

# Assessing Developmental Stages of Nonliterates using Evolutionarily Universal Variables

Michael Lamport Commons

Harvard Medical School

Charu Tara Tuladhar

Dare Institute

Sagun P. Giri

Dare Institute

Presented at the European Society for Research in Adult Development Annual  
Symposium, June 2nd, 2013, Sunday, Haus Wiesneck , 9:30-10:15am,  
Freiburg, Germany

# Introduction

## **Aim:**

To assess the developmental stages of nonliterate people by using interview questions that are relatively free of biases of culture and education level

The study was conducted among nonliterate individuals in rural parts of Nepal

# Model of Hierarchical Complexity

- The Model of Hierarchical Complexity (MHC) is used to determine behavioral stage through task analysis (Commons & Pekker, 2008)
  - The higher-order task *coordinates* the tasks of the next lower order. Three conditions that need to be met for this are:
    1. Higher-order task is defined in terms of two or more tasks at the *next lower* order of Hierarchical Complexity
    2. Higher-order tasks organize the less complex actions; that is, the more complex action specifies the way in which the less complex actions combine
    3. the lower order tasks have to be carried out *non-arbitrarily*, not just put together as an arbitrary chain
- There are 16 stages of development according to MHC.

# Table 1. Orders of Hierarchical Complexity

| Order | Name of Order of Hierarchical Complexity |
|-------|--|
| 0     | Calculatory                              |
| 1     | Sensory & Motor                          |
| 2     | Circular Sensory-motor                   |
| 3     | Sensory-motor                            |
| 4     | Nominal                                  |
| 5     | Sentential                               |
| 6     | Preoperational                           |
| 7     | Primary                                  |

|    |                        |
|----|------------------------|
| 8  | Concrete               |
| 9  | Abstract               |
| 10 | Formal                 |
| 11 | Systematic             |
| 12 | Metasystematic         |
| 13 | Paradigmatic           |
| 14 | Crossparadigmatic      |
| 15 | Meta-Crossparadigmatic |

# Background

- Stage distribution of literate people according to previous studies
  - 8.5% Below Abstract stage
  - 30% Abstract Stage
  - 40% Formal Stage
  - 20% Systematic Stage
  - 1.5% Metasystematic Stage and above
- Education level and developmental stage are correlated
- Past studies on stage imply that abstract stage, generally the lowest stage required to function in a society, is the minimum human stage
  - Unpublished manuscript by Commons-Miller, Commons, Li, Miler, Golino & Tuladhar (2012) on stage of pricing strategy in Brazil and USA

# Hypotheses

- Developmental stage distribution of nonliterate individuals should be more concentrated in the abstract and formal stages compared to that of the literate people
- Individuals who are leaders perform at a higher stage than non-leaders although they are illiterate (Replication of findings of Commons, Galaz-Fontes & Morse, 2006)
- The lowest stage at which the participants perform will be concrete stage because they are mostly rural farmers.

# Evolutionarily Universal Variables To Assess Stage

## □ Knowledge of tool usage

- Making tools that can be used for different purposes requires formal stage behavior
- At formal stage, membership to a group is more official as membership is earned or conferred by following logical rules

## □ Group Identity

- At the concrete stage, animals have group recognition based on face to face experience
- Humans identify groups based on experiences beyond face to face recognition. (e.g. race, caste, political party membership, social club membership and organizational membership)

# Methodology

## 1. Participants

Target group was determined as people without any formal education

- People who
  - Have never been to school
  - Could not read, write, sign their name
  - May identify money by looking at figures and colors, but could not do simple arithmetic
- Age group 16 and above

## 2. Procedure

- ❑ Study was conducted in remote parts of Nepal
  - Location was chosen based on the literacy report according to 2011 Census Report issued by Government of Nepal (Nepal Bureau of statistics, National Population and Housing Census, 2011)
  - Locations: Bara-Parsa border, Sindhupalchok and Rasuwa Village Development Committees (VDC'S)
- ❑ Nepalese Interviewers were trained on how to administer the interview and how to prompt
  - Mock interview sessions via *Skype* meetings
- ❑ Administered the interview in selected locations in Nepali language
  - Digital Audio recorders were used
  - Transcription was done in Nepali
  - Translated Nepali interviews into English
- ❑ Data is yet to be analyzed

### 3. Instruments

- ❑ An interview was developed based on the Model of Hierarchical Complexity (MHC) to determine the stage at which the participants performed
- ❑ Questions about two evolutionarily universal variables were asked
  - Knowledge of tool usage
  - Group identity
- ❑ Open ended (why, how), choice (which) and hypothetical questions (what if) were asked

