

**DEVELOPMENT OF A MANUAL FOR THEORY OF MIND FOR PERSONS  
WITH BRAIN DAMAGE IN KANNADA**

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A Dissertation Submitted in Part Fulfillment of Degree of Master of Science

(Speech-Language Pathology)

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## CERTIFICATE

This is to certify that this dissertation entitled “**Development of a manual for Theory of Mind for persons with brain damage in kannada**” is a Bonafide work submitted in part fulfillment for degree of Master of Science (Speech-Language Pathology) of the student Registration number 19SLP007. This has been carried out under the guidance of a faculty of this institute and has not been submitted earlier to any other University for award of any other Diploma or Degree.

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## DECLARATION

This is to certify that this dissertation entitled “**Development of a manual for Theory of Mind for persons with brain damage in kannada**” is the result of my own study under the guidance of Dr. Hema N, Assistant Professor, Department of Speech-Language Sciences, All India Institute of Speech and Hearing, Mysuru, and has not been submitted earlier to any other University for award of any other Diploma or Degree.

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## Chapter 1

### Introduction

Communication is a broad term that encompasses linguistic, paralinguistic, and pragmatic aspects of human behavior . The process of exchanging information is referred to as communication (Cates et al., 2012). Humans are sociable animals who require a social connection to thrive (Adolphs, 2006). Communication necessitates a delicate interplay between cognition and language. Communication requires a complicated connection between language and cognition (Danilov,2020).

Attention, memory, reasoning, problem-solving, and executive functioning are all important cognitive activities. Planning, self-directing/initiating, self-inhibiting, self-monitoring, self-evaluation, flexible thinking, and other behaviors are all examples of self-awareness, and goal setting can all benefit from these processes. Language processes include the transmission of communications by spoken, written, or nonverbal means such as gestures and facial expressions. It also includes understanding auditory, printed, or nonverbal messages. The cognitive processes and language processes help every individual to understand whatever has been communicated. Both the hemispheres have a major contribution in the case of speech and language in association with cognition. Difficulty concerning any of these expressive receptive aspects of cognition leads to malfunction in communication and therefore there will be difficulty in exchanging information. Cognitive and communication difficulties may occur as a result of brain insult to the brain, be it any hemisphere, has an impact on communication. The researches done with respect to the right hemisphere and its contribution to language is very limited. Since the 18<sup>th</sup> century, the effects of damage to the Left Hemisphere are a

point of discussion and numerous researches have been done concerning that. However, in recent years, there has been a considerable increase in knowledge and awareness of the Right Hemisphere's role in language, particularly in the context of daily social interactions (Myers, 1999; Tompkins, 1995). Various language-related impairments seen in individuals with damage on their right hemisphere are observed to be present in the province of pragmatics as stated by (Cummings, 2007).

The major functions of the Right Hemisphere (RH) contain a group of paralinguistic or pragmatic phenomena which is primarily mediated by RH, in addition, discourse planning and comprehension, as well as the development and comprehension of emotional prosody, sarcasm, metaphors, and indirect requests are also processed in RH (Brownell, Griffin, Winner, Friedman, & Happé, 2000). It is claimed that, these impairments in these aspects of pragmatics are due to the deficit in something called the theory of mind. This is denoted to understanding the feelings or state of mind of others (Seigal et al., 2002). So, damage to RH leads to the impairment of the above-mentioned functions. An acquired brain injury leads to deficits in language and non-linguistic domains.

The Left Hemisphere Damage (LHD) patients show no sign of greater difficulty on the Theory of Mind, compared with the non-mental tasks. However, the presence of ToM impairment was observed in LHD patients (Happé et al., 1999). Traumatic Brain Injury (TBI) is a type of acquired brain injury that occurs when the brain is affected by a sudden trauma in either the right or left hemisphere. Cerebrovascular disease, which includes many microinfarcts, massive infarcts, hemorrhages, and lacunes, subcortical arteriosclerotic

leukoencephalopathy, is one of the leading causes of disability worldwide and this acts as a major healthcare load to society, also a significant cause of disability around the world (National Institute of Neurological Disorders and Stroke, 2019). In individuals with cerebrovascular disease, the deficits revealed according to the studies and reviews are concerning working memory, episodic memory, semantic memory, perceptual speed, attention, and visuospatial ability, and socio-cognitive aspect. Unlike cerebrovascular accidents, changes in neural connections are affiliated with severe diffuse damage to key connections in the neuronal system that forms the "social brain," a dispersed network of the brain that is claimed to be responsible for social cognitive functions critical for adaptive social conduct (Njomboro et al., 2017).

