

The Ability of a Child's Self-rating Scale in Estimating Intellectual Ability

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ABSTRAK

Terdapat banyak dapatan yang mencadangkan supaya faktor bukan intelektual diambil kira semasa mengukur kebolehan intelektual. Berdasarkan cadangan ini banyak inventori tadbir sendiri telah dibina pada dekad yang lalu. Salah satu daripada inventori tersebut ialah 'School Feeling and Thought (SFT)'. Oleh kerana inventori ini dibina di Amerika, ianya perlu diterjemahkan ke dalam Bahasa Melayu dan diuji keupayaannya menilai kebolehan intelek kanak-kanak Melayu. Inventori SFT dalam Bahasa Melayu ditadbir ke atas 100 murid darjah enam (53 lelaki dan 47 perempuan) di sebuah sekolah rendah di Tampin. Kebolehan intelektual (IQ) kanak-kanak tersebut ditentukan dengan menggunakan WISC-R. Dapatan kajian ini mendapati korelasi antara skor SFT dengan IQ daripada skor WISC-R adalah sederhana. Dua sub-ujian SFT iaitu 'Action' dan 'Affect' didapati menjadi peramal IQ yang signifikan. Satu persamaan untuk meramal IQ boleh dibentuk hasil daripada analisis regresi berganda. Satu kelemahan persamaan ini ialah IQ yang bakal diramalkan mengandungi ralat sebanyak 11 mata. Walau bagaimanapun, SFT boleh digunakan untuk meramal IQ dan boleh digunakan sebagai alat penapis untuk mengukur kebolehan intelek kanak-kanak Melayu.

ABSTRACT

There is substantial evidence for non-intellectual factors to be considered as an additional criterion in the appraisal of intellectual ability. Therefore, the development of a child's self-rating scale has been intensive in the last decades. One of the most widely used self-rating scales is the School Feeling and Thought (SFT) scale. Bearing in mind that the SFT was developed in America, it is essential to undertake a study to ascertain whether the Malay versions of these instruments have the ability to assess intellectual ability of Malay children. The Malay version of SFT was administered to 100 Primary Six pupils (53 boys and 47 girls) from a single school in Tampin. The intellectual ability (IQ) was measured using the revised version of Wechsler Intelligence Scale for Children (WISC-R). The correlations between the SFT scores and the WISC-R full-scale IQ are modest. Two subtests of SFT, namely 'Action' and 'Affect', are found to be significant predictors of IQ. The equation derived from multiple regression analysis to estimate IQ using SFT subtest scores is found to be able to predict intellectual ability (IQ). The only limitation is that the IQ predicted by this equation has an 11-point error. Therefore, SFT can be used to estimate IQ and thus can be used as a screening test for intellectual ability of Malay children.

INTRODUCTION

Terman (1959), in the 30-year follow-up report on his research on intellectually gifted children, suggested implicitly that external or non-intellectual factors had to be considered in the appraisal of intellectual ability. His suggestion is based on his finding that the difference between the most and the least successful men among his 1925 study of gifted

children is not in intelligence but in personality factors.

In an intensive study on the characteristics of 64 eminent scientists, Roe (1952) found that despite long working hours and fewer vacations, they would rather be doing their work than anything else. Other researchers suggested that eminent adults are self initiated and are guided by self-generated

standards of excellence (Chambers 1964; Helson 1971; Nicholls 1972; Burden 1979).

Recent research findings also consistently support the view that children's perception of their own ability mediates achievement behaviour (Blumenfeld *et al.* 1982). The way children perceive their ability and attributions of success and failure can have consequences on their motivation towards school work and intellectual potential (Dweck 1986; Clifford 1986). Therefore, there is a great potential for non-intellectual ability, which can be self administered, to be developed to appraise intellectual ability among children. Since there is substantial evidence for the non-intellectual factors to be considered as an additional criterion in the appraisal of intellectual ability, the development of a child's self-rating scale has been intensive in the last decades. One of the most widely used self-rating scales is the School Feeling and Thought (SFT) scale.

