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## **Development and Validation of a Scale to assess Emotional Maturity in Mild Intellectually Disabled Children**

**D. N. Kowsalya, M.Sc., Ph.D. Scholar, H. Venkat Lakshmi, M.Sc., M.Phil. Ph.D., and K. P. Suresh, M.Sc., Ph.D.**

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### **Abstract**

The purpose of this paper was to develop a valid and reliable scale to assess the emotional maturity of mild intellectually disabled children. Such a scale will be helpful in identifying the support required to enhance the emotional maturity of the mild intellectually disabled children for the successful functioning at home, school, and in other social situations. The study was conducted on 80 mild intellectually disabled children with an IQ of 50-70 and aged between 9-14 years. An attempt has been made in this study to identify, develop and validate a total of 54 (84

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inclusive of sub items) items for measuring the emotional maturity in mild intellectually disabled children. The initial development, establishment of validity and estimation of reliability of the emotional maturity are discussed. The findings indicate that the scale has high acceptable reliability.

## **Introduction**

Emotion is a component of general experience. It is inherent aspects of human functioning that arise from a complex interplay among physiological, cognitive, and situational variables. Emotion has been considered an important part of social interaction. It is defined as a feeling or state associated with distinctive physiological responses that motivates action, communicates, and regulates interaction with others (Michael & Sheila, 1989). It influences one's lives, which otherwise would be dull. Emotions not only impel one to act but often serve as goal of action also.

Emotions are very basic during early childhood years and children adapt to the ever changing environment which are important for their survival and well-being. As the child progresses from infancy through adolescence he/she refines the expression of emotions. The gradual influence of maturation and training results in the transition from general gross behavior to more definite and individual emotional expression, with guidance and interaction of the parents, teachers, peers, friends and others. The child is likely to out-grow some childhood emotions and learns to refine and control the tantrums, behaviors and phobias.

The emotional development of children is concerned with the development of their feelings and expressions of themselves in relation to themselves, their parents, peers, teachers, siblings, other people and everything in the world (Philip, 2001). Emotions are a common means of

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communication which are important for social relationships, powerful motivators of behaviour and a source of pleasure or pain. They play an important role in all round development and interpersonal relationships (Philip, 2001). Emotional maturity is extremely important because emotions play an adaptive function to ensure survival.

The pattern of emotional development is unpredictable in a child with intellectual disability and their emotional development is below their age appropriateness. They are poorly adjusted emotionally and are unaware of the emotional reactions/outcome. They are found to exhibit less control over their emotions and suffer from problems of being socially withdrawn to the extent that it not only affects and influence their own functioning but also others.

Research findings have also suggested that children with intellectual disabilities exhibit impairment in their ability to identify emotional states in themselves and others, when compared to peers who have no mental disability (Hobson, Outson, & Lee, 1989; Mc Alpine, Sing, Kendall & Ellis, 1992), because they are characterized by significant limitations both in intellectual functioning and in adaptive behavior. Since emotions are transitory in nature, they need to be experienced and emotional experience has “valence”, only when emotions are either positive or negative in nature. This often motivates the mild intellectually disabled children (MIDC) towards action. Emotions also involve cognitive appraisals in a given situation. Since the MIDC cannot express, judge, or gauge emotions they interpret or react to every situations in a very impulsive manner. Emotions of the MIDC vary in intensity; anger can become rage, amusement can become joy, and fear can be heightened to a state of terror. The maturity has a marked impact on the behaviour of these children and it is at this juncture that education play a vital role in changing one’s behaviour and is very crucial in determining one’s maturity.

Enabling the mild intellectually disabled children in understanding their own perception and helping them in differentiating between positive and negative emotions helps them to be more self- reliant. They need to be given an exposure through activities, situations, and interactions so

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that they can enhance their experiences and make an attempt to integrate feelings, thinking and behaviour of positive emotional states, and tend to avoid situations that are negative. Children who are taught to identify, express, and cope positively with their feelings develop useful life skills. Mild intellectually disabled children can gain an understanding of different aspects of emotions through the use of books, board games, puppets, interactive storytelling, role-plays. Teaching children to identify and verbalize their feelings, as well as to read the emotional signals of other children and adults through that of facial expressions, posture, play or art work will benefit them. Hence an attempt has been made in the present study to develop and validate a scale to assess the emotional maturity of mild intellectually disabled children. By assessing emotional maturity of MIDC the parents, teachers, care takers and others can help them to understand and express their emotions in a socially acceptable manner.