In general patients with brain damage, may exhibit processing deficits, which include impairments in attention, and visual perception. Most of the language-related deficits present within the domain of pragmatics are the inability to perform tasks that targets indirect requests (Cummings, 2007), humor comprehension (Winner, Brownell, Happe, Blum, & Pincus, 1998), narratives (Brownell, Bihrlé, Potter & Gardner, 1986), the ability to use other people's beliefs to understand or predict behavior (Lundgren & Brownell, 2011). All of these are considered to be common and important features of natural conversation that occurs in day-to-day life in different social contexts (Griffin et al., 2006). Social cognition impairment was identified as one of the most severe behavioral outcomes of brain injury around the end of the 1970s. It is important to sustain social cognition, as this acts as a condition for human beings' adaptive learning and psychological fulfillment. The capability to analyze others' mental states based on their activities to understand one's own and others' relationships and using these concepts to guide one's

behavior and predict that of others is referred to as social cognition. Social cognition includes the capability to decode and comprehend social cues such as emotional expressions on the face, body posture or voice, making conclusions about others' mental states, making morally appropriate decisions, managing emotions, sentiments, experiencing empathy, and also expressing empathy are only some of the social cues that humans use (Cummings, 2007)

The term "Theory of Mind" is nothing but the method for assigning mental states to oneself and others according to Premack and Woodruff (1978). This skill could be separate from general intelligence because it necessitates various demands of information processing . To have effective communication, understanding other's feelings, intentions, emotions, reactions plays a salient role. So it is important to be the interlocutor of one's mental states as a means of navigating the social atmosphere successfully. The ability to accurately recognize, analyze, and make conclusions about the mental states of others is a key component of successful social navigation, according to the ToM.

For a better understanding of this concept, a model was proposed by Dennis et al. (2012). A tripartite model of ToM was put forth which included Cognitive Theory of Mind, Affective Theory of Mind, and Conative Theory of Mind. Cognitive ToM is mainly to do with mind-reading. This is concerned with false beliefs. In daily life situations, there are a lot of instances that would require us to differentiate between which is a false belief and which is not. Affective ToM is concerned with facial emotion which expresses the feeling of a person. It also includes what individuals want others to think and why is a certain facial expression purposefully hidden (Hein and Singer, 2008). Conative ToM includes two

prototypical forms, ironic criticism and empathic praise. This is about social communication, where one individual tries to sway the mental as well as emotional condition of another. They exhibit an inability to make inferences from the ongoing conversation. This plays an important role because for an individual to make sense of what and why certain feelings are shared why certain feelings are hidden. Reports suggest that individuals with no brain damage tend to change the way of conveying a message to the communication partner based on the mood or state of mind. Also, they keenly observe what the other might feel when the message is conveyed. Once they make the hypothesis of this, they decide on how to convey the message. But, if there is brain damage which in turn results in affected ToM, the individual fails at making such inferences.

Theory of Mind (ToM) starts developing rapidly in children who are pre-schoolers (Sodian, 2010; Wellman et al., 2001) and the development continues into adolescence, as the creation or maturation of neural substrates that support ToM is ongoing. The ability to think about one's own and others' mental states is supported by a network of coordinated brain regions through mentalizing networks during developmental periods (Hein & Singer, 2008; Kalbe et al., 2010).

The major brain regions involved in mentalizing networks are the superior temporal sulcus, temporoparietal junction, and temporal pole are all parts of the dorsomedial prefrontal cortex. But also expands to other parts as well, for example, the insula and amygdala (Burnett et al., 2011; Johnson et al., 2005). It is important to understand the coordination of the mentalizing network and central executive network while carrying out the activities of TOM in neurotypical adults and individuals with traumatic brain injury or right hemisphere damage. The

frontotemporal regions are the central executive network (CEN), and it underpins higher-order executive processes such as planning and organizing, coordinated attention, working memory, and decision-making, which is also likely to be impacted in individuals with traumatic brain injury (Ryan et al., 2016).

