

Phenotype Assessments

Objectives

- Develop and standardize tools for assessing behavioral, cognitive, and nutritional factors.
- Ensure the quality and consistency of data collected.

4.1. Questionnaires

- Compile the list of questionnaires and other tools for assessing various ‘core’ phenotyping assessments including developmental, exposomal, temperament/ personality, morbidity, etc.
- Obtain permissions for use and arrange translations as needed.
- Coordinate with the database team for REDCap implementation.
- Train research staff to administer the assessments.

4.2. Neuropsychological Measures

- Select appropriate neuropsychological assessments from the PEBL.
- Ensure cultural adaptation and translations for the selected assessments.
- Train research staff to administer the assessments.

4.3. Nutritional Assessments

- Incorporate dietary questionnaires and physical nutritional assessments, such as bioelectrical impedance analysis.
- Develop protocols for collecting dietary information and measuring body composition.
- Train research staff to administer the assessments.

4.4. Perinatal Assessments

- Select appropriate biomarkers to be studied in the perinatal stage.
- Ensure important brain pathways and processes are covered through biomarker sample collection.
- Train medical staff to collect biological samples.

4.5. Templates for administration

- Compile instructions for all assessments to be administered on participants.
- Detailed instructions in order to facilitate a standardized administration process.
- Ensure new recruits are familiar with all stages of phenotype assessments.

Implementation Subgroups

The following table indicates administration of the various questionnaires across different age bands within PARAM, followed by a brief summary of what the questionnaire intends to capture.

****PN-Perinatal, IT-Infant/Toddler, EC-Early childhood, LC-Late childhood, AD-Adolescent, YA-Young adult**

Instrument	PN	IT	EC	LC	AD	YA
Sociodemographic Information	*	*	*	*	*	*
Migration	*	*	*	*	*	*
Exposome						
Environment Exposures Questionnaire (including factors that contribute to the deprivation index)	*	*	*	*	*	*
ASSIST-Plus	*			*	*	*
Pregnancy History Questionnaire - Revised	*	*	*	*	*	*
Postpartum Bonding Questionnaire	*	*				
HOME Videos with PIPE Framework	*	*	*			
Indian Family Violence and Control Scale (IFVCS)	*					*
Adverse Childhood Experiences - International Questionnaire				*	*	*
School Climate Questionnaire			*	*	*	*
Pedigree	*	*	*	*	*	*
Alabama parenting questionnaire		*	*	*	*	*
Problematic mobile phone use questionnaire - Short Version				*	*	*

Brief Infant Sleep Questionnaire		*				
Kessler Psychological Distress Scale	*					*
Premenstrual Symptoms Screening Tool				*	*	*
Edinburgh Handedness Inventory Short Form			*	*	*	*
Covid 19 Scale	*			*	*	*
Development						
Global Scales for Early Development (GSED) v1.0	*	*				
Vineland Social Maturity Scale (VSMS)		*	*	*	*	
Pubertal Developmental Scale				*	*	*
Developmental screening test (DST)		*	*	*	*	
Neuropsychological						
Psychology Experiment Building Language (PEBL)			*	*	*	*
Temperament						
Infant Behavior Questionnaire		*				
Early Childhood Behavior Questionnaire		*	*			
Children's Behavior Questionnaire			*	*		
Early Adolescent Temperament Questionnaire				*	*	
Inventory of Callous Unemotional Traits (ICU)			*	*	*	*
Adult Temperament Questionnaire						*

Nutrition						
Anthropometry (Length/ Height, Weight, Head circumference, Chest circumference)	*	*	*	*	*	*
Nutritional Deficiencies	*	*	*	*	*	*
IYCF Indicators	*	*	*			
Food Frequency	*	*	*	*	*	*
USG	*					
Body Composition Analyser			*	*	*	*
Morbidity						
FLII	*				*	*
Child and Adolescent Behavior Inventory			*	*	*	*
DSM-5 tool adapted from Patient Health Questionnaire - 9 - Adolescents - Adults				*	*	*

[Prioritization](#) | [Duration of assessment](#) | [Telephonically assessable](#) | [Translations available](#)

The table below indicates priority status of administration for the entire test battery. Priority status will have to be made note of, if the subject is being assessed over a few sessions. Priority status column indicates tests from which are an absolute must with the goals of the study in mind. Duration gives the psychologists an idea of how much time each assessment takes, in order to optimize administration. A range of time is provided for some assessments as they may vary on the nature of clinical symptoms present. A fixed duration is provided for those assessments not subject to incidence of clinical symptoms in the participant.

Instrument	Priority Status	Follow up Administration	Duration
Sociodemographic Information	High		5 min
Migration	High	Yes	3 min
Environment Exposures Questionnaire	Moderate		7-10 min
ASSIST-Plus	High	Yes	3 min - 10 min
Pregnancy History Questionnaire - Revised	High		15 min
Postpartum Bonding Questionnaire	High		10 min
HOME Videos with PIPE Framework	Moderate		30 min
Indian Family Violence and Control Scale (IFVCS)	High		15 min
Adverse Childhood Experiences - International Questionnaire	High	Yes	10-20 min
School Climate Questionnaire	Moderate		5 min
Pedigree	High		5 min
Alabama Parenting Questionnaire	Moderate		10 min
Problematic Mobile Phone Use Questionnaire	Moderate		5 min
Brief Infant Sleep Questionnaire	Mild		5 min

Kessler Psychological Distress Scale	Moderate	Yes	5 min
Premenstrual Symptoms Screening Test	Moderate		5 min
Edinburgh Handedness Inventory Short Form	Moderate		2 min
Covid 19 Scale	Moderate		5 min
Global Scales for Early Development (GSED) v1.0	High	Yes	5-15 min
Vineland Social Maturity Scale	High	Yes	5-15 min
Developmental screening test	High	Yes	5-15 min
Pubertal Development Scale	Moderate		3 min
PEBL*	High	Yes	45 min
Infant Temperament Questionnaire	High	Yes	15 min
Early Childhood Behavior Questionnaire	High	Yes	15 min
Children's Behavior Questionnaire	High	Yes	15 min
Early Adolescent Temperament Questionnaire	High	Yes	15 min
Adult Temperament Questionnaire	High	Yes	15 min
Anthropometry	High	Yes	5 min

Nutritional Deficiencies	High	Yes	5 min
IYCF Indicators	High	Yes	10 - 15 min
Food Frequency	Moderate	Yes	5 min
USG	High	Yes	To be filled by doctor
Body Composition	Moderate	Yes	3 min
FLII	High	Yes	50 min
CABI	High	Yes	15-20 min
DSM PH9	Moderate	Yes	5 min

Instrument overview

A] Socio-demographic and migration questionnaire

¹**Sociodemographic Information** is captured using questions adapted from The National Family Health Survey (NFHS)-4, a large-scale survey conducted in a representative sample of households throughout India (<http://www.rchiips.org/nfhs/index.shtml>). The Standard of Living Index, the main reference for the NFHS-4, includes questions on the type of housing, kitchen area, source of drinking water, sanitation condition, source of light, livestock, type of cooking fuel, possessions, additional information on pets etc.

²**Migration questions** are taken from the National Sample Survey (NSS) questions on migration India to assess patterns of migration.

B] EXPOSOME

³**Environment Exposures Questionnaire** is taken from the ICMR Pesticides & Neurodegenerative Diseases Project, to assess exposure to neurotoxins, air pollution, noise, etc., among other sources.

⁴**ASSIST-Plus** (Alcohol, Smoking and Substance Involvement Screening Test) was developed for the World Health Organization (WHO) by an international group of substance abuse researchers to detect and manage substance use and related problems in primary and general medical care settings.

⁵**Pregnancy History Questionnaire- Revised** pertains to any health-related issues during pregnancy, the child's birth, and early development.

⁶**Postpartum Bonding Questionnaire** is a self-reporting questionnaire used to measure the mother-infant bonding from the woman's perspective. It is a widely used screening tool to detect mothers at risk of impaired bonding.

⁷**HOME Videos with PIPE Framework** Home Observation Measurement of the Environment - Short Form (HOME-SF) measures the quality of a child's home environment. It is derived from the HOME inventory (Caldwell & Bradley, 2001). It assesses the quality of cognitive stimulation and emotional support provided by a child's family. It provides information on nurturing qualities including the emotional and verbal responsiveness of parents, acceptance of the child, organization of the physical and temporal environments, provision of appropriate play materials, parental involvement with the child, and the opportunities provided for variety in daily stimulation.

The PIPE observational measure focuses on the reciprocal nature of dyadic interactions between parents and their infants in the context of a play. It assesses - initiation, maintenance, and termination of play-based interactions. A score is calculated by summing the scores of the three segments, which enable the examiner to categorize the interaction as typical or atypical.

⁸**Indian Family Violence and Control Scale (IFVCS)** Indian Family Violence and Control Scale (IFVCS) is a culturally tailored scale to measure domestic violence (DV) in the Indian context using a 63- item pool evaluating psychological, physical, sexual abuse, and control. IFVCS was developed to fulfill the need for a culturally tailored instrument measuring DV experienced by married Indian women. It was designed to survey the full spectrum of abuse and control that may be perpetrated against a woman by her spouse and marital family. Initial validation of the IFVCS suggests that it is an effective tool for measuring physical, sexual, psychological abuse and control of married women by their spouses and members of their marital families. It has the capacity to enrich understanding of DV epidemiology in India and thus enhance development of culturally tailored DV prevention strategies, and to evaluate the efficacy of such interventions in reducing DV. Its use in this project is to record exposure to parental conflict during childhood.