## **Materials and Methods**

### **Sample**

The study sample consisted of 80 children with mild intellectual disability, who are in the age bracket of 9-14 years (46 boys and 34 girls). They were identified as children with an IQ range of 50-70 based on Binet - Kamat test, Vineland Social Maturity Scale and Seguin form board test (as per the school records). Some simple tests were also conducted to assess the disability. The sample was selected from special schools in Bangalore city through Purposive sampling technique.

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## **Technique and Procedure**

The objective of developing a scale is to create a valid measure of an underlying construct. The theoretical principles, practical issues, and pragmatic decisions must be considered in construct validity of scales and the subscales. It is essential to conceptualize on the content of the scale and the initial item pool should include items representing all the subsections of the scale, if any. The method of wording the content and formulation of the statements need careful attention. The item pool should be later tested, along with variables and the objectives of the study to assess closely related constructs, on a heterogeneous sample representing the entire range of the target population. Finally, in selecting scale items, the goal is uni-dimensionality rather than internal consistency; this means that virtually all inter - item correlations should be moderate in magnitude (Lee and David, 1995).

## **Validity**

Validity is the most important consideration when developing, evaluating and interpreting tests. It refers to the appropriateness, meaningfulness, and usefulness of the specific inferences researchers make based on the data they collect. Validity has been described as 'the agreement between a test score or measure and the quality it is believed to measure' (Kaplan and Saccuzzo, 2001). It is the most important step to be considered when preparing or selecting an instrument for research study and the degree to which evidence and theory support the interpretations of test scores entailed by the proposed test.

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## **Creation of Item Pool and Face Validity**

Once the objectives and the content domain were tentatively identified, the task of formulating the items /questions for the scale was completed. The formulation of the initial pool of items related to the various domains is a crucial task for developing the scale. The fundamental goal at this juncture is to formulate all content systematically in a sequential manner that is potentially relevant to the target construct. The importance of the initial literature review becomes quite obvious in this process. Loevinger (1957) offered the classic articulation of this process: "The items of the pool should be chosen so as to sample all possible contents which might comprise the putative trait according to all known alternative theories of the trait ".

For the present study the items / questions reviewed from books, journals and electronic media were identified, adapted and compiled in framing of 100 items that covered the both positive and negative emotions of the MIDC attending special schools based on five points a Likert scale – always =4, frequently =3, sometimes =2, rarely =1 and never =0. Positive items were given the ratings of 4 to 0 and negative items were given the ratings of 0 to 4 respectively. The 100 items were screened for face validity with the help of expertise.

## **Content Validity**

Content Validity is based on the extent to which a measurement reflects the specific intended domain of content (Carmines & Zeller, 1991). It refers to the conceptualization of the statements

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for developing the scale for the study. If the researcher has focused in too closely on only one type or narrow dimension of a construct or concept, then it is conceivable that other indicators are overlooked. In such a case, the study lacks content validity. An estimate of content validity of a test is obtained by thoroughly and systematically examining the test items to determine the extent to which they reflect and do not reflect the content domain.

For the present study, the individual statement was drawn from a large pool of items that covered both positive and negative emotions. The developed scale was assessed for both face and content validity by a panel of experts from the field of Human Development, Education, Psychology, Special Education and Psychiatry. The items on the scale were rated as strongly relevant, relevant, needs modification or irrelevant. The experts reviewed all the 100 items comprising both positive and negative emotions. The statements that were found to be irrelevant and confusing were deleted and those that were rated as needs modification were revised. The suggestions made by the panel were incorporated to enhance clarity and readability of the instrument.

### **Construct Validity**

Construct validity is the extent to which a test measures the concept or construct that it is intended to measure and assesses the underlying theoretical construct (i.e., the test is measuring what it is purported to measure). Construct validation requires the compilation of multiple

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sources of evidence. In order to demonstrate construct validity, evidence that the test measures what it purports to measure as well as evidence that the test does not measure irrelevant attributes are both required. To evaluate construct validity, a pilot study was conducted on 20 mild intellectually disabled children (10 boys and 10 girls) who were in the age bracket of 9-14 years, with an IQ of 50-70.