Unfortunately, severe brain damage to the frontal and anterior temporal regions is particularly sensitive, resulting in diffuse microstructural abnormalities in the underlying white matter, reduced brain volume, and a high lesion burden. Based upon growing evidence that RHD plays the unique role in ToM and other higher-order pragmatic language abilities (Mossad et al., 2017). In most of the studies done, it is found that volume changes and cortical thickness (Thambisetty et al., 2010; Yuan & Raz, 2014) which alters theory of mind are found mainly in frontal cerebral regions more than for other areas, such as temporal, parietal, and occipital regions (Tisserand et al., 2002).

The other components of social cognition, including ToM ability, are considered as crucial for surviving in a socially complex society, because, in daily life, the need for complex and strategic cognitive assessment requires more than procedural and declarative knowledge of social rules (Barrett et al., 2007). Because of this, it's expected that the Theory of Mind impairments have been linked to difficulty in skills of daily life, which are very important including interpersonal communication (Watts & Douglas, 2006). Likewise, it is also expected that acquired social cognition impairments are very difficult to deal with. Activities which include making inferences, understanding others' state of mind, understanding and detecting or identifying emotions, first-order/second-order beliefs, detection of deception, understanding the hidden emotion, etc will be affected in individuals whose right frontal area is damaged, especially medial and

ventral region. Results of few studies imply that the participants required “effective connections” (among ventromedial frontal regions/amygdala and other limbic regions) to have intact ToM. Emotional and social behavioral changes after brain injury are mainly due to significant impairment in recognizing facial as well as vocal expressions of emotions, detecting social faux pas, and non-verbal fluency (Milders et al., 2003).

All the above-mentioned factors get affected when there is brain damage. It has also recently been discovered that ToM impairment in patients with brain injury is linked to caregivers' lower quality of life. As a result, ToM deficits can be viewed as part of a larger bio-psycho-social framework, in which the severity of symptoms frequently leads to poor familial, social, and job reintegration results. Individuals with significant brain injuries, in particular, have difficulties identifying the origins of an interpersonal conflict or understanding the significance of social acts. Based on clinical observations, caregivers may be disturbed by patients' lack of sensitivity to the implications of their behaviors (agitation, irritability, aggressiveness, apathy, to those who care for them regularly).

### **1.1 Need for the Study**

It is time and mentioned that brain injury which is acquired is considered to be one of the most common causes of disability in adults (Feigin et al., 2010) and among which stroke (Strong et al., 2007) and Traumatic Brain Injury (TBI) are the two most common causes of acquired brain injury (Feigin 11 et al., 2010). In individuals with brain injury theory of mind is one of the domains which gets affected as mentioned earlier. Because of impaired Theory of Mind, social communication gets affected. Individuals with impaired ToM are considered

egocentric because of the way they behave. This often results in the exclusion of such individuals because of them being insensitive and apathetic. Most of the time, this goes unnoticed since it's seldom included in the assessment. Because of poor assessment, the ToM remains untouched even during the intervention. It is a basic talent that is employed throughout one's life, with significant implications for social communication and social interactions (Henry et al., 2013). Though recently researchers have spoken about treating or training to elicit better outcomes with respect to social communication, there are not many manuals with activities available to treat individuals with ToM impairment post brain injury. In the present study, an attempt is made to create activities with reference to verbal and non-verbal output corresponding to the left and right hemispheres and thereby improving the concept of ToM in brain-injured individuals.

## **1.2 Aim**

The current study aims to develop a treatment manual containing activities that target theory of mind for persons with brain damage in Kannada.

## **1.3 Objectives**

1. To construct a treatment manual to treat Theory of mind in persons with brain damage
2. To determine the content validity of the constructed treatment manual.
3. To conduct a pilot study on persons with brain damage by using the constructed manual



## **Chapter 2**

### **Review of Literature**

The present study focuses on developing a manual with different activities to work on impaired Theory of Mind post brain damage or brain injury. The review with reference to different studies done to evaluate the status of the Theory of Mind after brain damage and the studies heading towards the rehabilitation of impaired ToM is briefly explained in the following section and thus the need and necessity of developing the manual are discussed.

#### **2.1 Brain damage and social cognitive deficits**

Brain injury results in several linguistic and non-linguistic consequences according to Brownell and Stringfellow (1999). They listed out few components affected in the domain of pragmatics and social cognition which include difficulty in targets, indirect requests, humor comprehension, narratives, the ability to use other people's beliefs to understand or predict behavior.