⁹**Adverse Childhood Experiences - International Questionnaire** refers to some of the most intensive and frequently occurring sources of stress that children may suffer early in life. These experiences include multiple types of abuse; neglect; violence between parents or caregivers; other kinds of serious household dysfunction such as alcohol and substance abuse; and peer, community and collective violence. Questions cover family dysfunction; physical, sexual and emotional abuse and neglect by parents or caregivers; peer violence; witnessing community violence, and exposure to collective violence. An addendum to this questionnaire that explores

positive experiences during childhood (adapted from the Childhood Trauma Questionnaire) has been added keeping in mind that resilience factors would also moderate development alongside exposure to adversity.

¹⁰**School Climate Questionnaire** is a self-reported assessment of the psycho-social environment of the school. Four dimensions are included, namely school safety and order, school support and acceptance, school equality and fairness, and encouraging student autonomy and cooperation. The framework and a few items were revised from the WHO document “Creating an environment for emotional and social well-being”.

¹¹**Pedigree** is used to record family health history. It can help identify whether subjects are at higher risk for some diseases. It is also used to help in looking for early warning signs of disease and records family history of mental illness.

¹²**Alabama Parenting Questionnaire** is a parent assessment tool used to measure various dimensions of parenting. These dimensions are relevant to the etiology and treatment of externalizing disorders in children.

¹³**Problematic Mobile Phone Use Questionnaire** was designed to understand the relationship between phone use and impulsivity. It is a self report questionnaire to understand mobile phone dependency. Impulsivity is at the core of dependence disorders, thereby making it an important factor that is measured via this scale.

¹⁴**Brief Infant Sleep Questionnaire** is a comprehensive assessment that provides information about infant and toddler sleep patterns, as well as parent perception and parent behaviors that may contribute to sleep outcomes.

¹⁵**Kessler Psychological Distress Scale (K10)** provides an understanding of a global measure of psychological distress based on questions regarding anxiety and depressive symptoms. The K10 scale involves 10 questions about emotional states each with a five-level response scale. The measure can be used as a brief screen to identify levels of distress.

¹⁶**Premenstrual Symptoms Screening Tool** measures the impact and severity of menstrual cycle symptoms. The scale reflects and 'translates' categorical DSM-IV-TR criteria into a rating scale with degrees of severity.

¹⁷**Edinburgh Handedness Inventory Short Form** is a scale used to assess the dominance of a person's right- or left-hand use in daily activities. The inventory can be used by an observer to assess laterality in an individual.

¹⁸**Covid 19 Scale** was developed to assess the effect of the COVID-19 pandemic on participants. Questions are used to assess incidence of infection and number of vaccinations/boosters administered on the participants.

CJ DEVELOPMENT

¹⁹**Global Scales for Early Development (GSED) v1.0** is used to capture child development, through a common unit, the Developmental Score (D-Score) which represents holistic development. The scales of measurement provide a standardized method for measuring the development of children up to 36 months of age across diverse cultures and contexts. The GSED measures are meant to collect population-level data on Early Childhood Development to be used primarily for research and programmatic evaluations. The measures consist of a care-giver reported measure (Short Form).

²⁰**Vineland Social Maturity Scale** is a psychometric scale used to assess social competence in growing children. It is a widely used tool for the assessment of social and adaptive functions. It is designed to measure social maturation across 8 domains. The scale consists of 89 items grouped into year wise levels. A social age and social quotient score are calculated, along with indications regarding the social deficits and the social assets in a growing child.

²¹**Pubertal Developmental Scale** is a widely used self-report measure of physical development and assess pubertal status. An overall pubertal developmental score is calculated from questions about physical development and questions regarding puberty.

²²**Developmental Screening Test** is used to measure the mental development of a child and to assess how well a child's development fits with their age. The test is used on children aged 0-15 years. The test contains 88 items and is administered as a semi-structured interview. The interview is conducted with the primary caregiver of the child.

²³**PEBL**

The battery of neuropsychological assessments is administered on all individuals.

Instrument	Description	Platform
Digit Span Test (Forward & Backward)	Verbal attention & working memory	PEBL
Corsi Block Tapping Test (Forward & Backward)	Working memory	PEBL
Trail Making Test (Part A & B)	Processing Speed & Cognitive Flexibility	PEBL

Wisconsin Card Sorting Test	Set Shifting (Cognitive flexibility)	PEBL
Emotion Recognition Task	Emotion Recognition	PEBL
Stop-Signal Task	Response Inhibition	jsPSYCH
Social Cognition Rating Tools in the Indian Setting (SOCRATIS)	Social Cognition	REDCap
Auditory Verbal Learning Test	Learning and memory	REDCap

D] TEMPERAMENT

²⁴**Infant Temperament Questionnaire** is a parent-report instrument developed by Dr. Rothbart (1981) and has become one of the widely used measures of infant temperament.

²⁵**Early Childhood Behavior Questionnaire** was designed to assess temperament in children between the ages of 18 and 36 months. The questionnaire was designed to provide a more comprehensive and detailed assessment of temperament compared to existing measures appropriate for toddlers. It provides an assessment of temperament across eighteen dimensions. According to this scale, the definition of temperament included reactive processes involving not only emotion, but also motor and sensory systems, as well as an emphasis on self-regulatory processes that modulate reactivity.

²⁶**Children's Behavior Questionnaire** was designed to assess temperament in children between 3 and 7 years. It is widely used in developmental research. The instrument uses caregiver input to provide detailed reports of a child's temperament across 15 subdomains.

²⁷**Early Adolescent Temperament Questionnaire** assesses ten aspects of temperament related to self-regulation in adolescents. The scale consists of 65 items graded across a 5-point rating scale. Scales measuring aggression and depressive mood are included to facilitate examination of relationships between temperament and traits relevant to socialization.

²⁸**Inventory of Callous Unemotional Traits (ICU)** provides a comprehensive assessment of callous and unemotional traits. These traits have proven to be important for designating a distinct subgroup group of antisocial and aggressive youth. This assessment contains a self-report (youth) and a parent report form.

²⁹**Adult Temperament Questionnaire** measures the constructs of effortful control, negative affect, extraversion/surgency, and orienting sensitivity. The questionnaire is a self-report measure consisting of 77 items (short form) scored on a 7-point Likert scale used to measure constructs of personality and temperament.

E] NUTRITION

³⁰**Anthropometry** includes measurements of body size, structure and composition. Hand grip strength, height, weight, mid-arm circumference, head circumference and chest circumference will be measured for the purpose of this study.

³¹**Nutritional Deficiency** is used to collect information regarding any nutritional deficiency/symptoms that the participant might be currently undergoing. The form involves visual descriptions and photos to accurately match physical symptoms associated with a nutrient deficiency. The items are taken from the National Institute of Nutrition battery which was designed to understand nutrition and feeding practices across India.

³²**IYCF Indicators** are used to collect information on the status of feeding practices among infants and young children less than 5 years of age. The WHO has defined 8 core indicators to assess infant and young children feeding practices at a household level.


³³**Food Frequency Questionnaire** is a type of dietary assessment instrument that attempts to capture an individual's usual food and beverage consumption by querying the frequency at which the respondent consumed food items based on a predefined food list.

³⁴**USG** is a checklist designed to understand various scans and procedures conducted with the pregnant mother to be at various time points during her pregnancy. It involves a detailed checklist with yes/no answers regarding date and timings of scans conducted at the OB/GYN facility that the mother has enrolled herself in.

³⁵**Body Composition Analyzer** is a device used to analyze the body and provide us with values such as body fat, muscle mass and visceral fat.

F] MENTAL MORBIDITY

³⁶**Flexible and Light Interview for ICD-11 [FLII-11]** Is a clinical assessment tool used to screen participants for a range of disorders. This includes mood disorders, anxiety disorders, OCD, PTSD, eating disorders and substance use disorders along with psychotic symptoms and suicidality screening. The tool has been adapted for use with an Indian population.



³⁷**Child and Adolescent Behavior Inventory** measures different dimensions of psychopathology in children/youth as well as social and academic impairments. The questionnaire measures child behavior across 10 domain scores and is a parent rated form. The questionnaire is both a screening tool and clinical evaluation tool. The inventory offers scores for internalizing and externalizing disorders and can be used with children from 6-18 years of age.

³⁸**DSM-5 tool adapted from Patient Health Questionnaire - 9**

Severity Measure for Depression - Child is a 9- item measure that assesses the severity of depressive disorders and episodes (or clinically significant symptoms of depressive disorders and episodes) in children ages 11–17. The measure is completed by the child prior to a visit with the clinician. Each item asks the child to rate the severity of his or her depression symptoms during the past 14 days.

Severity Measure for Depression - Adult is a self-rated 9-item measure that assesses the severity of depressive symptoms in individuals age 18 and older. The measure is completed by the individual prior to a visit with the clinician. Each item asks the individual to rate the severity of his/her depression during the last 14 days.



A. Explaining the study/ instruments to the participant

Hi, my name is I am a psychologist working with the PARAM study at site name. Since you have agreed to participate in the study, I would like to explain a bit about the study to you. You can ask me any follow-up questions immediately or at any time during the assessments.

The PARAM study is trying to understand how human brains grow, from birth to early adulthood. As you would know a baby is a quick learner, very responsive to the environment and also sensitive to any negative influences in the environment. It is believed that the patterns of how our brains grow and what all affects their growth may have some of the answers to how mental illnesses occur. This means we could perhaps, in the future, use this knowledge in the treatment of mental illnesses.

