



# Development and validation of ecological inventories of a child with intellectual disabilities

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### ABSTRACT

This research paper concerned with the detail procedure for development of ecological inventories of a child with mild intellectual and developmental disabilities. The main purpose of this study is to develop the instrument which helps in need assessment of functional skills and development of functional curriculum for children intellectual disabilities. First stage three main environments were selected such as home, school, and community then each environment was divided into different sub-environments. The information about environment and sub environment were collected from different sources such as siblings, parents, teachers and observation of the child through different instruments. Collected information were organized into catalog. The developed ecological inventories were finalized in the light of feedback received from experts. The experts reported as the best tool for assessment of children with intellectual and developmental disabilities.

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### Introduction

Assessment of a child with intellectual disability is necessary for assessing eligibility for special educational services at a minimum. According to Sattler (1992) there are four kinds of assessment, norm-referenced tests, interviews, observations, and informal assessment, complement each other and form a firm foundation for making decisions about children. The use of more than one assessment procedure provides riches of information about the child, permitting the evaluation of the biological, cognitive, social, functional and interpersonal variables that affect the child's current behavior. In the diagnostic assessment of children, it is also necessary to obtain information from parents and other significant individuals in the child's environment. For school-age children, teachers can play a vital role in providing information. For pre-school children, parents are the best source in providing information.

According to current definition of mental retardation, the assessment of children with mental retardation is based on intelligence tests and adaptive behavior skills. The assessment process includes an assessment of the child's cognitive and adaptive or community living skills functioning, and an evaluation of the family, home, and classroom to establish goals, resources, and priorities. Ecological inventories are used to identify the common, daily, functional tasks of non-retarded and retarded persons, in particular environments, are required to perform (Baine, 1991). The methods of ecological inventories discussed are based on modification and extension of procedure described by Brown, Shiraga, York, Zanella and Rogan (1984), Sobsey (1987), Baine (1991), and Mohsin (2009). Kerbs & Block. (1992) used ecological inventory approach and discrepancy analysis in teaching of leisure education to children with disabilities.

Browder (2001) highlighted the importance of functional assessment for planning and curriculum development for

children with disabilities. Ecological inventories are the tool, which were developed, on the basis of information collected from different sources such as: parents, and teachers through prescribed diaries and interviews, observation of retarded and non-retarded children by researcher. In the first phase environment was selected and then sub environments of each environment were identified and enlisted the tasks related to sub environment. Ecological inventories are used to identify the common, daily, functional tasks non-handicapped and handicapped persons; in particular environments are required to perform and these ecological inventories help to develop the curricula for developing countries. (Baine et al 2000).

There are 2.49 percent population is with disabilities in Pakistan. The breakup of different disabilities is as: physically handicapped 19 percent, mentally handicapped 14 percent, multiple disability 8.21 percent, visually impaired 8.6 percent, hearing impaired 7.40 percent, and others disabilities are 43.33 percent (National Census Report, 1998). It seems that this estimate presented by national census report is not correct because the disability labels are not well defined and 43.33 percent are not classified at all. According to World Health Organization (WHO) as referred by Shahzadi (2001) about 10 per cent of the total population of developing countries is suffering from some sort of disabilities. Of these 2.5 percent is with severe disabilities and approximately 2 percent of the population is considered to be intellectual disabilities/mentally retarded. At present time government is catering only 4 % with education and other intervention facilities. But still there is problem for assessment of children with intellectual disabilities in Pakistan. The instruments which is ecological valid and reliable and also measuring the functional skills of children with intellectual disability are not yet available in Pakistan. There is a great need for instrument for assessment of children with intellectual disability. The use of ecological inventories for

assessment of children with intellectual disabilities has been started in other developing countries but in Pakistan there is no significant work available. So there is dire need such measuring instrument which ecological valid for Pakistani norms. This study attempted to develop measuring instruments which will fulfill the assessment needs of the children with intellectual disability in Pakistan. The ecological inventories referenced model of assessment presented in this study can be helpful for professional and para-professional working in this area. This is an area of special educational needs where there has been little original work done in Pakistan.

### Methodology

#### Participants

Keeping in view and available resources, one child with mild intellectual disability, his younger brother without intellectual disability and parent who showed their strong written commitment and consent to participate in development of ecological inventories of their child was selected. Two teachers who were concerned with the education of the child with mental retardation in school were involved. Three experts in the field of special education were also selected for validation of ecological inventories.

#### Instrumentation

The following instruments were developed and used for collection of data.

- Parents' Consent Form
- Diaries for Parents to record tasks performed by their children with and without mental retardation
- Diaries for Teachers to record tasks performed by children
- Observation Record Form for children with mental retardation and children without mental retardation used by researcher.
- Interview with parents and teachers for development of ecological inventories.
- Task Importance Rating Scale

*Parent Consent Form;* Parent Consent Form was developed to gain the consent of parent for participation in the program. On the form, the parent provides written consent and expressed strong commitment for cooperation with program staff. The parents consent form is provided in Annexure-1.

