements.

The international experts described the myths because they saw each as a serious impediment to successful gifted education. Therefore, it is suggested that a more qualitative use of the RATIMAG, as Sak (2011) had done with his test results. For him, as previously for the authors of the 19 myths, each incorrect answer signalled the need for clarification and further training regarding precisely this measured misconception. Similarly, incorrectly answered items on the RATIMAG should be a reason to clarify this misconception in a person.

The flexibility to adapt or expand the RATIMAG may be particularly useful in formative assessment or training contexts. However, such adaptations should be clearly distinguished from the validated version used in empirical research. In practice, test users do have some flexibility in the qualitative application of the RATIMAG. Given that the concepts of giftedness, gifted education, and gifted identification are far from universally defined, users may choose to exclude items they consider implausible. Nevertheless, the RATIMAG offers a foundational set of items that—according to expert review, including many authors of the original myths (Treffinger, 2009)—permits a construct-valid assessment of prevalent misconceptions about giftedness.

Secondly, users can add further items if they wish to identify more myths. The myths collected by Treffinger (2009) were indeed remarkably stable compared to those published in GCQ (Volume 26, Number 1) in 1982. However, the RATIMAG items are undoubtedly incomplete. Depending on their interests, users can add items to myths

on specific topics as diverse as gender (Veldman & Mathijssen, 2022), equity (Novak et al., 2020), or acceleration (Colangelo et al., 2004).

Thirdly, users can choose between strict and milder scoring for each item. The latter recognizes a tendency towards the correct answer as correct on a 5-point rating scale. Such a milder scoring may align with the widespread view in educational practice that there is no certain knowledge (Klopp et al., 2023; Lammassaari et al., 2024). After all, different points of view and paradigms regarding giftedness, gifted education, and gifted identification also exist in science (Dai, 2023; Sternberg & Ambrose, 2020).

Conclusion

This study presents a knowledge-based questionnaire designed to capture information about the distribution of myths about giftedness across different educator roles and demographic differences. The validity and reliability of the questionnaire on a large and diverse sample were demonstrated by means of several analyses, such as exploratory factor analysis (EFA) analysis, confirmatory factor analysis (CFA), and parallel analysis. The fact that the questionnaire has been developed by collecting data from various groups, including preservice students in teacher education, teachers, and university lecturers, constitutes an important sample group for use in future studies. The results indicated that the questionnaire is reliable, and valid in revealing the myths that educators have about giftedness myths.

Limitations and Further Directions

While this study is a valuable questionnaire development study examining educators' perceptions of giftedness, some limitations must be acknowledged. First, although the questionnaire consists of three groups, which are preservice teachers in teacher education, teachers, and university lecturers, data could not be collected with equal distribution. These unequal group sizes may limit the generalizability of the questionnaire's applicability among these three groups.

Second, the questionnaire consists of three sub-dimensions which are characteristics and needs of the gifted, assessment and achievements, and personality and social-emotional aspects of development of giftedness; however, the fact that the number of items in the sub-dimensions is not distributed equally may limit the generalizability of the results when comparing between sub-dimensions.

Third, the study used a 5-point rating scale. This scoring system may allow a neutral (3) response, which may not provide the expected answers to the questions in the knowledge-based questionnaire. Although the strong results obtained in this study, designed as a 5-point rating scale, indicate that this situation did not negatively affect this research, it may affect the results obtained if used in future studies.

Taken together, these limitations offer productive avenues for future research. Comparative cross-national research, longitudinal intervention studies, and multimethod evaluations will be crucial for building a more nuanced, globally informed understanding of how myths about giftedness emerge, persist, and can ultimately be transformed through high-quality educator preparation.

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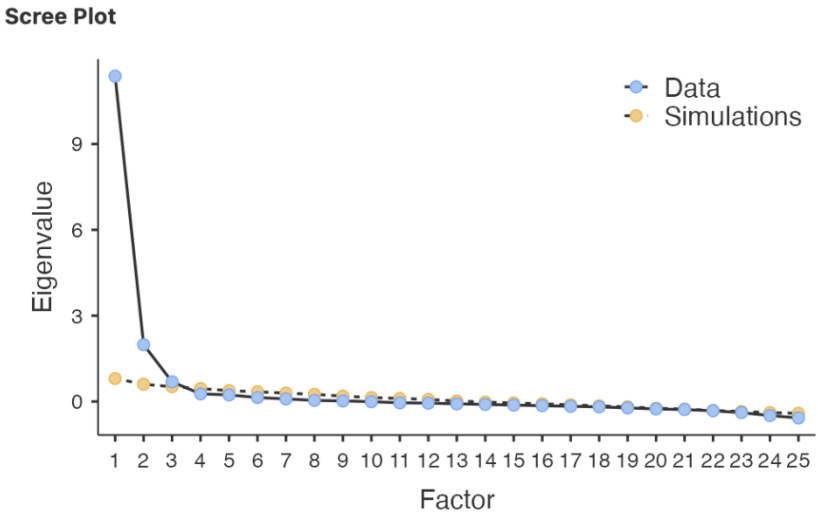
Appendix A

Figure A1
Parallel analysis scree plot



Appendix B

Items of the three subscales of the RATIMAG and percentages of correct answers for strict and mild scoring.

	Strict	Mild
	%	%
Characteristics and needs of the gifted subscale		
Gifted individuals are a heterogeneous group.	15.2	55.9
Giftedness is a developmental construct.	32.6	81.8
Achievement can and does vary across high-potential children and over time.	31.8	83.2
Interests, learning styles, and creative opportunities are intimately associated with high performance.	34.2	78.5
Effort and motivation are a matter for gifted students' education.	41.3	83.6
Giftedness cannot be revealed with just an IQ test.	38.1	72.3
When evaluating giftedness, we should also consider success.	20.2	59.3
Gifted student assessment data should come from multiple sources and should include multiple assessment methods.	42.7	83.4
Differentiation is required to meet the educational needs of gifted students.	37.9	79.8
In programs for the gifted, diversity is as important as continuity.	41.7	81.2
The needs of gifted learners do take time, effort, and funding.	40.9	80.4
Education should be organized according to individual needs in a way that will bring each student to their maximum level.	49.4	82
Assessment and achievements subscale		
High ability can create pressures and sources of stress that can overwhelm high-ability students and prevent them from realizing their potential.	15.6	47.8
Gifted students may have problems finding educational and social environments that promote academic development.	21.3	66.6
Gifted youth with extreme talent may not be socially and emotionally prepared to handle the power and attention such ability levels often generate.	21.5	67
Personality and social-emotional aspects of development of giftedness subscale		
IQ scores are not sufficient to express the highest potential.	4.0	16.1
Differentiation applications can be considered very time-consuming.	11.1	42.9
Every teacher has the qualifications to study with gifted students.	3.0	14.5
The gifted program is not an extension of the content considered important for gifted students. It is an "extra".	9.7	43.1
Using a single curriculum for gifted students facilitates assessment.	5.5	23.9