Neurocognitive profiles associated with the cerebrovascular disease were studied by Njomboro (2017) and the author assessed functions like episodic, semantic, and working memory; perceptual speed, attention, and visuospatial abilities, etc. It was reported that focal lesions that are a result of CVA lead to various social cognitive deficits including, impaired recognition of some emotions following lesions in the amygdala, insular region, and ventromedial prefrontal cortex. More diffuse lesions are said to disrupt frontal subcortical pathways which in the main contributor to Social functions controlled and carried out by the brain. With reference to social cognition, the Theory of Mind is the focus of interest.

## 2.2 Theory of Mind

The theory of Mind was studied first by Premack and Woodruff (1978). They attributed the term to the process where an individual attributes mental state to oneself and others. Their study focused on investigating whether or not Chimpanzee has the theory of mind in the first milestone and it attracted many researchers' attention. Authors used the phrase Theory of Mind caught the attention and then on numerous researches began to understand the development of ToM, the role of ToM in different disordered populations as well.

ToM is one of the complex functions that allow us to infer the cognitive state as well as the emotional state of other people from their attitude and thereby to anticipate and analyze their behaviors (Stuss & Anderson, 2004). They also stated that its related to self-consciousness. A multilevel analysis of social cognition resulted in understanding ToM being very much necessary to regulate social interaction (Beer & Ochsner, 2006). ToM effects with aging and it constitutes an important aspect of social cognition and there is a set of mental processes such as perception of others and self, knowledge about certain social rules related to interpersonal relationships, etc needed to decipher the social world, generating and regulating behavior and social interactions being referred to as social cognition. Therefore mindreading is very important in daily life (Duval et al., 2011).

Therefore the ability to understand the fact that others too have feelings and thoughts and the way we behave can have an impact on these feelings and thoughts is the fundamental part to carry out a successful and impactful conversation with others. This was rightly recognized by Wareham and Kelly's (2020) study. This is considered to be the key factor of having social interaction because as individuals

we all have our own intentions as well as expectations of how the communication partner will respond. In support, Leslie (1987) documented that ToM emerges very early, author further states an example by emphasizing how the infant vocalizes expecting it to be recognized by the listener. Thereby achieving social competence, where we have to adapt and inculcate our social behavior to suit the person and also the context in which the conversation is going on, ToM is required. Interpreting the context and the person based on one's own perception of what the feelings, thoughts, and beliefs of the other person could be is of utmost importance to make the adaptations. However, it is also mentioned that, if a person is lacking Theory of Mind it does not mean that person is having poor social skills. People who lack ToM might have the ability to maintain eye contact and initiate conversation as well. But they may not be able to use the skills they have effectively due to a lack of social competence. The author substantiates this statement by rightly pointing out how they fail to initiate a conversation in a conducive manner and situation not to forget the appropriate topic. To rightly identify the topic to start a conversation, keeping the context in mind one must be aware of the mental state of the other person. In a population where there is impairment of ToM, social communication will be difficult.

## **2.2. Types of ToM**

As more and more researches emerged to study ToM, classification was also proposed. Researches made use of neuroimaging evidence and behavioral evidence and based on this ToM was classified into cognitive ToM and affective ToM (Hein & Singer, 2008). According to them, cognitive ToM refers to reading other's minds having certain cognitive beliefs and affective ToM is all about emotional states of a

person that includes a certain function that involves affective influence mainly empathy. Dennis et al. (2013) support the classification given by Shamay-Tsoory and Aharon-Peretz, (2007). Hein and Singer (2008) also said that it is very useful. Meanwhile, in their study, Dennis et al., (2013) realized the need of differentiating between what a person feels or wants to appear to feel and influencing what someone feels. To put it in simple words, they wanted to differentiate between affective ToM and conative communication. So they proposed a model called the Tripartite model of ToM involving, 1). Cognitive, 2). Affective and 3). Conative ToM. According to their view on ToM, cognitive ToM is mind-reading that is concerned with a false belief. Affective ToM comprises two concepts those are, emotion expression and emotive communication, stating that emotion on the face that expresses feeling is the emotional expression and when a person is consciously selecting the expression that he or she wants to display based on what a person wants others to think he feels and is referred to as emotive communication, this can be deceptive. Conative ToM is about a person influencing the emotional state as well as the mental state of another person. This includes ironic criticism and empathic praise.