SCHOOL FEELING AND THOUGHT (SFT)

Description and Administration of SFT

The School Feeling and Thought (SFT) scale developed by Clifford (1988) is in some respects similar to Kuhl's (1985) Action Control subscale. Both are based on Rotter's (1966) Locus of Control scale and attempt to measure the extent to which an individual responds constructively to failures or misfortunes through self-reporting. Contrary to Kuhn's Action Control subscale developed for adults, SFT focuses on school failure primarily for 7- to 17-year-old school children.

The SFT consists of 36 items with a 6-point agree disagree Likert scale. It yields three subscale scores: Feeling About Failure (Affect or Aff), Action About Failure (Action or Act) and Preferred Task Difficulty (PD). It takes about 25 minutes to administer the SFT with the researcher reading every item aloud to the children.

Reliability and Validity

a. Reliability

The standardization of the SFT was conducted using 233 students aged 10 – 12 years old enrolled in two public schools in a

midwestern state of the USA. The alpha coefficient for the original 36 items was .90. For the SFT subscales, the alpha coefficients for Affect, Preferred Difficulty and Action were 0.85, 0.88 and 0.80 respectively.

b. Validity

Responses to the original 56 items in the SFT scale were analysed using factor analysis with varimax rotation. The analysis resulted in three factors (Affect, Preferred Difficulty and Action). Items with a minimal factor loading of 0.40 were retained. In the final form of SFT, each subscale contained nine items.

The SFT score was validated using selected items from well-known achievement tests, Iowa Tests of Basics Skills (ITBS) and Iowa Test of Educational Development (ITED), which formed an inventory called Academic Risk Taking (ART) Measure, consisting of mathematics, spelling and vocabulary. The SFT scale has a modest correlation with the ART Measure. For the fifth grade (11 years old) the correlation coefficient is 0.48 ($p < 0.001$) for vocabulary, 0.41 ($p < 0.001$) for spelling and 0.37 ($p < 0.001$) for mathematics.

The SFT was translated and administered to 194 fourth grade Taiwanese students (Clifford and Chou 1991). The translated version of the SFT scale had a reliability of 0.87. The reliability for the subtests was: 0.72 for the Affect, 0.82 for the Preferred Difficulty and 0.86 for the Action.

OBJECTIVE OF THE STUDY

The objective of the study was to explore the possibility of using the SFT score to predict intellectual ability (IQ) of Malay children. Bearing in mind that the SFT has been developed in the USA, it is essential to undertake a study to ascertain that the Malay version of this instrument has the ability to assess the intellectual ability of Malay children. Since the cost of administering intelligence tests is high, psychologists have developed screening measures to gauge intellectual ability. If the SFT can be effectively used for screening purposes, an enormous amount of resources can be saved.

TRANSLATION PROCEDURE

Translation Panel

The SFT was initially translated into Malay by the researcher and then given to a translation panel comprising five local experts: two associate professors of Malay Studies, two Educational Psychology lecturers and a teacher with 12 years' experience in teaching Malay children in a rural area.

Item Analysis and Back Translation

After receiving separate comments from each translation panel member, the researcher made the necessary changes as suggested by the panel. The SFT was then administered to a class of 25 Primary Six pupils in a school near Universiti Pertanian Malaysia. The respondents were instructed not only to respond to every item but also to mark items which they did not understand. Four items in the SFT (items 2, 10, 13, and 21) needed re-wording.

The final Malay version of the SFT was given to five final-year Bachelor of Education (Teaching of English as a Second Language) students at Universiti Pertanian Malaysia. They translated each item in the instrument back into English. This 'back translation procedure' was essential to ensure that the content of the final Malay version of the SFT did not deviate from the original English version. From the back translation, the researcher found that all items had been correctly translated.

RELIABILITY OF THE MALAY VERSION OF SFT

The internal consistency reliability of the translated version of SFT is modest. The

Cronbach Alpha coefficient for all 27 items is 0.6. A Cronbach Alpha coefficient of 0.75 can be obtained if 3 items are deleted (items 2, 13 and 21). Furthermore, the deletion of these items will improve the reliability of the subscales. The reliability for Affect increases to 0.60 from 0.55, for Preferred Difficulty to 0.67 from 0.59 and for the Action to 0.55 from 0.43. As these three items shared a common feature, that they are all negatively worded, the deletion of these items for further administration seems sensible. The final items for SFT are therefore reduced from 27 to 24.