So, to understand human brain growth, we are asking participants of different ages and from different parts of the country to answer some questions about themselves and their families. We are also asking them to undertake some assessments that will tell us about the growth of the brain.

Most of these will be question answer based.

Some may need you to give your responses on rating scales. I will explain them to you more when we get to them...

There will be some measurements.... Physical, blood

If you are agreeable, we would also like to scan your brain...

All of this information is provided in an information sheet. Please read the information sheet before we begin.

(Once information sheet has been read by the participant) I will walk you through the consent forms now. You can provide us with your name, signature and address on this sheet. (Show relevant sheet to the participant & explain the consent form to them).





B. Explaining self-rating tools

Instructions for the psychologist:

Self-rating assessments will have to be administered with care. Self-rating tools are largely based on the judgment of the respondent (i.e. revealing subjective intentions). Discrepancies in observed behaviors/ attitudes by the investigator may have to be ignored. Please be sure to explain the Likert scale and yes/no options of the questionnaire to the subject. Subjects should be instructed to record the first response that comes to their mind, do not encourage any deep thinking regarding the answers and if they are confused, the subject should be prompted to record their best guess. If doubts persist from the subject's end, interviewers are allowed to explain the items in a simpler way but they should not draw parallels to real life or provide examples to the subject. If the respondent is unable to give a response after all, the item can be skipped (NR - No response).

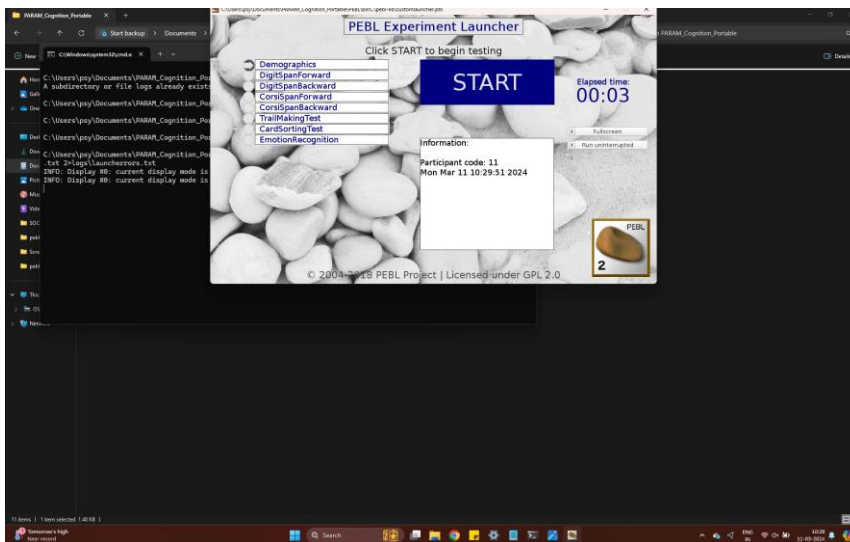
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C. Instructions for PEBL tasks

The neuropsychological tasks can be accessed via PEBL software, REDCap and jsPsych. The PEBL screen with the entire battery will begin once the psychologist clicks the “START” button and deselects the “Fullscreen” box.

Instructions to interviewer - Please ensure to conduct the neuropsychological battery **first**, in your list of assessments. Fatigue can affect test performance. Ensure the participant is not hungry, thirsty, cold or warm as this can affect their test performance. Check whether your participant is comfortable and alert before beginning.

Instructions to participants - “You are about to play some games on a computer that will help us understand how your brain functions. These games give us an idea about your memory, your speed and accuracy. These games will take 45 minutes to play totally. Each game has an instruction screen. The instructions will be explained to you before you begin the game. Please **DO NOT** press any part of the screen unless you are ready for the game to start immediately”



Each screen will record some demographic information from the participant such as PARAM ID, Name, Sex, Handedness and Site Number.



C1. Digit Span Test

C.1.1 Digit Span Forward

“You are about to take part in a memory test. You will be presented with a sequence of digits, one at a time on the screen. Each digit will occur only once during a list. You will then be asked to type the list of digits **EXACTLY THE ORDER YOU SAW THEM IN**.

If you do not know what digit comes next, you must guess a number, but try to put the numbers you saw in their original list positions. If you make a mistake, you can use the backspace key to make a correction.

You will start with a list of three items, and will get three different lists at each length. If you are able to recall two out of three lists completely correctly, you will move on to the next longest list length. Touch screen or click mouse button to start.”



C.1.2 Digit Span Backward

“You are about to take part in another memory test. You will be presented with a sequence of digits, one at a time on the screen. Each digit will occur only once during a list. You will then be asked to type the list of digits; **IN THE OPPOSITE ORDER YOU SAW THEM IN**. That is, if you saw 12345, respond 54321.

If you do not know what digit comes next, you must guess a number, but try to put the numbers you saw in their original list positions. If you make a mistake, you can use the backspace key to make a correction.

You will start with a list of three items, and will get three different lists at each length. If you are able to recall two out of three lists completely correctly, you will move on to the next longest list length. Touch screen or click mouse button to start.”



C2. Corsi Block Tapping Test

C.2.1 Corsi Forward

“You are about to take part in a test that measures your ability to remember a sequence of locations on the screen.

You will see nine blue buttons on the screen. On each trial, the buttons will be lit up one at a time in a certain order. **REMEMBER** the sequence.

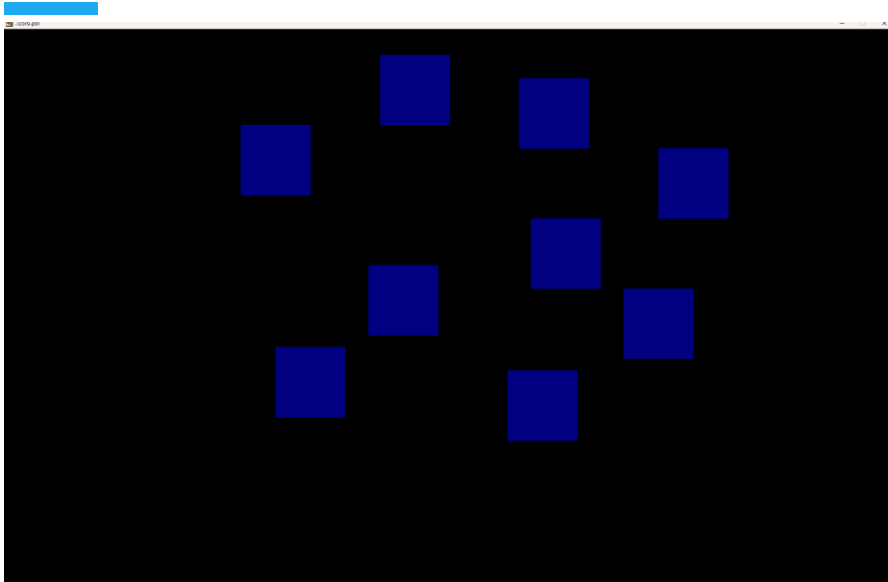
When the sequence is finished, you need to click on each square **IN THE SAME ORDER THEY WERE GIVEN**. When you are done, click the button labeled **DONE**.

If you cannot remember the order, click on them as close to the original order as you can.

You will start with a sequence of two buttons and you will get two attempts at each length. The sequence will increase by one whenever you get at least one of the two tries correct. If you are correct, your next sequence will be one longer.

When you are ready, click the mouse or touch screen to begin.”

There will be a practice trial before the game begins.



C.2.2 Corsi Backward

“Well done! You will now do this again, but **BACKWARDS**.

You will again see nine blue buttons and on each trial, the buttons will be lit up one at a time in a certain order. **REMEMBER** the order.

When the sequence is finished, you need to click on each square in the sequence.

HOWEVER, YOU MUST DO SO IN THE OPPOSITE ORDER THAT THEY WERE GIVEN.

That is, click on the last square you saw first, then the next-to-last, and so on, until you click on the first square last. If you cannot remember the order, click on them as close to the original order as you can. When you are done press the spacebar. You will start with a sequence of two buttons and you will get two attempts at each length. The sequence will increase by one whenever you get at least one of the two tries correct. If you are correct, your next sequence will be one longer. When you are ready, click the mouse or touch screen to begin.”

There will be a practice trial before the game begins.

C3. Trail Making Test

“In this study, your goal is to click on each circle, in sequence, as quickly as you can.

When you click on the correct circle, its number will change to boldface, and a line will be drawn from the previous circle to the new circle.

On some trials, the circles will be numbered from 1 to 26 and you should click on them in numerical order (1- 2- 3 -4 and so on).