A study focusing extensively on conative ToM in which, 71 children with TBI and 57 with orthopedic injury (OI) were involved, and their ability to comprehend criticism which is ironic and empathic praise was checked (Dennis et al., 2013). Tasks used, required them to identify the belief and intention of the speaker. The task demanded them to understand speech acts that had both literal truth (direct speech act) as well as ironic criticisms (indirect speech act). The authors reported that there was difficulty in comprehension of indirect speech act post-TBI.

With respect to emotions in general, Bennett (2002) focuses on valence and arousal. Where valence includes positive and negative emotions which can be elation which is highly positive and extreme sadness which is highly negative and it is noteworthy that positive emotions are processed faster than negative ones. Arousal emotions can be low to high and high arousal emotions are easy to process than low arousal emotions. For example, low arousal is tranquil emotions and high arousal is agitated and this is also supported by Cunningham and Johnson (2007).

False belief, emotional communication, and ironic and empathic influence to study cognitive ToM, affective ToM, and conative ToM respectively by Dennis et al. (2013) study done on 143 children among which 82 of them had a traumatic brain injury (TBI) and 61 had an orthopedic injury. They found out that, children with TBI had difficulty in all types of ToM. It was also found that even if the severity is mild, in the case of TBI, affective and conative ToM are much vulnerable. The study also focused on the fact that, because of this impairment, they might have to face negative consequences in society.

Dennis et al. (2013), attempted to understand the emotional expression and emotive communication in their research on emotive communication. Emotive communication is one of the salient features in social communication which involves varying one's expression based on what the viewer has been perceived by testing 134 children among which 78 of them had TBI and 56 of them had OI, with varying severity and it was found that, those with a severe level of TBI showed deficits in emotions such as anger, fear, and sadness. Difficulty in understanding the dual role played by the emotion, the need of hiding the emotion in order to act according to the situation was also affected and this led to poor social

communication as reported by the author. It is very essential to have an understanding and when to use and when not to use certain emotions in a social context. This enables good social communication.

The effect of age on the different components of ToM was studied by Duval et al. (2011). They reported that the neuropsychological studies were very helpful in differentiating cognitive and emotive ToM. The observation includes false beliefs, understanding the intention behind an action, and faux pas which is about identifying blunders in a given scenario. In addition, it is argued that cognitive ToM has two mental representations which are first-order and second-order representations. The first order is about one's own perspective on what the other person might be thinking (I think that sam thinks...). This shows that every individual has their point of view and it certainly differs from one another. Second-order mental representation is attached to higher-level meta representation according to Morin (2006). It involves one's own perspective on what a person is thinking about other people (I think, sam thinks that Ram thinks....). Affective or hot ToM was tested using verbal short stories as suggested by Hynes, Baird, and Grafton (2006). Other tasks included, face recognition, reading the mind in the eyes test, etc. However, the study used false belief task and attribution of intension task to monitor cognitive ToM and, eye test depicting basic and complex emotion to monitor affective ToM in 70 individuals of three different age groups namely young adults, middle-aged adults, and elderly adults. Both subjective and objective assessment was done and the age-related decline was seen in both the components of ToM, however severity of it differs from individual to individual and affective ToM is more vulnerable than cognitive ToM.

Both adults and children post TBI exhibit impaired emotion recognition (Bornhofen & McDonald, 2008). Along with difficulty recognizing facial emotion after childhood TBI, also possess impaired comprehension of affective prosody (Schmidt, Hanten, Li, Orsten, & Levin, 2010). Croker and McDonald (2005) stated that children post TBI, struggle to identify negative emotions which include anger, sadness, and fearfulness are present when compared with that positive emotions, and the same behavior could be present in adults with TBI as well. The difference between cognitive ToM and affective ToM was studied by Preis et al. (2017) and stated that affective ToM is most likely to get affected than cognitive ToM, however further studies should be done to prove this as a strong point.