### **Readability Test**

For the present study, 54 items were formulated for Emotional Maturity scale. After the tool was developed, a draft copy of the tool was prepared and was tested for readability by the investigator so as to ensure that the items of the tool did not have double barrel questions, the items were not contradicting in nature and also further to ensure that there was no repetition of any items with similar meanings.

**Reliability** is the extent to which a test or procedure produces similar results under constant conditions on all occasions. For the present study, test- retest method was used to assess the reliability of the instruments. The following reliability test was carried out to estimate the reliability.

**Test-Retest method** involves administering same test twice given to the same group after a certain interval of time has elapsed. A reliability coefficient is then calculated to indicate the relationship between the two sets of scores obtained.

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A pilot study was conducted on 20 MIDC in age group of 9 -14 years with IQ range of 50-70, to determine the validity and to estimate reliability of the tools developed for the present study. After data collection the validity and reliability were tested through statistical analysis.

### **Results and Discussion**

In the present study 100 items were identified, adapted and compiled for the formulation of scale to measure the emotional maturity in Mild Intellectually Disabled Children. The items that were not relevant, contradicting and confusing were deleted and only 54 items were standardized for the study. In this study all the items of the scale were standardized based on Likert’s five point rating and the ratings given were always = 4, frequently = 3, sometimes = 2, rarely = 1 and never = 0. Positive items were given the ratings of 4 to 0 and negative items were given the ratings of 0 to 4 respectively.

**Table 1. Items selected from various sources for face validity**

<b>Sources</b>	<b>No. of items</b>	<b>percentage</b>
Thesis	10	10
Articles	20	20
Manuals	50	50
Books	20	20
<b>Total</b>	100	100

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**Content validity:** (also known as **logical validity**) refers to the extent to which a measure represents all facets of a given social construct. The generally accepted quantitative index for content is the Aiken's V index. This index will be used to quantify the ratings of panel experts constituted for evaluating the items in the instrument. The Aiken's V index with 0.80 indicates the good content validity of the measure. The eight steps of Aiken's V index for content validity are as follows (Aiken, 1980).

- n experts rate the degree to which the item taps an objective on a 1 to c on Likert-scale, where c is the maximum score in grading scale
- Let  $l_o$  = the lowest possible validity rating (usually, this is 1 on the Likert-scale)
- Let r = the rating by an expert
- Let  $s = r - l_o$
- Let S = the sum of s for the n raters
- Aiken's V is then  $V = S / [n*(c-1)]$
- The range will be from 0 to 1.0
- A score of 1.0 is interpreted as all raters giving the item the highest possible rating

Content validity was assessed by a panel of subject experts. The purpose was to depict those items with a high degree of agreement among experts. The 100 items were initially screened using face validity with experts, only 54 items were screened. Panels of five subject experts were given the scale for content validity. The subject experts consisted of experts from the fields like,

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Human development, Education, Psychology, Special Education and Psychiatry.

**Table 2. Content validity by five subject experts for developing Emotional Maturity Scale for MIDC**

<b>Description</b>	<b>No. of items</b>	<b>percentage</b>
No. of items screened at face validity	100	100
No. of items evaluated by experts	100	100
No. of items satisfied Aiken's Index	54(84*)	54
No. of items not satisfied Aiken's Index	46	46
No. of items considered for pilot study	54	54

\* Inclusive of sub statements

After scrutiny by the subject experts some items which were found to be irrelevant or contradicting were deleted. The questionnaire was modified using face validity, content validity, and readability test. The final questionnaire was framed with 54 (84 inclusive of sub items) items.

### **Reliability and Internal Consistency**

Reliability was evaluated by Split –half reliability index and consistency was performed using the Cronbach`s alpha and Intra-class correlation co-efficient (ICC). Results on Cronbach`s alpha, ICC and Split-half reliability co-efficient was presented in table 3. It is observed from table 3 that, all the dimension of scale had good reliability and consistency index ( $>0.80$ ). Hence the developed scale for measuring Emotional Maturity in Mild Intellectually Disabled Children is more reliable and accurate.

