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MALIN'S INTELLIGENCE SCALE FOR INDIAN CHILDREN (MISIC): THE ERRONEOUS PRACTICE OF SIX PERCENT PRORATION

Roopesh B Nagaraj*

M.Phil., Ph.D Additional Professor Dept of Clinical Psychology NIMHANS, Bengaluru – 560029.*Corresponding Author

ABSTRACT Malin's Intelligence Scale for Indian Children, popularly known as MISIC, is one of the widely used intelligence tests in India. The popularity and usage of this test has increased recently after it has been made one of the two intelligence tests that needed to be mandatorily administered before the assessment and diagnosis of Specific Learning Disability in India. This test yields three scores: verbal IQ, performance IQ and the full-scale IQ scores. MISIC takes about 2 to 3 hours for the complete administration, and hence sometimes due to reasons of shortage of time and non-availability of the performance subtest materials, the performance subtests are not administered. The manual provides an option, where if only verbal subtests are administered, and to substitute the missing performance IQ, the examiner can prorate by adding 6% to the Verbal IQ to obtain the full-scale IQ. However, this practice of adding up 6% as proration to obtain the full-scale IQ is based on an incorrect assumption and erroneous attempt to match the Indian norms with the American norms. This article discusses the reasons with examples as to why such a practice is not appropriate and should not be carried on. This article also recommends that verbal IQ >85 can be accepted (with or without full-scale IQ >85) as the criteria for the SLD assessment and diagnosis.

KEYWORDS :

INTRODUCTION:

Arthur J Malin for his doctoral thesis (Malin, 1966) adapted Wechsler's Intelligence Scale for Children (WISC; Wechsler, 1949). This adaptation can be considered as a significant milestone and contribution towards the assessment of intelligence of children in India. Eventually the adaptation was named as Malin's Intelligence Scale for Indian Children (Malin, 1969), and popularly came to be known as MISIC. MISIC has six verbal subtests and five performance subtests, which altogether yield Verbal IQ (only 5 out of 6 subtests are considered for scoring VIQ), performance IQ and full-scale IQ.

In the recent Gazette of India notification (2018), Department of Empowerment of Persons with Disabilities, in its guidelines for evaluation and procedure for certification of Specific Learning Disability (SLD), has made it mandatory to administer either MISIC or WISC-III for the assessment of IQ. However, due to the lack of Indian adaption, comprehensive norms, and difficulty in obtaining the WISC-III test, majority of the psychologists' resort to MISIC to ascertain IQ as part of the SLD assessment.

MISIC takes about 2 to 3 hours for the complete administration, and hence sometimes due to reasons of shortage of time, human resource, incomplete, damaged, and/or non-availability of the performance subtest materials, the performance subtests are not administered by the psychologists. The manual provides an option, where, if only verbal subtests are administered, to substitute the missing performance IQ, the examiner can prorate by adding 6% to the Verbal IQ to obtain the full-scale IQ. However, this practice of adding up 6% as proration to obtain the full-scale IQ is based on incorrect assumptions and erroneous attempt to match the Indian norms with the American norms. This article discusses the reasons with examples as to why such a practice is not appropriate and should not be carried on.

1. Different cultures – Different norms

It is natural for anyone who adapts a test to a different culture, to compare the results of the adapted population to the results of the original sample. Similarly, Malin on several occasions compares the American and Indian normative data (with respect to WISC and MISIC), and reports that Indian children (normative group) have performed better in verbal tests and poorer in performance tests compared to American children. Given this, it is natural that in order to obtain a particular IQ, say an IQ of 120, an Indian child has to have a higher score (for eg. raw score of 15), compared to an American child (for eg. raw score of 13). He further discusses the repercussions of an Indian child obtaining a (*comparatively*) lesser verbal IQ compared to an American child, despite the former performing better in verbal tests.