Test retest (after a lapse of 30 days for 30 pupils) results indicated that there was no significant difference in the total score of the SFT. However, mean scores for the second administration for the total and two subtests (Aff and Act) are higher than the initial administration (Table 1).

METHODOLOGY

Respondents and Data Collection

One hundred Malay Primary Six pupils (53 boys and 47 girls) from a single school in Tampin were the respondents for this study. The average age of the respondents was 11 years 7 months (SD=2.7 months). This sample size was adequate in minimizing Type II error consistent with the F-test statistic set at a power level .8 and alpha at .05 (Cohen 1992).

The SFT was administered to the pupils during the first visit to the school. The researcher administered WISC-R (Wechsler Intelligence Scale for Children-Revised) (Wechsler 1974) individually to the res-

TABLE 1
Test-retest result of SFT (N=30)

SFT	First		Second		t	r
	Mean	SD	Mean	SD		
Aff	25.51	5.23	27.48	5.88	-1.37	0.79
PD	33.35	5.01	34.98	6.11	-1.12	0.84
Act	26.18	4.12	28.15	4.87	-1.57	0.77
Total	87.03	10.45	88.64	8.88	-1.44	0.89

Critical region for t (df=28) = 2.048 at p < 0.05

pondents. The full-scale IQ score derived from WISC-R is used as a criterion for the intellectual ability (IQ).

Data Analysis

The data was analysed using a computer software package known as SPSSPC+.

FINDINGS

In order for the SFT to be able to appraise intellectual ability, the SFT scores must strongly correlate with the IQ scores. The correlations of the SFT scores with intelligence tests (in this particular study, WISC-R) range from 0.59 to 0.70 (Table 2).

Results from the stepwise multiple regression analysis indicated that the two subtests of SFT (Affect (Aff) and Action (Act)) are the significant predictors of IQ (Table 3). Both Aff and Act contribute 50% ($R^2 = .50$) to the IQ variance. The contribution of Affect to the IQ variance is 41% ($R^2 = .41$). Action gives an additional 9% to the IQ variance.

Based on the above analysis, the equation to predict IQ based on the SFT scores is:

$$IQ = \text{Aff}(.94) + \text{Act}(.70) + 43.3$$

The predicted IQ scores derived from the equation contributed nearly 50%

($R^2 = .4998$) of the WISC-R IQ score variance. Subsequently, based on the information inferred from Table 4, the equation proposed to predict intellectual ability is well above the chance ($F = 31.98$ $p < .0001$). The only limitation is that the predicted IQ score generated by the equation has about an 11-point error at 95% confidence level (standard error of measurement = 10.7). Therefore, if the calculated IQ is 105, then the true IQ is estimated between 94 and 116.

DISCUSSION AND CONCLUSION

The initial findings of the study indicated that the Malay version of SFT is a modestly reliable instrument to assess intellectual ability of Malay primary school children. Since the correlation of the SFT with the WISC-R is also modest, the intellectual ability (IQ) estimated from the equation has an 11-point error. With these findings, the SFT has some potential for utilization as a screening measure for IQ.

The findings of this study tend to support findings of earlier researchers (Blumenfeld *et al.* 1982; Crocker and Cheeseman 1988; Blatchford 1992) that children's perceptions of their ability are accurate and realistic. That 11-year-old Malay children can almost accurately rate themselves will add a new

TABLE 2
Correlations of the SFT with the WISC-R (N=100)

Variable	IQ	Aff	PD	Act
Aff	.64			
PD	.62	.74		
Act	.59	.54	.76	
Total	.70	.86	.93	.87

Note: All correlation coefficients are significant at $p < 0.001$

TABLE 3
Equation to predict IQ

Step	Variable	R^2	B	T	p
1	Aff	.41	.94	5.3	.0001
2	Act	.50	.70	4.1	.001

TABLE 4
Analysis of variance

Variable	df	SS	MS	F	p
Regression	3	11020.8	3673.6	31.98	.0001
Residual	96	11027.7	114.9		

perspective to research as it is contrary to the belief that Malays are reserved and introverted.

In view of the above findings, the SFT should be accepted as an additional instrument for use by educational authorities to assess the intellectual ability of Malay children. However, further research is needed to examine the consistency of the results and to determine whether the prediction equations can be used with other subjects.

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