# Results

From preliminary data analysis we found:

- ❑ People performed at concrete, abstract and formal stages
- ❑ The stage of performance depended on whether the material was on
  - Tools
  - Group
- ❑ Both men and women did better on tools
- ❑ Men and women did the same

# Discussion

- ❑ Stage and intelligence are highly correlated
- ❑ Standard intelligence tests have been shown to have culture and education level biases
- ❑ Using interview questions that ask about evolutionarily universal variables to determine stage may be an alternative for contemporary intelligence tests

## **Future research:**

Conduct experimental studies comparing prediction of intelligence by using standard IQ tests verses the interview instrument used in this study.

# Interview Questions

## Demographics

- Have you ever been to school?
  - [If YES, STOP the interview, if NO, CONTINUE]
- Do you know how to read or write?
  - [If YES, STOP the interview, if NO, CONTINUE]
- Can you sign your name?
- What is your name?
- How old are you?
  - Ask them to estimate
  - If they cannot ask their family
  - If they don't know put down a rough

- What languages do you speak? Do you speak \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_?
- Take note of their gender. Write it down.
- Where do you live? What is the name of the town? Name of the street?
- Do you have a wife/husband?
  - [If YES, proceed to the next question. If NO, skip the next question]
- What is the name of your husband/wife?
  - If I needed to find you, could you please name someone who could tell me where you are?
  - Where does he/she live?

# Interview Questions

## Working and hunting questions:

- What work do you do?
  - Probe: Is that all? What else do you do? Anything else?
  - [E.g. Hunting, farming, animal husbandry, household chores, dairy farming, selling goods etc. If they HUNT, ask questions a, b, c, d]
- Do you hunt?
- What do you hunt?
- Why do you hunt?
  - Probe: How long does it take you to get to where you hunt?
  - Are you out all day hunting? Two hours? Two day? How long?
  - How dangerous is it to hunt?
  - Probe: Any other reasons why it is dangerous?

- How do you hunt?
- What do you use to hunt?
  - PROBE: Can you say more? Explain.
- How do you know this tool?
  - Probe: Can you say more? Why does that matter?
- For what part of hunting do you use this tool for?
- Why can you not use another tool for the same task?

# Interview Questions

## Questions About Tool Usage:

### For Female participants

- Would you mind taking me to your kitchen and showing me what you use for cooking and eating?

### For Male participants

- Would you mind showing me the tools you use for \_\_\_\_\_ [Fill the blank with the activity (ies) they reported that they do.]

### Questions (Repeated for each tool)

- What is this tool used for?
- Why is this “name of tool” good for <this job[what is the tool used for]>?
- How do you know this <name of tool> is used for <this purpose>?
- What are the similarities or differences between these tools?
  - ❖ [Refer to the tools they show.]
- Can you use one tool to do the work of the other?
- Can two different tools do the same job?

# Interview Questions

## Group Identity Questions:

- ❑ Who do you think are your own people?
  - Probe: Within Nepal, when you go to a temple, when you go the marketplace
- ❑ What is your position among your own people?
  - [E.g. Are they a member, leader, assistant to a leader?]
- ❑ If you are out somewhere and you see a few people, how do you know that they are your own people?
  - Are people who are not of/from your \_\_\_\_\_ different from you?  
Are they similar?
  - How do you know if some is same or different as you/your people?
  - PROBE: What else? Can you think of anything else?

- Who is/are the leader(s) among your people?
  - What does it take to become a leader?
- Please look at this picture and tell me if these people are your own people.
- Name the caste of these people.
- Among these people, which people do you dislike the most? Why?
- Among these people, which people do you like the most? Why?
  - Then pick 3 pictures that they do not choose and that are not of their caste or tribe.
  - Include pictures of at least 1 male and 1 female.
  - Ask the following question regarding those 3 pictures.
- If your family was starving, how likely would this person be to share food with you? Why?

# Interview Questions

## Group Identity and Religion:

- Could you look at this picture (Hindu temple and Buddhist shrine) and tell me what it is?
  - [Ask for all pictures. If they identify it as a something they know proceed with the following questions]
- What is a \_\_\_\_\_[temple, stupa whatever they identify].
- What do people do there?

- ❑ Who goes there? Does everybody go there?
  - Or do only certain people go there?
- ❑ Do you go there?
- ❑ Why do you go there?
- ❑ How do you know to go there?
- ❑ How are people who go there different from people who do not go there?
  - PROBE: Why do you say that? What makes you say that? How do you know? Can you say more? Explain?

Questions?