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Inventory Of Multiple Intelligence- Test Construction For Indian Population

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Abstract

Even after the advent of Gardner's theory and a general nod of acceptance to it; intelligence testing remains somewhat synonymous with IQ assessment. The aim of the researchers was to create a psychometric test to evaluate the dominance of each type of Intelligence in a respondent; as given by Gardner. Initially 82 items were constructed (72 divided equally among 8 intelligence types and 10 dual). The final scale contains 60 items with satisfactory psychometric properties.

Keywords- Gardner, multiple intelligence, test construction, Indian population.

1 Introduction

1.1 Timeline of Intelligence studies

Intelligence has been one of the most explored and controversial topics. There has been meritorious work explaining the basis of Intelligence and yet, have not even scratched the surface. The consensus now is that all of the theories of Intelligence can be classified into four categories.

The first group is concerned with the components of intelligence or parts of intellect; and testing the parts through psychometrics is how this group makes intelligence tangible. These individuals, not surprisingly, are called psychometric theorists. The likes of Spearman, Thurstone and Cattell fall in this category. Cognitive theorists rely heavily on the back end operations that display intelligence; or, that intelligence is a function of cognitive processes. Examples are Hunt, Simon and Shaw.

Theorists like Sternberg, Gardner and Mayer side with the notion intellect is nothing but successful tackle of stimuli. This category is cognitive contextual theories; fitting, since the proposition is that cognition or intelligence is context based. Last group, known as the reductionists or biological theorists; consider the brain and its components a basis for intelligence. Eysenck, Sperry and Horn are some of the reductionists. (Gardner, M. K., 2011; Sternberg, R. J., 2020)

1.2 Gardner's theory

Gardner defined intelligence as "*the capacity to solve problems or to Fashion products that are a valued in one or more cultural setting.s*" (Gardner and Hatch, 1989; as cited in Brualdi, A., 1998) Initially, Gardner's theory, explained in his book FRAMES OF MIND; had seven intelligence types. Naturalistic intelligence was added in 1995, followed by existential intelligence in 1999(Smith, M. K., 2002) Gardner's theory, being of the cognitive contextual kind; naturally, challenged the psychometric view. His theory challenged the single mindedness of previous definitions of Intelligence (which only mention cognition) by including the biological, psychological as well as the social components.(Willingham, D. T., 2004)

He has continued to broaden his work to creativity, learning, ethics etc. He is a part of a Harvard research group by the name of PROJECT ZERO, who work on the processes of learning in children and adults. (Gardner, H., et al., 2003)

Even though Gardner's theory took the world of academia by a storm, it is not without criticism. Most prominent problem with this theory is the dissatisfaction with the empirical evidence. The second most raised

question is the question of testing of the eight intelligence types. (Klein, P. D., 1997; Smith, M. K., 2002; Kincheloe, J. L., 2004)

However, there is little doubt about the positive impact Gardner's multiple intelligence has on the classroom education. (Klein, P. D., 1997; Winner, E.; 2005; Leshkovska, E. A., & Spaseva, S. M., 2016; Massanet Oliver, A., 2018; Bowker, M., 2020)

2 Method

2.1 Participants

The process began with the construction of 82 items. Of these, 72 items belong to each intelligence type and 10 items were dual, i.e., evaluated two intelligence types in the respondent. Example, the item –"*I love reading slash writing stories about Nature."* evaluates both Linguistic and Naturalistic intelligence. These items were sent to 11 experts working in prestigious universities in India.

Expert scrutiny revealed fit items and 75 total items (60 + 9 dual) were sent to the sample. 118 respondents filled the questionnaire in virtual form.

2.2 Materials and procedures

Item analysis was performed and items with difficulty value below 30 and higher than 80, were eliminated. Items with discrimination value below 0.2 were also removed. Total of 5 items were eliminated based on these parameters. Split half, Spearman as well as Cronbach Alpha were calculated (table 4.1). Content Validity Ratio, Aiken V Content Validity, Item Content Validity and Scale Content Validity (table 4.1) were calculated. The items with dissatisfactory values of each validity type were excluded (0.5 and below). Finally, 60 items were retained (54 + 6 dual items). 5 point Likert scale was used; ranging from Strongly agree to Strongly disagree.

3 Theory

3.1 Types of intelligence

Linguistic Intelligence

Ability to learn multiple languages with ease, great reading and writing skills. Eg., lawyers and writers.

Mathematical Intelligence

Abstract reasoning, critical thinking. Eg., scientists and engineers.

Spatial Intelligence

Vivid imagination, retention of information in picture form. Eg., architects and pilots.

Musical Intelligence

Affinity for tunes , high sensitivity for voices and sounds. Eg., singers and musicians.

Kinesthetic Intelligence

Good hand eye coordination , learn by doing. Eg., athletes and answers.

Interpersonal Intelligence

Good at communication and connecting with people. Eg., politicians and gurus.

Naturalistic Intelligence

Appreciative of and find beauty in nature, flora and fauna. Eg., farmers and zoologists. **Intrapersonal Intelligence**

Self-actualized, "lone wolves". Eg., psychologists and librarians.

Existential Intelligence

High moral standards, strong code of conduct based on values and beliefs. Eg., philosophers and yogis.

(Vardin, P. A., 2003; Gardner, H. E., 2011; Nazarova, Y. X., 2019)

4 Results and Discussion

Table 4.2 displays questions for each intelligence types. From left to right, these are; Interpersonal, Mathematical, Spatial, Musical, Naturalistic, Intrapersonal, Existential, Linguistic and Kinesthetic. The items that are mentioned twice are dual items and need to be scored for each of their intelligence type. The inventory has a separate scoring sheet for ease of use.

The scale is open to further revision. The test makers feel that duality of items is a path worth exploring in the near future. Additionally, the scale is in English language which requires at least secondary or senior secondary level of education.

Table 4.1

Split Half Coefficient	0.9980644
Spearman Brown Coefficient	0.999031
Cronbach Alpha Coefficient	0.95648
Scale Content Validity	0.928571

Table 4.2

INTE.	MTH.	SPT.	MSC.	NAT.	INTA.	EX.	LNG.	KNT.
1 __	2__	3__	4__	5__	6__	7__	8__	9__
10__	11__	12__	13__	14__	15__	16__	17__	18__
19__	20__	21__	22__	23__	24__	25__	26__	27__
28__	29__	30__	31__	32__	33__	34__	35__	36__
37__	38__	39__	40__	41__	42__	43__	44__	45__
46__	47__	48__	49__	50__	51__	52__	58__	56__
53__	58__		55__	56__	55__	60__	59__	
54__				57__	57__			
				59__	60__			

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