### **2.3. ToM and Brain injury**

Study done by Happe et al., (1999) is one of the oldest studies which is of great significance in the field of theory of mind post brain injury was influenced by the nature of ToM in individuals with autism. Two studies were done to understand the nature of ToM in Right Hemisphere Damage (RHD) and Left Hemisphere Damage (LHD) respectively. 8 patients with RHD post-stroke and 5 individuals with LHD post-stroke were taken as participants and were compared with controls. The tasks were story comprehension, single cartoon task, and cartoon pairs. Study 1, showed that patients with RHD do have impairment in comprehending stories and cartoons which would demand attribution of mental state. In the case of study 2, patients with LHD also had little difficulty while performing ToM tasks compared to non-mental tasks. Post this, the authors claimed that the effect of LHD on ToM is not significant.

A study on children with TBI found that their performance for non-ToM tasks was better and this shows that the ability to keep information and to analyze the information is present (Dennis et al., 2012). However, the performance on ToM tasks was poor, and also with increasing severity ToM was more affected. Task developed by Dennis et al was used, where different pictures were shown and response is elicited by asking yes or No questions.

ToM of individuals with (5 individuals with severe TBI) and without TBI focusing mainly on conversation level was examined by Byom and Turkstra (2012). Participants were made to have a conversation with age-matched peers in which the topic of conversation would gradually enter different levels they have disclosed themselves to have effective communication and also they were expected to use more and more mental state terms in intimate topics. Authors found that though the use of mental state terms increased during the intimate topic of conversation in both the groups, but the extent to which the normal group used was way more than that used by individuals with impaired ToM post-TBI. They have also mentioned that this would act as a serious hurdle to have effective social communication. According to Turkstra et al. (2001), Martin and McDonald (2003), Bibby and McDonald (2005), post-TBI individuals have difficulty processing social information, which eventually affects ToM thereby skills such as beliefs, understanding mental as well and the emotional state gets affected. A study by Havet Thomassin et al. (2006), and Turkstra (2008) reported that individuals with severe TBI fail to perform well in reading the Mind in the Eyes task. This task is all about understanding the emotion of a person by looking at the photograph of their eyes. Tasks such as making an inference out of the comic strip of a story were also difficult post-TBI which shows that brain damage leads to impairment in ToM.



Again a study by Turkstra et al. (2018) found that, when the working memory load increased in individuals with TBI, the performance was poor on Video Social Inference since ToM was impaired.

Bibby and McDonald (2005) studied the impairment in understanding different emotions and other states of mind which is the theory of mind in patients diagnosed with severe TBI. They were given tasks of verbal and non-verbal, first and second-order ToM also included non-mental inferences tasks which were story tasks and cartoon tasks. The performance of the clinical group was poor in the case of both ToM and non-mental inference tasks. Impaired ToM post brain injury is often linked to several aspects including affected usage of gestures, considering interests of others while having the conversation, egocentrism, difficulty in following social rules. They also found difficulty in applying the theoretical aspects in real situations, other communication impairments including difficulty understanding non-literal speech, sarcasm, humor, deceit, etc. Individuals with TBI possess general weakness with respect to ToM, along with other linguistic constraints and limitations in working memory.

An assessment battery was developed to evaluate ToM with reference to Balaban et al (2016) investigation of ToM abilities post RHD with 8 types of tasks. Interestingly, very clear that ToM is affected compared to the control group however, it's not necessary that all those who have RHD will have ToM impairment. A review study to examine the status of ToM after acquired brain injury was done by Bivona et al (2018). ToM is affected in most of the patients who have experienced severe acquired brain injury. They also reported saying this impairment eventually leads to poor outcomes with respect to family, social and

work environment, etc, which is said to be affecting the quality of life of those who are affected and caregivers of that person.

#### **2.4. Intervention for ToM**

A study to probe into intervention post-TBI focusing on social aspects was conducted by Ylvisaker, (2005). Focusing on rehabilitation of cognitive, behavioral, and social domains to help the individual recover overall is important. The author collected the results of many different studies which were targeting intervention of behavioral aspects and social interactive competence post-TBI. He concluded by saying, social skills, getting along with peers, maintaining good friendships are important since an individual with deviant social skills are not easily accepted which in turn leads to depression as well. In order to improve their social life, training Theory of Mind is very important as this helps them to understand what has to be told and what should not be told in the given situation so that the communication becomes more effective at the same time this allows them to be more inclusive in the society since they become more sensible by being able to recognize the right emotion. Training with a view to work on impaired ToM helps individuals to be well fit in society. Few aspects that have to be considered during intervention for social wellbeing such as counseling communication partner, who spends most of the time with the patient to enhance the competence of communication, working on behaviors which are important to be socially active, videos can also be used to train. Situational training has to be considered to target the most vulnerable situation in which the person goes off track so that they will be less stressed.