*Diaries for Parents;* Parent was given the specially designed diaries with instructions to complete them. In the diaries date and time were also mentioned. Parent was requested to record their observations, thrice a day i.e morning, afternoon and evening. Parent was asked to identify different environments and sub environments, where their children are required to function. Orientation session was conducted with parent regarding the use of diaries for identification of different environments and sub environments and their related tasks. Orientation was based on examples in real life and demonstration was given by filling the tasks in the diaries of one sub environment. Child's parent filled the task performed by their retarded child and non-retarded child within fifteen days. The diaries for parents are provided in Annexure-2.

*Diaries for Teachers;* Teachers were given the specially designed diaries with instructions to complete them. Orientation session was conducted with parents regarding the use of diaries for identification of different environments and sub environments, where their students function. Teachers were requested to record their observations during school hours. Orientation was based on examples in real life and demonstration was given by filling the tasks in the diaries of one of the child. The diaries for teachers are provided in Annexure-3.

*Observation Record Form (ORF);* Observation Record Form was developed for identification of different environments and sub environments, and their related tasks. There were four parts of Observation Record Form (ORF). First part deals with the basic information about the child and setting such as morning, afternoon and evening. Second part, deals with the school environment, third parts deals with the home, community and fourth part deals with the school environment. Researcher himself observed the activities of child with and without intellectual disability in the home, community, school and other natural settings. The Observation Record Form is provided in Annexure-4.

*Interview with parent and teachers;* Researchers conducted the series of interviews with the parent and teachers. First Phase Interviews: In the first phase interviews with parents and teachers were conducted with the purpose to supplement the information collected by diaries from parents and teachers and observation by researchers. Baine, (1991) developed a list of questions for collecting such information through interviewing of parents and teachers. A modified form of this list was used as a guide for collecting these information. Some sample questions were as under: 1. What are daily tasks, your child frequently performed in the morning, afternoon, and evening in each sub environment? 2. what are the tasks performed by your child in common, special events such as marriage ceremony, birthday and etc?, 3. please, identify some of the seasonal functional tasks performed by child., and 4. what are the daily tasks having low frequency but high importance? On the basis of information collected above mentioned sources, researcher consolidates the ecological inventories of each child and shared with parents. Second phase interviews: Interview sessions were conducted with parents. Parents were asked 1) to identify environment, sub environment and their related tasks, which their children are unable to perform, 2) draw a list of tasks according to their preferences to be learnt by their child. Task Importance Rating Scale (TIRC) priorities the tasks, which are to be listed in catalogue. The sample of interview schedule is available in Annexure- 5-

*Task Importance Rating Scale;* Task Important Rating Scale was devised by Baine (1991, 1999) to finalize the tasks for catalogue. The tasks were rated on four levels: High, medium, low and none. The unimportant tasks were eliminated and remaining tasks were organized into catalogue. The importance of each task was judged during interview sessions with parents by its contribution such as: a) learning functional skills, b) Increasing the social acceptability, c) appropriateness for the chronological age of the child, d) increasing opportunity to learn additional skills, e) learning survival skills, f) improved variety of environments. g) Increasing opportunity of interaction with non handicapped children, h) Increasing ability to fulfill frequent opportunities to perform, I) increasing ability to perform in less restricted environment, j) improving health, k) improving safety l) increasing opportunity to understand/ express thoughts, and feeling, m) increasing opportunities to enjoy social emotional recreation in life. Task Important Rating Scale is provided in annexure-6.

*Questionnaire for experts for validation of ecological inventories;* A questionnaire was used for validation of ecological inventories through experts in the field of special education. The original questionnaire was developed by Mohsin (2009) The questionnaire was modified and dealt with the following areas: a) ecological inventories are according to social and cultural environment of Pakistan, b) appropriate for the chronological age of the child, c) increasing opportunity of

interaction with children without intellectual disability , d) increasing ability to fulfill frequent opportunities to perform, e) Suggestions for improvement. The experts responded each question in narrative form. The questionnaire for experts is provided in annexure-7

#### **Procedure for development of ecological inventories**

Ecological inventories were developed in the followings steps: 1) Training of Parents and teachers, 2) Conducting ecological inventories, 3) Cataloging of activities, and 4) Validation of developed ecological inventories.

#### **Training of parent and teachers**

Two day training of parent and teachers was designed and conducted. The main purpose of this training was to well equip the parent and teachers in collection of information about functional tasks in their respective environments and sub environment, determine task priorities, programming, implementation of training program and understanding the whole process of study. Content of the training includes: Introduction of Mental retardation and their characteristics, Introduction of functional skills, use of diaries for identification of environments and sub environments and their related tasks, hands on activities on how to complete diaries, different techniques and reinforcers used during training of their child.