However, one has to realize that, different norms are required only when the performance varies between/among different cultures. If the performance does not vary between/across culture, then there is no need to have different norms. On the other hand, one has to remember that only the '***performance/raw scores***' **can be compared across the cultures/countries, and the '*IQ norms*' cannot be compared across the cultures/cultures**. That is, one can compare the performance of Indian and American children on a particular test, but one cannot compare the Indian norms and American Norms.

Performance varies depending on several aspects/variables, such as education of the parents and the child, occupation of the parents, socioeconomic status of the parents, nutrition levels, prior exposure to similar tests and testing process, attitude to testing, attitude towards achievement, and so on (Prifitera, Saklofske and Weiss, 2005). Whenever there are significant differences among the above-mentioned aspects/variables (such as difference between developed/western countries and underdeveloped-developing/eastern countries), there is a requirement for separate norms. If the differences are little/not existent among the above-mentioned aspects/variables (such as difference between India and Sri Lanka, and so on), then one can say that separate norms may not be required (if it is too difficult or challenging to adapt and/or to standardize the test to local culture).

2. Six percent proration

Malin reports that the Indian children (that is the standardization sample of MISIC), scored 10% higher in verbal scores, compared to American norms, and scored 6% lower in performance scores, compared to American norms.

Subsequently, in the 'computation of scores', the manual mentions that, 'if only the verbal IQ is obtained, it can be balanced for a full-scale IQ by adding about 6% to supply for the missing performance scores'. Malin does not mention the exact reason as to why he decided on the 6%, but it is not difficult to understand. It might probably because, he would have felt that the Indian sample had 6% lower performance scores compared to American sample, and that he might have decided it to bridge the gap.

However, this 6% proration option is incorrect and the following points clearly provide the reasons as to why it is incorrect.

a. As the Indian adaptation had extensive revision/changes in verbal items compared to the original WISC, it was not appropriate to compare the American and Indian sample at all.

b. As mentioned above, only performances on a particular/same test can be compared, but not the norms. That is irrespective of how Indian children have performed, the obtained values are actually '**the**' norms. That is, the obtained values will become the norms, and only that value will be considered for all purposes. That is irrespective of whether Indian children performed higher or lower than American children, Indian children's performance will be '**the norms**' that needs to be considered as standard. So given this, the question of adding 6% does not arise at all. Continuing with the same argument, ***it will be impossible to know how much to add or how much to subtract, either for the entire verbal IQ or for entire performance IQ***.

c. Further, if we consider the raw scores of the MISIC and the possible maximum raw score obtainable by anybody;

- The average (of the maximum obtainable raw scores) of all the verbal subtests would be 22.66 (and if we omit Digit span it is

23.6).
- On the other hand, the average (of the maximum obtainable raw scores) for performance subtests would be 26.2.

This only indicates that there are more chances of obtaining higher scores in performance subtests than verbal (But one should remember that this in itself will not say whether or not the children obtain higher scores in performance subtests).

d. If for example, just for the sake of argument here, if one considers that Malin's adding of 6% is the correct procedure to substitute the lower performance scores that was obtained by Indian children compared to their American counterparts. Then one has to answer as to why Malin did not provide the option to reduce 10% from the verbal IQ (because as he reports that Indian children obtained 10% higher verbal scores compared to their American counterparts).

e. Further, if at all Malin would have decided to make up for the lower results on the performance subtests, the manual did not suggest to add the 6% to the performance IQ when all subtests are administered. Why is the addition of 6% when the performance subtests were not administered seen as necessary, but not when it is administered? This is not given any explanation.

f. Logically, if we consider the reported values, that, the verbal score is already higher (10% than expected), and the performance is already lower (6% than expected); adding 6% to the already higher score will actually inflate the IQ. Let us consider two scenarios. First scenario (correct practice), when both verbal and performance tests are administered, we take the average of verbal and performance scores to arrive at the full-scale IQ. Second scenario (prorating – incorrect practice), when we administer only verbal tests and prorate with adding 6% to the verbal score to obtain the full-scale IQ (refer table 1). It can be seen in table 1, that the 6% prorating will incorrectly inflate the IQ of the child.