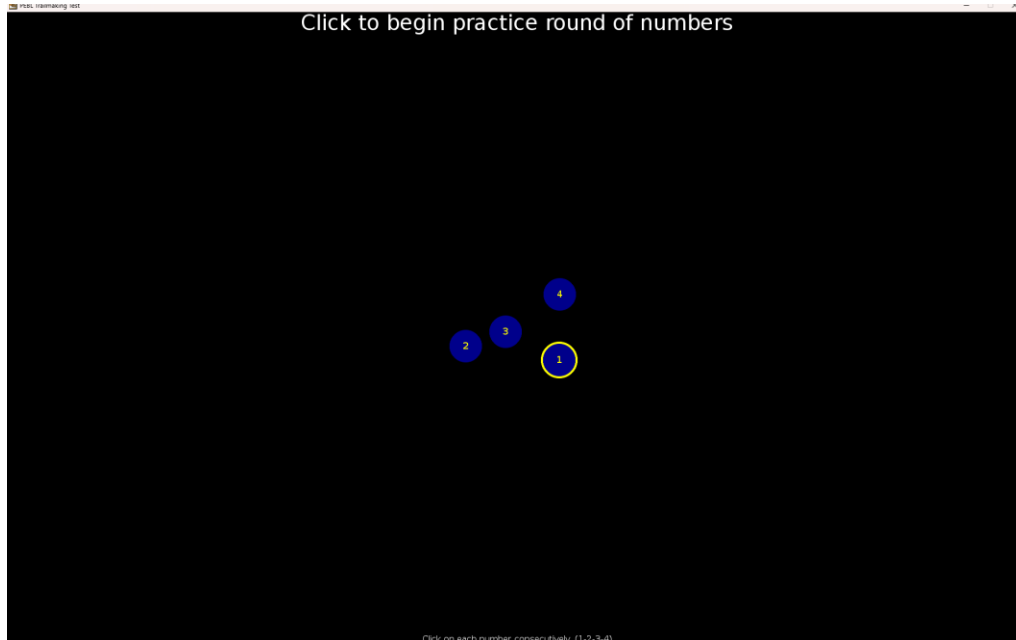
One other trial, the circles will have both numbers (1 to 13) and letters (A through L) and you should click on them in alternating ascending order (1-A-2-B-3-C and so on).

If you click the wrong circle, no line will be drawn.

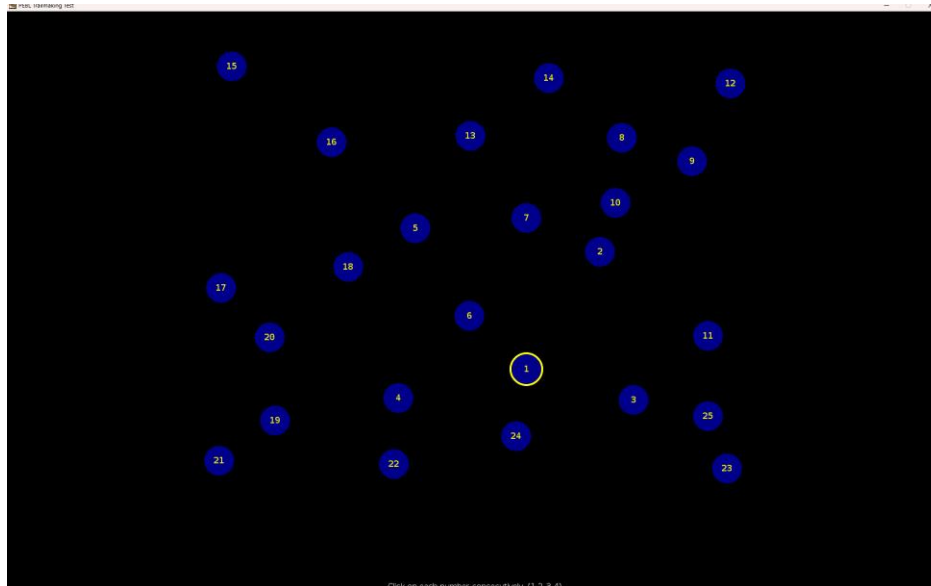
The trial will continue until you have successfully clicked on all of the circles in the correct order.

Ask the experimenter if you have any questions. Press the mouse to begin”

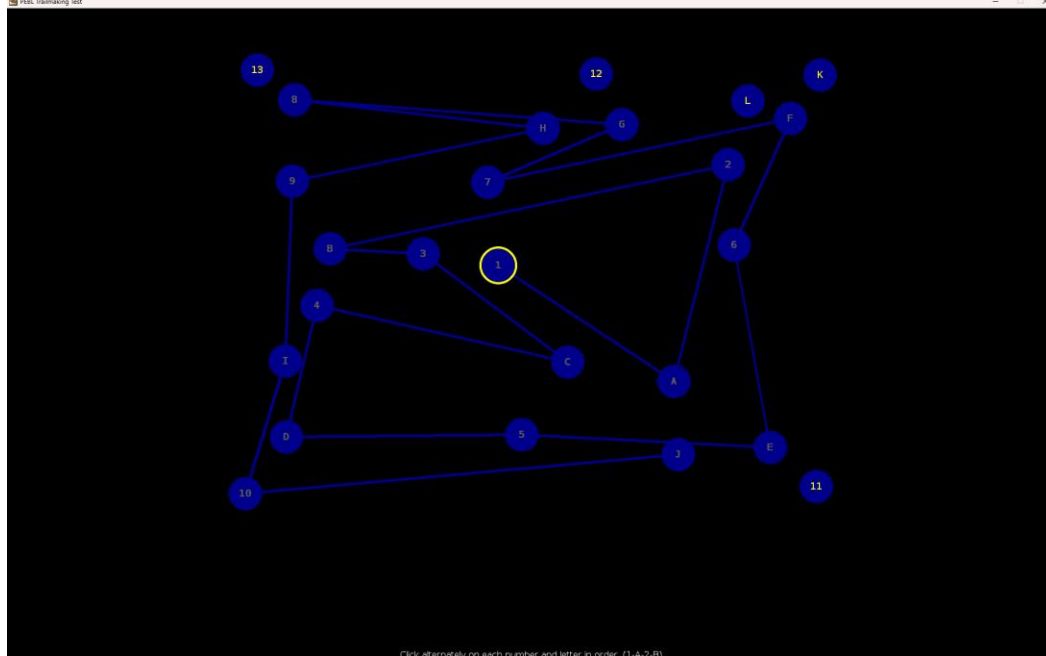
Practice trial with 4 numbers.



Real trial with numbers from 1 to 25.



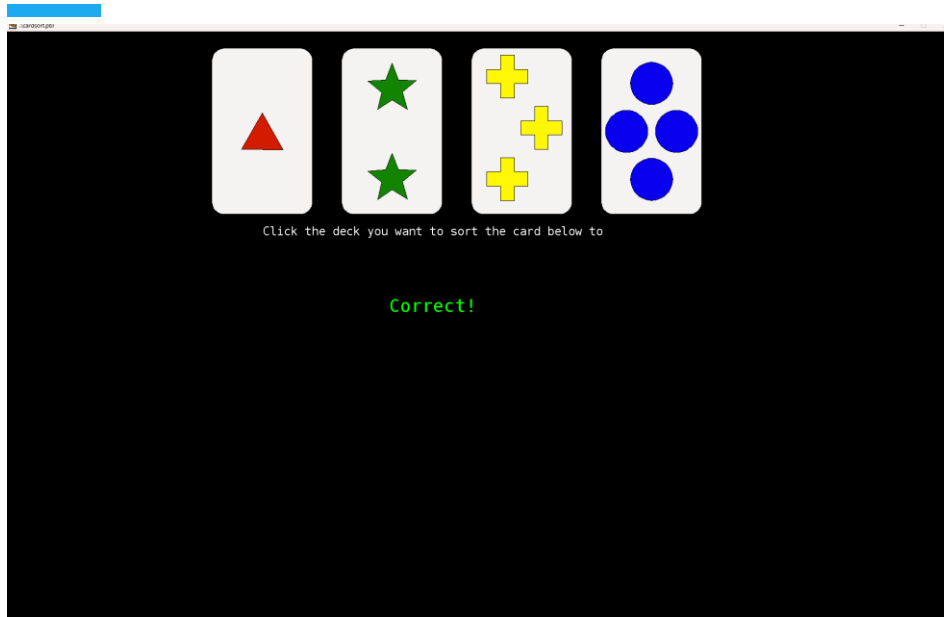
Trial with both numbers and letters.



C4. Wisconsin Card Sorting Test

“You are about to take part in an experiment in which you need to sort cards based on the pictures appearing on them. To begin, you will see four decks. Touch screen or mouse button to continue.”

“Each deck has a different number, color and shape. You will see a series of cards and need to determine which deck each belongs to. Tap or click on a deck with your mouse pointer to determine the deck each new card belongs in. The correct answer depends upon a rule, you will not know what the rule is. But we will tell you on each trial whether or not you were correct. Touch screen or mouse to continue. Click the deck you want to sort the card below to. If you are correct, a green colored “Correct!” will appear on the screen. If you are incorrect, a red colored “Incorrect!” will appear on the screen.



C5. Emotional Recognition Task

Step 1: Elicit understanding about the 6 basic emotions

“Welcome to the emotion recognition task. First, we would like you to verify that you understand the six basic emotions involved in this test. Click OK to continue.

The six questions will be presented to the participant:

Do you know what Anger feels like and make a face to show me that feeling?

Do you know what Fear feels like and make a face to show me that feeling?

Do you know what Happy feels like and make a face to show me that feeling?

Do you know what Sad feels like and make a face to show me that feeling?

Do you know what Surprise feels like and make a face to show me that feeling?

Do you know what Disgust feels like and make a face to show me that feeling?