#### **Conducting Ecological Inventories**

Ecological inventory is the process of identifications of those tasks which a person performs and can be expected to perform in the future in his environment (Sobsey, 1987). Ecological inventories are used for identification of environments and sub environments and their related common daily functional tasks of children with and with out mental retardation (Baine, 1991). Following steps were followed for developing the Ecological inventory of each child with and without mental retardation (Baine, 1991). Kerbs, P.L., & Block, M.E. (1992) used different activities in developing environmental inventory for children with disabilities.

*Step-1:* Identification of a child with mental retardation and a child without mental retardation (Who is younger brother/sister/ cousin of child with mental retardation) for whom the ecological inventory is being designed. In this study Abdul Rehan is selected for conducting the ecological inventories. Abdul Rehan was 14 years old having one brother and two sisters. He was the youngest child. The demographical information of Adbuil Rehman is presented in table below

The detail information of child is presented in annexure .6

*Step-2:* Selection of environments for ecological inventory: In this step, the purpose and brief introduction of the environments were given. Brown and his colleagues (1979) identified the domains areas for developing of ecological inventories of a children mental retardation/ intellectual disabilities such as community, domestic, leisure, and vocational. But due to time constrain and available resources we collected the information of only home, community, and school. The information of school is more important as suggested by Brown and Snell (1993a) because school is addressing specific needed skills. As Brown and Snell (1993a) also suggested adding a "school" domain to address specific skills needed in school.

After selecting the environment, with the consultation of parents , teachers subenvironment of each environment were identified for development of detail tasks. The below table presented the environment and sub environment.

*Steps-3:* The information about further environments and sub environments and their related functional tasks were collected by using the four sources: 1) Diaries for Parent, 2)

Diaries for Teachers, 3) Interview sessions with parents and teachers, and 4) Observation conducted by researcher through Observation Record Form.

Specially designed diaries were given to the parent and teachers and advised them to identify environments, sub environments and their related functional tasks performed by their retarded child and also non-retarded (Annexure-2). Parent and teachers filled the diaries by identification of environments and sub environment with their related tasks performed by the children during the period of fifteen days.

Interview sessions with parent and teachers were conducted to supplement of the information collected through diaries from parents and teachers and observation by researcher. Frequency the task is performed with which the task is performed was recorded as: hourly (H), daily (D), weekly (W), monthly (M) and yearly (Y) was recorded. Tasks were also recorded with the number, how many environments and sub environments each task was required to performed.

*Steps-4:* A number of tasks were achieved in each environment and sub environment through above-mentioned sources. Researcher consolidated the ecological inventory of the child and shared with parent. Home inventory was listed in the first and school inventory was listed at the end. The information about activities of kitchen sub environment is provided in table no.

The detail ecological inventories of environment and sub environment are presented in annexure 7.

*Step-5: Catalogue of activities in ecological inventories;* Tasks were identified which required to performed in each environment and sub environment, the relative importance of each task is estimated with consultation of parent and teachers using Task Importance Rating Scale devised by Baine,(1991). The unimportant tasks were eliminated, and remaining tasks were organized into catalogue according to environments and sub environments as hourly (H), daily (D), weekly (W), monthly (M) and yearly (Y). The below table is showing the relative importance of each task such as high, medium and low and organized in catalogue.

*Steps-6: Validation and finalization of developed ecological inventories*

The developed ecological inventories were shared with the 3 experts in the field of special education and their responses were recorded on the above mentioned questions. On the basis of responses ecological inventories of Abdul Rehman was finalized. The detail final ecological inventories are available in annexure- 8

The detail ecological inventories of each environment , sub environment and their related activities are presented in annexure. 7.

#### **Discussion**

Education is the basic right of each child. Previously IQ based teaching models were used for the education of children with intellectual disability. Thus, aged students with intellectual disability were given the curriculum meant for lower aged groups. In the way the aged student felt shame while learning

along with the lower age group children. Assessment has always been an important process for planning but the more important is types of test and their reliability with reference to specific environment. There are several factors that limit the reliability of common testing formats for students with intellectual disabilities. We need the tests which are reliable and valid with reference to specific environment. Reliable and objective assessment is necessary for education and training of functional skills among children with intellectual disabilities. The instruments measuring the functional skills of children with intellectual disability are not yet available in Pakistan which is ecologically valid. Ecological inventories are the tools, which were developed on the basis of information collected from parents, and teachers on prescribed diaries, observation of retarded and non-retarded child and interview with parents and teachers. Assessment through ecological inventories is more reliable and valid than others intelligence tests and adaptive scales which are commonly used in developed countries for assessment of children with mental retardation. These instruments/ tests cannot be used in Pakistan due to different social and cultural conditions. They are also environment specific and when a large number of adaptation and modifications takes place in borrowed tests, the standardization process should be done on native sample. The developed ecological inventories of a child present a clear picture of his environment, sub-environment. This assessment procedure is friendly user for teachers, parents and caregivers. Parent were the equal partner in developing ecological inventories. Teachers role also be seen in this study in respect of identification, selection of environment, sub environment, selection of related activities or tasks, organization of catalogue. The main things which this procedure more valid and reliable is its validation process through experts. Effective programing for children with disabilities can be done easily through these inventories.

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