Table 1: Showing the inflated full-scale IQ if 6% proration is used for two individuals

Person	Scenario	V IQ	P IQ	Mathematical operation to arrive at the full-scale IQ	F IQ	Interpretation
Mr.Sa	Correct	110	94	Avg of VIQ+PIQ	102	Average
	Prorating	110	-	Add 6% to VIQ	116.6	Above avg
Ms.Ra	Correct	80	64	Avg of VIQ+PIQ	72	Borderline
	Prorating	80	-	Add 6% to VIQ	84.8	Dull normal

Similarly, the same inflated IQ (as shown in table 1) will be obtained if we just go by the raw score and normative values given in the MISIC manual. Table 2 depicts the same phenomenon (as shown in table 1) with the examples taken from the 'median raw score – TQ/IQ values' of each subtest given in the MISIC manual. That is the values given in the table 2 are the median raw score value of/for the 8 years old child in MISIC manual. For example, in the 'information' subtest the obtainable raw scores are from 1 to 21, the median raw score will be 11; and in the 'object assembly' subtest the obtainable raw scores are from 1 to 25, the median raw score will be 13; and so on. To obtain Verbal IQ, only five verbal subtests have been considered (i.e., Digit span is excluded here) as suggested in the manual.

Table 2: Showing the effect of the 6% proration when the median raw score is considered

	Verbal subtests								F-S IQ **CORRECT method** (Avg of VIQ & PIQ) **103**	F-S IQ **INCORRECT method** (VIQ + 6%) **109**
	Info	Com	Arit	Simi	Voca	DS		VIQ		
Median Raw score	11	11	8	9	23	9		-		
TQ	100	100	100	110	98	100		102.6		
	Performance subtests									
	PC	BD	OA	Cod	Maze		PIQ			
Median Raw score	9	9	13	25	11		-			
TQ	100	113	106	98	97		102.8			
Info = Information, Com = Comprehension, Arit = Arithmetic, Simi = Similarities, Voca = Vocabulary, DS = Digit Span, PC = Picture Completion, BD = Block Design, OA = Object Assembly, Cod = Coding										

Therefore, **if we prorate by adding 6%** to the verbal IQ as a proration for the missing PIQ, it will only yield an inflated full-scale IQ (table 2). Hence, it is always better to have both verbal and performance scores to arrive at the full-scale IQ.

g. Conceptually, children come with different abilities, and it is rare that two children share similar kind of abilities across subtests and/or across domains. A child can have lower verbal ability and higher performance ability, or vice versa. A general observation is that intellectually very superior child/person usually scores more in verbal tests compared to performance subtests and it is vice versa for children with intellectual disability (Gallagher, 1961). However, it will be almost impossible to exactly know how much to add or subtract to obtain full-scale IQ if either verbal or performance scales are not administered.

CONCLUSION:

Though it was standardized a few decades ago, MISIC is still one of the popular tests to assess the intelligence of Indian children, as the test is adapted to suit Indian conditions and standardized on children of about five cities across India. It allows to have separate V-IQ, P-IQ and full-scale IQ. Further, even though it is one of the two mandated intelligence tests that is required to be administered before performing an SLD assessment in India, it is for all practical purposes, the only one available. Despite this, due to few reasons, as mentioned above, some examiners do not administer performance subtests; but to compensate the same, they prorate the verbal IQ to obtain full-scale IQ by adding up 6% to the VIQ. This practice is incorrect, and does not have any conceptual and/or scientific basis to do so. Therefore, psychologists have two options when using MISIC: (i) administer the whole test, i.e., both verbal and performance subtests and then obtain full-scale IQ; or (ii) if only verbal subtests are used then, to report only Verbal IQ.

For the SLD assessment and certification, this author requests the authorities to modify the current SLD criteria, to consider the option of verbal IQ if it is fulfilling the criteria, which is IQ of >85, with or without the full-scale IQ of >85.

This article only discusses the incorrect practice of adding up 6% as proration (when performance subtests are not administered) to obtain full-scale IQ.

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