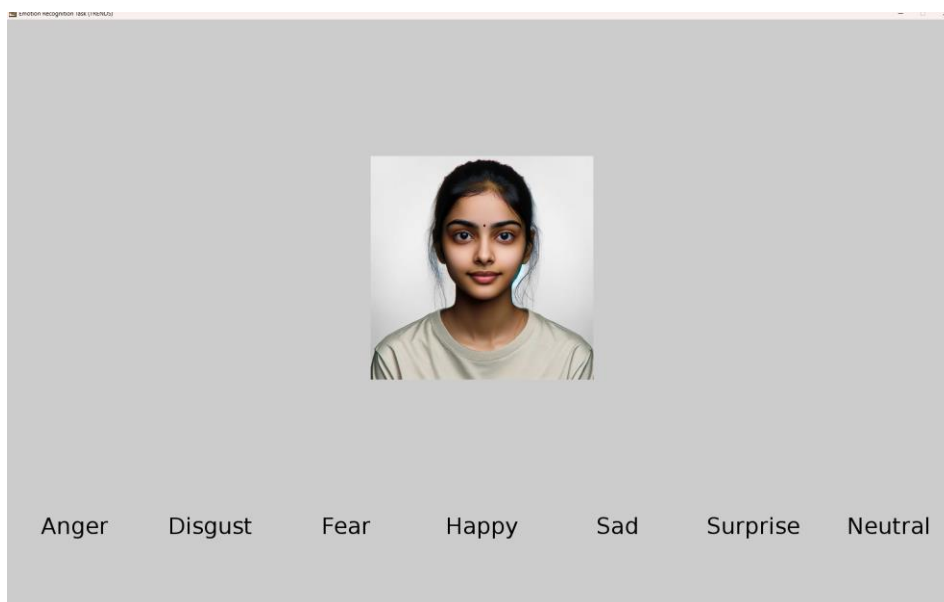
There might be times when one doesn't feel any particular emotion. This state is called neutral.”



Step 2: Practice trials

“Let us see if you understood what we discussed. We will show you a few pictures on the screen. It will have emotion words below. You must identify the expression and pick the word the matches.

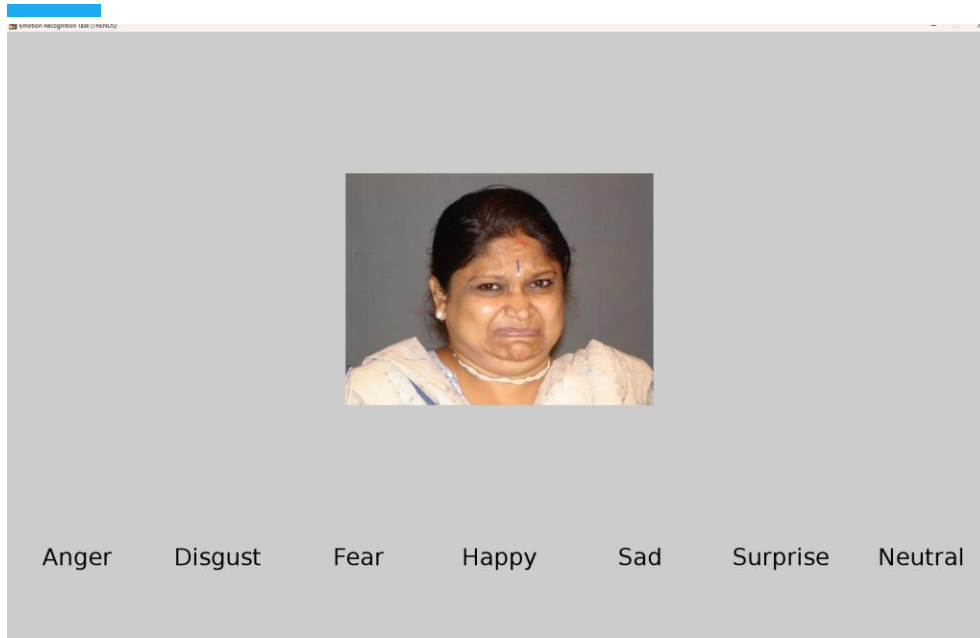
Touch screen or click the mouse button to try some practice images.”



Step 3: Test trials

“Well done! Now the main task begins.

Touch screen or mouse button to start.”



C6. Stop Signal Task

“Your main task is to respond to white arrows (with a black border that appear on the screen). Press the LEFT ARROW key with the right index finger when you see a LEFT ARROW. Press the RIGHT ARROW key with the left index finger when you see a RIGHT ARROW. Thus

Left Arrow - Left Key

Right Arrow - Right Key

However, on some trials (stop signal trials) the white arrow will turn red after a variable delay. You have to stop your response when this happens. On half of the trials, the red stop signal will appear soon and you will notice that it will be easy to stop your response. On the other half of the trials, the red stop signal will appear late and it will become very difficult or impossible to stop your response.

Nevertheless, it is important that you do not wait for the signal to occur and that you respond as quickly and as accurately as possible to the white arrows. After all, if you start waiting for the red stop signals, then the program will delay their presentation. This will result in long reaction times. We will start with a short practice block in which you will receive immediate feedback. You will no longer receive feedback in the experimental phase. However, at the end of each experimental block, there will be a break. During this break, we will show you some information about your mean performance in the previous block. The experiment consists of 1 practise trial and 4 experimental blocks.”



GO TRIALS:

Average response time = 453 milliseconds
Proportion missed go = 0.17 (should be 0)

STOP-SIGNAL TRIALS:

Proportion correct stops = 0.25 (should be close to 0.5)

You can take a short break, the next block starts in 13

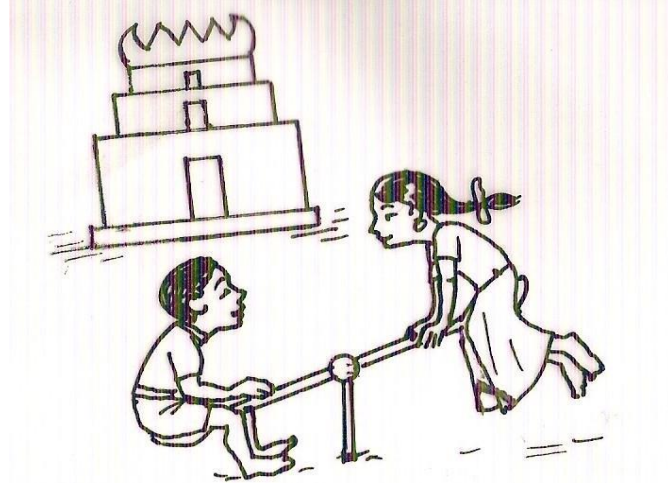
C8. Social Cognition Rating Tools in Indian Setting (SOCRATIS)

C.8.1 Second Order Theory of Mind Task No.1 (Rani-Suresh Story)

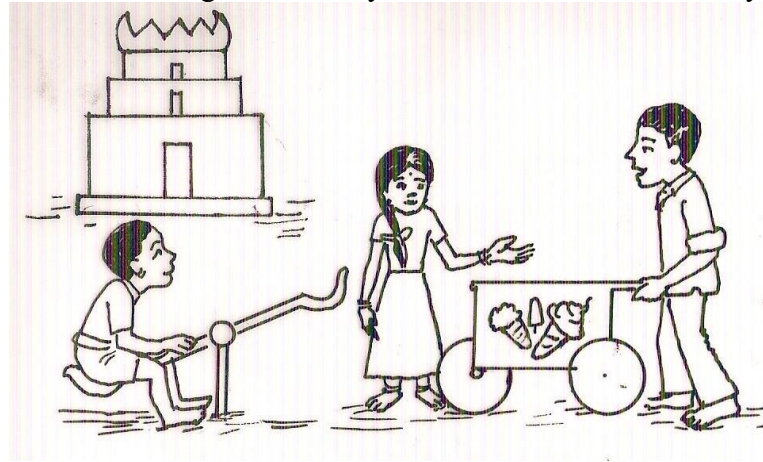
Step1: Explain the procedure: I will read out a story which has been depicted in these pictures... (Show the pictures). Once I complete the story, I will ask you for any doubts you had regarding the story and then clarify the doubts. If you have understood it well, I will ask you a few questions related to the story which you need to answer.

Step 2: Narrating the story:

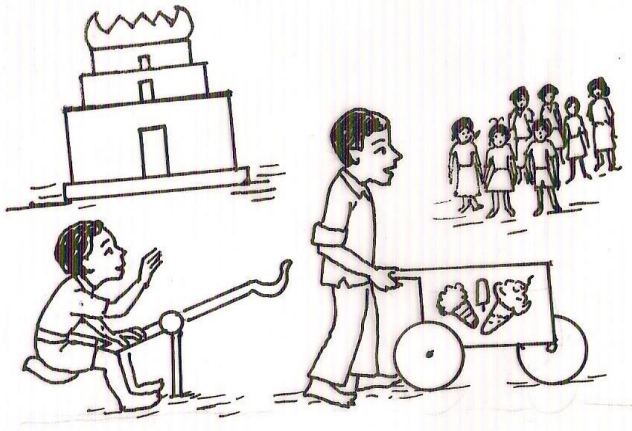
Picture 1: This is Rani and this is Suresh. They are playing near a temple.



Picture 2: An ice-cream man comes there to sell ice-cream. Rani is very keen to eat ice-cream, but she has left her money at home. So, she requests the ice-cream man to wait until she went home and brought the money. As Rani's house was nearby, the ice-cream man agrees to wait.



Picture 3: After a while, the school bell rings and the ice-cream man begins to go towards the school. "Wait! Rani is going to come" says Suresh. "But I will have a good business near the school, as many children will be there" says the ice-cream man and leaves.