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**Table 3. Test-Retest reliability (stability) and Cronbach alpha (consistency) co-efficient based on pilot study**

Spilt half reliability	0.918
Cronbach`s Alpha	0.982
Intra-class correlation	0.971

**Construct Validity:** General method of finding the constructs in the scale was item –total correlation. Item-total correlation was used to check the unidimensionality of the scale to assess the emotional maturity of MIDC. The item-total correlation was found to be positive for most of the items of the scale (>0.400). The ‘item – total correlation’ of the items were found to be in the range of 0.5-0.6 (22 of total items), 0.6-0.7 (31of total items), 0.7-0.8 (18 of the total items) and 0.8-0.9 (6 of the total items) respectively as shown in table 4.

**Table 4 : Content Validity by Aiken`s Index and Item-total correlation of emotional maturity**

Sl. No.	Statements	Aiken`s Index	Item-total correlation
1.	I like the way I am	1.000	0.821
2.	I am comfortable with my surroundings	0.850	0.502
3.	I follow rules at home	0.700	0.584
4.	I cry frequently	1.000	0.634
5.	I become stubborn when I do not get what I want	0.850	0.901
6.	I tend to exhibit fear when restricted	1.000	0.583
7.	I get excited easily	1.000	0.654
8.	I blame others for my mistakes	1.000	0.742
9.	I can control my anger	1.000	0.445

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10.	I am tolerant	1.000	0.818
11.	I am a happy child	1.000	0.553
12.	I obey elders	0.850	0.523
13.	I feel sad when I am denied of what I want	1.000	0.590
14.	I am attention seeking a)at home	1.000	0.510
	b) in the classroom	1.000	0.528
15.	I play with other children without troubling them	0.450	0.606
16.	I help my father when he is sick	0.850	0.402
17.	I cooperate in class activities	0.900	0.627
18.	I have helping nature	0.900	0.484
19.	I interfere with others work	0.850	0.692
20.	I am very a)noisy	1.000	0.578
	b) talkative	0.850	0.500
21.	I take things from others without permission	0.700	0.819
22.	I become very violent when angry	0.950	0.828
23.	I tease others	0.900	0.572
24.	I am teased by others	0.950	0.585
25.	I am jealous of my a)peers	1.000	0.738
	b)siblings	1.000	0.745
26.	I get tired easily	0.450	0.547
27.	I take the help of others to complete my work	0.650	0.535
28.	I am selfish	0.750	0.693
29.	I enjoy the companionship of my a)peers	1.000	0.457
	b)siblings	1.000	0.524
30.	I avoid taking part in social gatherings	0.950	0.438
31.	I have the fears of the following :		

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	a)animals	1.000	0.443
	b)strangers	1.000	0.441
	c)horror stories	1.000	0.487
	d)dirt	1.000	0.787
	e)water	1.000	0.714
	f)height	1.000	0.420
	g) darkness	1.000	0.445
	h) fire	1.000	0.524
32.	I am jealous of my siblings	1.000	0.517
33.	I tell lies	1.000	0.602
34.	I wet myself		
	a)during the day	0.650	0.818
	b)during night	0.800	0.355
35.	I accept my mistakes	0.750	0.636
36.	I sit in my own place	0.950	0.602
37.	I pull others hair	0.850	0.583
38.	I blindly follow what others do		
	a) school	0.350	0.504
	b) home	0.350	0.426
39.	I am responsible of my belongings		
	a)my clothes	1.000	0.426
	b)school bag	1.000	0.562
	c)lunch box	1.000	0.703
	d)books	1.000	0.689
40.	I am confident of my abilities	0.850	0.474
41.	I enjoy success	1.000	0.551
42.	I get angry and frustrated easily	1.000	0.547
43.	I make friends easily	0.950	0.467
44.	I enjoy humorous stories	0.900	0.428
45.	I can understand others feelings	1.000	0.410