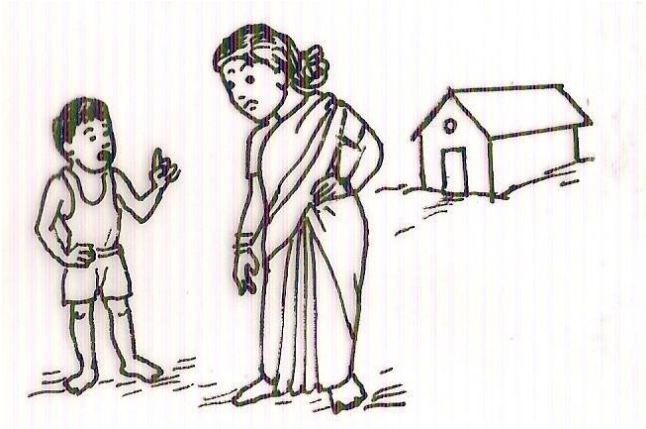
Picture 4: On his way to the school, the ice-cream man crosses Rani's home. Rani sees him going towards the school and follows him.



Prompt Question before Picture 5:

1. Where were Rani and Suresh playing?
2. Does Suresh know that Rani has seen the ice-cream man?

Picture 5: Suresh goes to Rani's home to inform her that the ice-cream man has left. Upon reaching there he meets Rani's mother. "Where is Rani" asks Suresh. "She has gone to buy ice-cream" replies the mother.



Step 3: Clarification of doubts:

Did you understand the story?

YES----- Go to Step 4

NO----- Repeat the story (or) Clarify specific queries----- Go to Step 4

Step 4: Questions:

ToM Question: Where does Suresh think, Rani has gone to buy the ice-cream?

Justification Question: Why?

Score: Temple + ToM Justification = 1

Temple without any ToM Justification = 0

School = 0

Control Questions:

Reality based: Where is the ice-cream man now? Temple = 0, School = 1.

Memory based: Where was the ice-cream man before Rani went to get the money?

Temple = 1, School = 0

Prompt question:

Where were Rani and Suresh playing?

Does Suresh know that Rani has seen the ice-cream man?

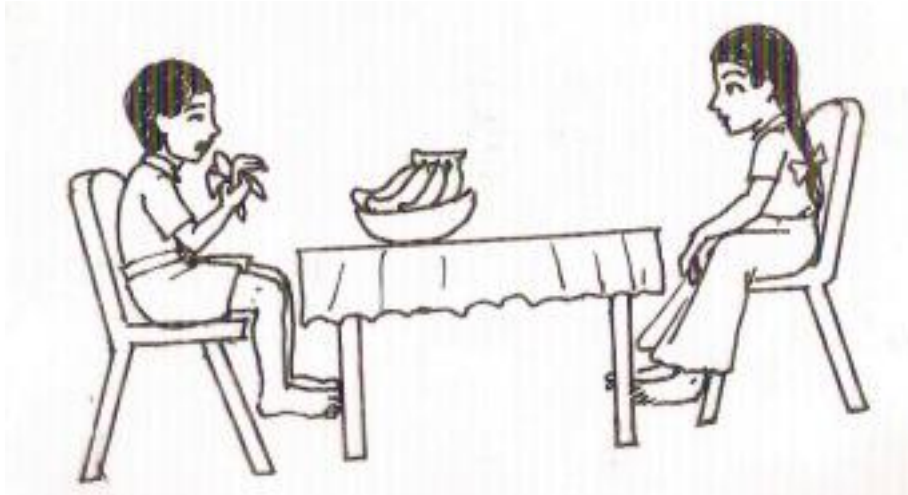
C.8.1 Second order Theory of Mind Task No. 2 [Bananas Story]

Step 1: Explain the procedure: *I will read out a story, which has been depicted in these pictures... (Show the pictures). Once I complete the story, I will ask you for any doubts you had regarding the story and then clarify the doubts. If you have understood it well, I will ask you a few questions related to the story, which you need to answer.*

Step 2: Narrating the story:

ToM Second order task no. 2 [Bananas Story]

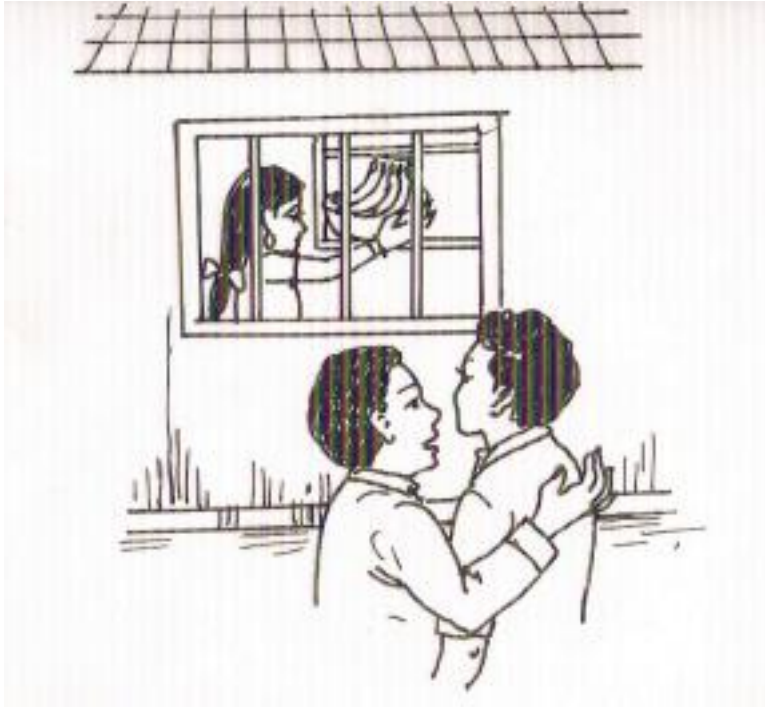
Picture 1: This is Asha and this is her brother Vijay, in their home. They are sitting at the table and Vijay is eating bananas.



Picture 2: A friend calls Vijay and he goes to meet him outside.

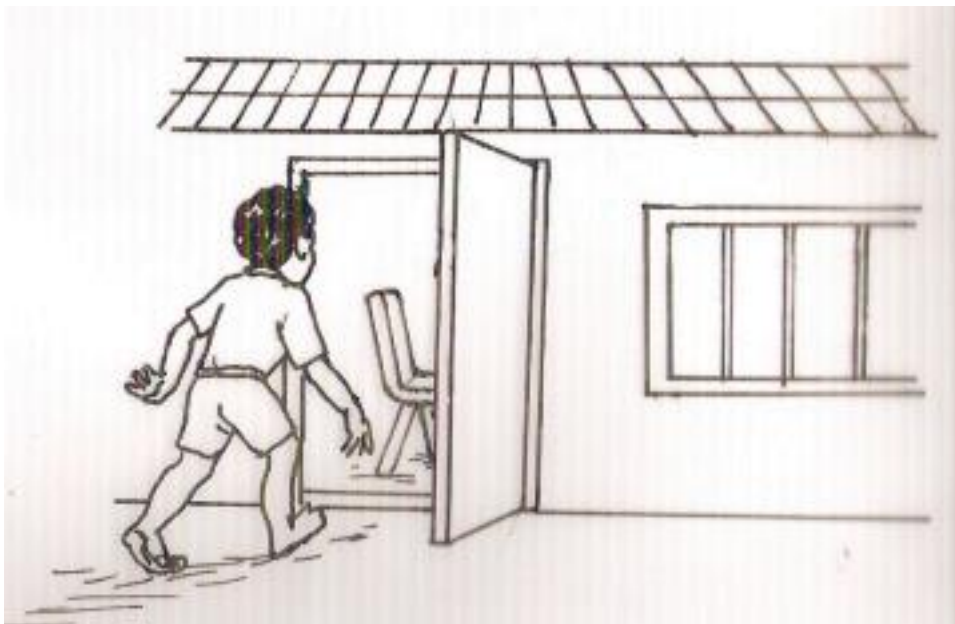


Picture 3: Asha takes the bananas and keeps them in the cupboard. As Vijay is talking to his friend, he sees, through the window, Asha keeping the bananas in the cupboard.



Prompt question: Does Asha know that Vijay has seen her keeping the bananas in the cupboard?

Picture 4: Vijay finishes talking to his friend and returns back home.



Step 3: Clarification of doubts:

Did you understand the story?

YES----- Go to Step 4

NO----- Repeat the story (or) Clarify specific queries-

----- Go to Step 4 Step 4: **Questions:**

ToM Question: Where does Asha think, that Vijay would look for the bananas? Justification question: Why?

Score: Table/Anywhere other than the cupboard + ToM Justification = 1

Table/Anywhere other than the cupboard without ToM Justification = 0

Cupboard = 0

Control Questions:

Reality based: Where are the bananas now? Table/Anywhere other than the cupboard = 0, cupboard = 1. Memory based: Where were the bananas before Vijay went to meet his friend?

Table = 1, cupboard = 0

C.8.2 Metaphor-Irony Story No.1

Step1: Explain the procedure: I will read out a story to you. Once I complete the story, I will ask you for any doubts you had regarding the story and then clarify the doubts. If you have understood it well, I will ask you a few questions related to the story which you need to answer.

Step 2: Narrating the story:

Arun leaves his village and goes to a city for higher education. While studying in the city, he puts on a lot of weight, which is very conspicuous. He returns to the village after 6 months on vacation. He goes to see his friend Santosh in his house. Upon seeing him Santosh comments, “Hey Arun, you have become an elephant!!” At this point, another friend of theirs, Anand comes in. He comments, “What Arun, didn’t anyone feed you in the city?!”

Step 3: Clarification of doubts:

Did you understand the story?

YES----- Go to Step 4

NO----- Repeat the story (or) Clarify specific queries----- Go to Step 4

Step 4: Questions:

Metaphor question: When Santosh said “...you have become an elephant!” Did he mean Arun is slim or fat?

Score: fat = 1, slim = 0

Irony question: When Anand said “What Arun, didn’t anyone feed you in the city?!” Did he mean Arun is slim or fat?
Score: fat = 1, slim = 0

C.8.2 Metaphor-Irony Story No.2

Step 1: Explain the procedure: *I will read out a story to you. Once I complete the story, I will ask you for any doubts you had regarding the story and then clarify the doubts. If you have understood it well, then I will ask you a few questions related to the story which you need to answer.*

Step 2: Narrating the story:

Harish, Suraj and Prashanth were three close friends. One day they decided to have a singing competition. Harish sang a song first, which came out very badly. Suraj commented, “**For a moment I thought a donkey was singing**”. Harish asked Prashanth how was his singing, to which he replied, “**Oh, you sang very well with great expertise**”

Step 3: Clarification of doubts:

Did you understand the story?

YES----- Go to Step 4

NO----- Repeat the story (or) Clarify specific queries----- Go to Step 4

Step 4: Questions:

Irony question: When Prashanth said “**Oh, you sang very well with great expertise**” did he mean Harish sang well or no”

Score: Didn’t sing well = 1, Sang well= 0

Metaphor question: When Suraj said “**For a moment I thought a donkey was singing**” did he mean Harish sang well or not?

Score: Didn’t sing well = 1, Sang well= 0

C.8.3 Faux Pas Recognition Task

Administering the faux pas task:

Put the stories in front of the participant. Say, “I’m going to be reading you some brief stories and asking you some questions about it. You have a copy of the story in front of you so you can read along and go back to it”.

Then read the stories out loud and ask the questions. If they say to the first question, no, no one said anything they shouldn’t have said or that was awkward, skip to the control questions for that story.

Make sure you ask the control questions, whether or not they say “yes or no” about someone saying something awkward.

EXAMPLE:

It was Satish's birthday and he purchased a new shirt which he proudly wore and went to meet his friends Vinod and Kumar. "Happy Birthday Satish!" said Kumar, "When are you going to give us sweets?" he asked. "Please come home. Mother has made sweets and we can enjoy them" said Satish "But first, buy some proper clothes for you Satish. This shirt looks quite old and doesn't suite you at all," said Vinod. "No, first we will have sweets, as I am really hungry" declared Kumar, and they carried on.

They need to be told that some of the stories would have social blunders and the rest would not. They need to use their discretion and judgment to comment about the presence or absence of the faux pas. Once the respondents understand the concept of social blunders, the stories should be read out loud and ask the questions asked. If they say to the first question, no, no one said anything they shouldn't have said or that was awkward, skip to the control questions for that story. Make sure you ask the control questions, whether or not they say "yes or no" about someone saying something awkward.

Step 1: Explain the procedure: I will read out a story, which has been narrated in this handout... (Show the handout). Once I complete the story, I will ask you for any questions you had regarding the story and then will answer the questions. If you have understood it well, I will ask you a few questions related to the story, which you need to answer.

Step 2: Narrate the story:

Step 3: Clarify doubts:

Did you understand the story?

YES----- Go to Step 4

NO----- Repeat the story (or) Clarify specific queries----- Go to Step 4

Step 4: Ask Questions:

Step 5: Scoring:

Faux pas stories: No = 0, Yes = N out of 6 (clarification questions), 1 point each for a control question correctly answered.

Control stories: No = 1, Yes = 0

Story 1:

Sunil and his friends were playing in the lunch break, when the principal called them and said, "Meet my son, Kishore. He will be joining you as your classmate from today".

"That's nice Sir" said Sunil and took Kishore along to play with his friends. After a few minutes, they finished playing and were sitting and chatting with each other when the bell rang and they were about to leave for class. Ravi, who was a senior, came over and said, "Hey, let's bunk class and play. The new Principal is a very boring teacher; you all will go off to sleep in class."

Did anyone say something they shouldn't have said or something awkward?

YES First ask **Clarifying questions**, and then ask **Control questions**

NO..... Ask only **Control questions**

Clarifying questions:

Who said something they shouldn't have said or something awkward?
Why shouldn't he have said it or why was it awkward?
Why do you think he said it?
Did Ravi know that Kishore was the new principal's son?
How do you think Kishore felt?
Control questions: In the story,
What were Sunil and his friends doing in the lunch break?
Why did the principal call them?

Story 2:

Kumari bought her friend, Geeta, an expensive photo frame for a wedding gift. Geeta had a big wedding and there were a lot of presents to keep track of. Kumari visited Geeta a few months later and was seeing a photo framed in the same photo frame when it slipped from her hands and broke. "Oh! I'm so sorry I broke this beautiful photo-frame," said Kumari. "Don't worry," said Geeta. I never liked it anyway. Someone gave it to me for my wedding."

Did anyone say something they shouldn't have said or

something awkward? YES First ask *Clarifying*

questions, and then ask *Control questions* **NO**..... Ask

only *Control questions*

Clarifying questions:

Who said something they shouldn't have said or something awkward?
Why shouldn't he have said it or why was it awkward?
Why do you think he said it?
Did Geeta remember that Kumari had given her the frame?
How do you think Kumari felt?

Control question: In the story,

What did Kumari give Geeta for her wedding?

How did the frame break?

Story 3:

Suresh was very interested in drawing. Once he drew a portrait of Mahatma Gandhiji and his parents got the photo framed for him. He took the portrait to school and the teacher told him to hang it on the wall of the class room.

After class that day Suresh and few of his friends were standing near the portrait when Vinay, a senior came in and commented, "Hey, don't you think the artist of this portrait needs some drawing classes?"

Did anyone say something they shouldn't have said or

something awkward? YES First ask *Clarifying*

questions, and then ask *Control questions* **NO**..... Ask

only *Control questions*

Clarifying questions: Who said something they shouldn't have said or something awkward?

Why shouldn't he have said it or why was it awkward?

Why do you think he said it?

Did Vinay know that Suresh had drawn the portrait?

How do you think Suresh felt?

Control questions: In the story,

What were Suresh's interests?

Who helped Suresh to frame the portrait?

Story 4:

Manohar was returning home after a tiring journey from Chennai. He decided to meet Sunil who lived on the way. They had planned to meet each-other at a nearby hotel. Manohar was standing near the counter of the hotel, when a girl came to him and ordered, "Two masal dosas and two cups of tea please". At that moment, Sunil came by and said "Hello Manohar. Hope I'm not too late."

Did anyone say something they shouldn't have said or

something awkward? YES First ask *Clarifying*

questions, and then ask *Control questions* **NO**..... Ask

only *Control questions*

Clarifying questions:

Who said something they shouldn't have said or something awkward?

Why shouldn't he have said it or why was it awkward?

Why do you think he said it?

Did the girl know that Manohar was only waiting for his friend and was not a waiter? How do you think Manohar felt?

Control questions: In the story,

Manohar was returning home from which place?

Where did Manohar and his friend plan to meet?

Story 5:

Shankar had secured 90% marks in his SSLC exams which made his parents very proud. One day when Shankar was playing outside, his parents told his brother Mani their plan of buying him a new bike. They decided to make it a surprise for him. That evening when the two brothers were returning home after playing football, Shankar said, "The play ground in the nearby village is very big. We can enjoy more over there." Mani promptly replied "Once your bike is here, we can go there everyday brother."

Did anyone say something they shouldn't have said or something awkward? YES First ask *Clarifying questions*, and then ask *Control questions* **NO.....**

Ask only *Control questions*

Clarifying questions:

Who said something they shouldn't have said or something awkward?

Why shouldn't he have said it or why was it awkward?

Why do you think he said it?

Did Mani remember that the bike was supposed to be a surprise for Shankar?

How do you think Shankar felt?

Control questions: In the story,

What were Shankar and Mani playing?

Why did Shankar's parents want to give him a bike?

C.9.4 Perceptual Animacy Test

Participants are shown 20 second videos and asked "Is there an interaction between the shapes?" with the possible response options - Yes, No & Maybe.

C9. Auditory Verbal Learning Test

Read instructions verbatim. If the participant does not understand, you may repeat the instructions.

Read the words at an even pace, 1 second per word. Maximum time for participant recall for each trial is 1 minute (60 seconds). Words stated that are not from the list are "intrusions" and should be noted as such on the score sheet. Singular/plural variations are considered correct. At the end of Trial 6 note the time. There must be at least a 15-minute delay before the Long-Delayed Recall.

Trial 1 Instruction: Say, "You will hear a list of words. Listen carefully and try to remember them. When you hear the chime, say as many of the words as you can remember. Don't worry if you don't remember them in the right order. Are you ready?"

Trial 2-5 Instruction: Say, "Let's do that again. When you hear the chime, say as many words as you can remember, even if you said them the first time. Are you ready?"

List B Instruction: Say, "You are going to hear a second list of words. Listen carefully and try to remember them. When you hear the chime, say as many of the words as you can remember. Don't worry if you don't remember them in the right order. Are you ready?"