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46.	I am kind to others	1.000	0.618
47.	I adapt and adjust to changing circumstances	1.000	0.579
48.	I quarrel with my a)peers	1.000	0.585
	b)siblings	1.000	0.592
49.	I maintain silence when needed	0.900	0.491
50.	I am in the habit of a) beating others	1.000	0.845
	b) pinching others	1.000	0.679
	c) throwing objects at others	1.000	0.533
	d) damage furniture	1.000	0.679
	e) break toys	1.000	0.818
	f) slam doors	1.000	0.704
	g)nail biting	1.000	0.590
	h) snatching things from others	1.000	0.631
	i) nose picking	0.800	0.518
	j) lip sucking and biting	1.000	0.411
51.	I take care of my mother when she is sick	1.000	0.550
52.	I respect elders	1.000	0.468
53.	I cause trouble at a) home	1.000	0.477
	b)school	1.000	0.650
54.	I have pleasing manners for eg., to say a) hello	1.000	0.474
	b) thank you	1.000	0.420
	c) sorry	1.000	0.562
	d) please	1.000	0.544

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**Table 5. Results of validated scale for measuring the Emotional Maturity of MIDC**

<b>Emotional Maturity</b>	<b>Number of children</b>	<b>%</b>
Stable (0-183)	17	21.3
Moderately stable (183-213)	16	20.0
Moderately unstable (213-226)	16	20.0
Relatively unstable (227-235)	18	22.5
Unstable (>235)	13	16.3
<b>Total</b>	<b>80</b>	<b>100.0</b>

### **Summary**

For the present study the items were collected from various sources such as Ph. D. thesis, research articles, manuals and books (Table 1). The collected items were grouped in to two aspects for the study namely positive and negative items. The grouped items were then formulated into scale in the order of sequence covering both the positive and negative aspects. After the scale was formulated, the 100 items of the scale were screened for its face validity (Table 2). This was followed by the content validity by a team of subject experts who evaluated the scale of 100 items on 5 point rating i.e., 0-4. The ratings of five subject experts were tabulated and analyzed using Aiken's Index (Table 4). Only 54 items satisfied Aiken's Index, a quantitative index for content validity, were selected.

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A pilot study was conducted on 20 MIDC (10 boys and 10 girls). The reliability test was performed to measure the scale constructed. The reliability index for the split half method, test-retest reliability and internal consistency was done using Cronbach's Alpha (Table 3). The internal consistency measured by Cronbach's Alpha was found to be more than 0.90. Hence the scale developed was highly reliable and consistent.

The results of the present study shows the total correlation of items i.e., out of 84 items 22, 31, 18, 5, 6 items fall in the ranges of 0.5-0.6, 0.6-0.7, 0.7-0.8, 0.8-0.9 respectively. It is clear from the results (Table 5) that 22%, 20% and 16% of MIDC are relatively unstable, moderately unstable and unstable, 21% are emotionally stable and 20% are moderately stable.

### **Conclusion**

The present paper on development and validation of a scale to assess emotional maturity of mild intellectually disabled children was statistically validated and standardized using the validation measures such as face validity, content validity, and construct validity. It was found that a total of only 21% of mild intellectually disabled children are stable and the 20% of them are moderately stable in their emotional aspects, which highlights that there is need for appropriate intervention programme to enhance the emotional maturity of these children.

### **Implications**

The above scale can be used by special educators, parents, research students to assess the emotional maturity of children with mild intellectual disability and train these children by providing them with intervention programme appropriate modules and techniques to educate them.

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**D. N. Kowsalya, M.Sc., Ph.D. Scholar**  
Assistant Professor and Research Scholar  
[d.n.kowsalya@gmail.com](mailto:d.n.kowsalya@gmail.com)

**H. Venkat Lakshmi, M.Sc., M.Phil., Ph.D.**  
Associate Professor and Research Guide  
[anju.venks@gmail.com](mailto:anju.venks@gmail.com)

Department of Human Development (Recognized as Research Center)  
Smt. VHD Central Institute of Home Science  
Bangalore - 560 001  
Karnataka  
India

**K. P. Suresh, M.Sc., Ph.D.**  
Scientist (Bio-statistics)  
National Institute of Animal Nutrition & Physiology  
Adugodi, Bangalore - 560 030  
Karnataka  
India  
[sureshkp97@gmail.com](mailto:sureshkp97@gmail.com)

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