Trial 6 Instruction (Do not read the list of words to the participant): Say, "Now tell me all the words you can remember from the first list, the list I repeated a number of times. Are you ready?"

List A	List B
Arm	Shoes
Cat	Monkey
Axe	Bowl
Bed	Cow
Plane	Finger
Ear	Dress
Dog	Spider
Hammer	Cup
Chair	Bee
Car	Foot
Eye	Hat
Horse	Butterfly
Knife	Kettle
Clock	Mouse
Bike	Hand



D. Instructions for anthropometry

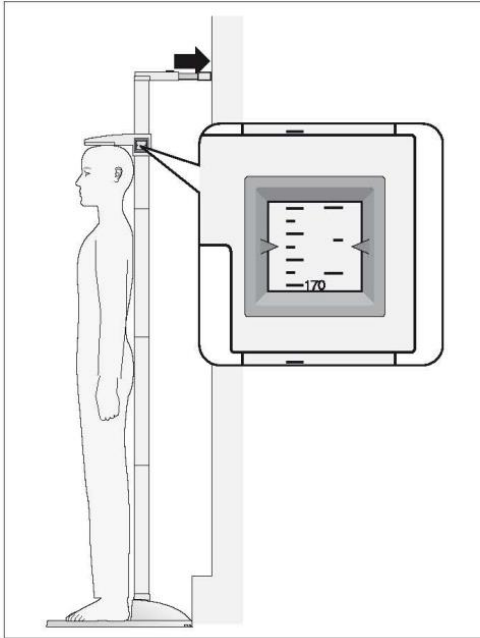
D1. Measuring Height

When Measuring height, ask the participant to remove their

- Footwear (shoes, slippers, sandals, etc.), and
- Head gear (hat, cap, hair bows, comb, ribbons, etc.).

* **Note:** If it would be insensitive to seek removal of a scarf or veil, the measurement may be taken over light fabric.

- Ask the participant to stand on the base:
 - Facing you.
 - With feet together,
 - Their heels against the backboard,
 - Their knees straight, and
 - To look straight ahead
- Make sure eyes are the same level as the ears.
- Ask the participant to breathe in and stand tall, and move the *measure arm* gently down onto the head of the participant.
- Read the height in centimeters at the exact point.
- If the participant is taller than you, stand on the stiff wooden stool to read the participant's height.
- Tell the participant to slowly bend their knees and step off the stadiometer.
- Record the height measurement in centimeters on the participant's questionnaire.



D2. Measuring Weight

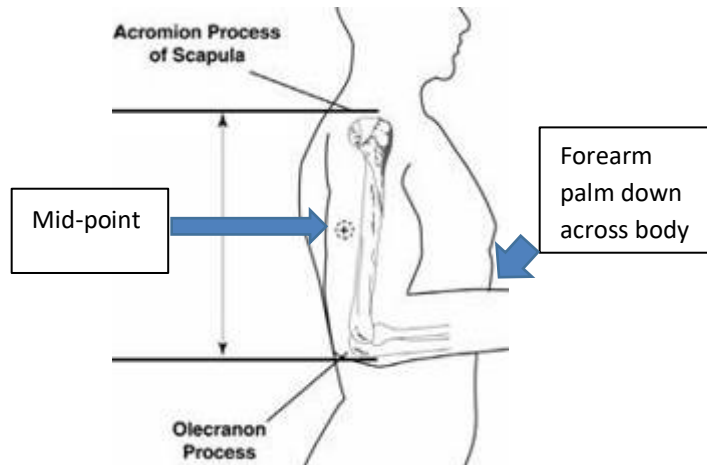
- Ask the participant to remove their footwear (shoes, slippers, sandals, etc.), socks and anything in their pockets, including wallet, coins, keys, etc.
- Gently tap the scale to activate it and wait until the 0.0 screen appears
- Ask the participant to:
 - Step onto the scale with one foot to each side of the digital display.
 - Stand still
 - Face forward
 - Hang arms to the side
 - Stay on the scale until weight is displayed until asked to step off.
- Read the weight on the scale and record it in kilograms to the nearest 0.1 kg on the participant's questionnaire.
- Ask the participant to step off the scale
- Activate the scale and wait until the 0.0 screen appears (see image below)



D3. Measuring Mid Upper Arm circumference

The midpoint of the upper arm is used for different measurements including the mid upper arm circumference, and skin folds of triceps and biceps:

- Ask the participant to:
 - Turn so that you stand facing their right side.
 - Stand upright with the weight evenly distributed on both feet.
 - Position the right arm with the elbow flexed at 90 degrees, and with the forearm placed palm down across the front of the body.
 - On the shoulder- locate the lateral projection of the acromion process.
 - Ask the participant to move her hand forward and backward. This helps you to find the lateral projection of the acromion process.
- On the elbow- locate the olecranon process of the ulna.
- Measure the distance between these two locations and mark the midpoint position.
***Note:** The tape must be centered on the back of the arm shows the correct placement of the measuring tape centered on the back of the arm; whereas shows the measuring tape placed incorrectly.
- Make a mark at the midpoint and cross this mark with a vertical line.
- At the front of the participant's arm, on the same horizontal plane as the marked mid-point of upper arm length, mark the position of the bicep's skinfold.
- Ask the participant to relax the right arm.
- Proceed to the arm circumference measure.



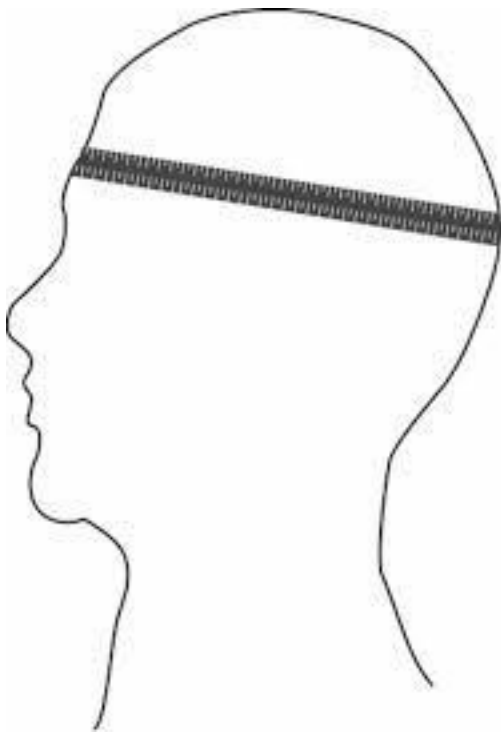
Marking the lateral projection of the acromion process and the olecranon process of the ulna

Taking measurement

- Ask the participant to:
 - Turn so that you stand facing their right side.
 - Stand upright with the weight evenly distributed on both feet, the shoulders relaxed, and the right arm hanging loosely at the sides.
- Continue to stand facing the right side of the participant. Do not stand behind the participant for this measurement.
- Wrap the measuring tape around the arm at the level of the upper arm mid-point mark).
- Check that the tape fits around the arm but does not compress the skin.
- Take the measurement to the nearest 0.1cm



D4. Measuring head circumference (from the NHANES manual)



1. Position the SP: Instruct the parent (or guardian) to stand holding the child over the parent's left shoulder or else sit on the white box with the child in the parent's lap. Ask the parent to remove any of the child's hair ornaments or braids.
2. Take the measurement: Place the head circumference tape around the child's head so that the tape lies: across the frontal bones of the skull; slightly above the eyebrows;

perpendicular to the long axis of the face; above the ears; and over the occipital prominence at the back of the head (Exhibit 3-1). Move the tape up and down over the back of the head to locate the maximal circumference. Tighten the insertion tape so that it fits snugly around the head and compresses the hair and underlying soft tissues. Measure the circumference to the nearest 0.1 cm. Since the head circumference tape shows both centimeters and inches, check that you take the measurement using the metric scale.

D5. Measuring Hand Grip using Hydraulic Hand Dynamometer

1. Positioning the participant: Participant is required to be seated or standing in a comfortable manner. Their hands have to be stretched out in front of the body. Instruct the participant to grip the dynamometer as tightly as possible with maximum force.



2. Instruction for the trainer: The grip on the dynamometer has to be adjusted based on the hand size of the subject. Smaller hand size means smaller grip distance. The dynamometer has a vertical rod that can be attached and detached at the bottom and secured in place with a clasp. Three trials have to be recorded from each participant. Grip measurement has to be conducted on both left and right hands. 6 measurements have to be recorded from all participants (3 measurements from each arm). Please remember to reset the pointer in the dial to zero before recording each measurement. The dial has 2 rings in black and white color. The black ring measures recordings in kilograms and the white ring measures recordings in pounds. Please make note of the recording in kilograms only.



E. Instructions for Body Composition Analyzer

1. The psychologist will have to press the big dial on the Body Composition Analyzer (BCA) to turn on the machine. The psychologist will have to input the height of the participant by rotating the dial. The dial has 0.5 increments so height will be entered into the machine as 160.5 cms or 160.0 cms.
2. The participant is now instructed to stand on the machine such that both their toes and heels are touching the metal plates on the machine.



3. The participant is instructed to look straight as the machine records their weight. The machine will beep.

-
4. The psychologist will have to unhook the small attachment and place it in the participants' hands. The participants have to place their finger grip over the bar such that their thumbs touch the metal plate inside. Participants are instructed to 'Pose' as the machine records body fat, muscle mass and visceral fat values.



5. The psychologist asks the participant to step off the machine once a final 'beep' is heard and they can now record the values calculated by the machine.