A pilot study on training ToM after RHD was conducted by Lundgren et al. (2007). The basis of training is the model by Wellman et al. (2002) which makes use of thought bubbles to represent the mental state of a person, which provides clear and graphical means to act for mental states of people. It was made sure that the thought bubble is displayed well within the visuospatial capacity of the subjects. Stimuli were a basic representation of the characters in a two-floor house. Before starting the training subjects were assessed using the Cognitive and Linguistic Quick Test (Helm-Estabrooks, 2001), and many baselines were checked followed by the presentation of stimulus which had a thought bubble above the head of a character that represented their thoughts regarding different objects and the subject has to decide what the thought of the character would be based on the knowledge they have for the object and beliefs of the other character of that house in the given situation. Following this, they were also asked to forecast the behavior based on their mental state. This task focuses on first-order beliefs and then on second-order beliefs as well. Authors found that even the individuals with significant RHD also can undergo training and there was a positive response after receiving the training. So it is recommended that the person with RHD years after stroke can undergo training for ToM.

The deviant social skills are often seen in patients with TBI and this makes them reluctant to treatment so the problems like poor social relationships, difficulty at the workplace, and they also find it hard to carry on independent living according to Driscoll et al.(2011). This review study exposed that social impairments can be effectively treated in individuals with brain damage, however, the support for such interventions is not strong enough to generalize. Since there is a rising number of brain injuries among civilians and military personnel, it is very much necessary to

come up with effective strategies and therapy methods to treat such impairments faster. There are very limited training materials or manuals dedicated to training individuals with impaired ToM post brain injury. ASHA also considers working on these domains as its scope of practice as it stresses effective communication.

Project on training ToM, mentions that there are quite good number of studies related to intervention done that shows no significant improvement in carrying over the skills learned in the session to the outside world (Jansen, 2015). Speech-language pathologists (SLPs) play an important role in enhancing ToM and thereby communication ability. According to the author's point of view, it is important to come up with effective training strategies or activities to train ToM and also to compile all the materials available to make it easy and accessible for SLPs.

The treatment of TBI provided by SLPs globally was studied by Davee (2014). 60 SLPs from Sweden, Sri Lanka, Cyprus, Trinidad and Tobago, and the United States were part of this study as SLP is one of the disciplines that work closely with TBI patients in assessing communication skills as well as treating them. ASHA mentioned that an overall aim of an SLP working with patients with brain injury is to make a plan for the treatment during the initial stages after the damage till the patient has reached the level of being independent. As part of the study, SLPs from different parts of the world could fill the form and which was available on a social media platform and the link was also mailed. Four questions were asked which included the location of work, how often have they seen patients with TBI, usage of the International Classification of Functioning, Disability, and Health (ICF) while assessing and treating patients with TBI, and the problem faced

by them while providing service. One of the answers to the last question was about the lack of resources for training or treatment which was given by an SLP working in Sri Lanka.

The use of stories, images, and certain oral stimuli followed by group conversation in a group for adults to train ToM is recommended by Cavallini et al. (2015). These tasks were followed by questions to make sure that all the adults are taking part in the group conversation to discuss what they feel. Taking few previous studies into consideration, complex social scenarios were given and were asked to solve the problem present in the given situation and were asked to explain how they would do that, as this was considered as a useful way to make patients involve actively in the training protocol (Bottiroli et al., 2013). The authors further said that this study could pave the way for more research focusing on intervention as there are not many studies done.

In sixty-one individuals with TBI, the social cognition and emotional regulation training efficacy were checked by Westerhof -Evers (2017). In this Randomized Control Trial study, patients were trained for difficulties in recognition of emotion, ToM as well as socio-behavioral skills, and these aspects were trained under three different modules. There was significant improvement in facial emotion recognition, ToM, and socio-behavioral skills, 5 months post-treatment which improved quality of life and rapport with the caregiver. This study is evidence that a structured treatment plan can surely help overcome hurdles in the way of effective communication present due to impaired ToM.

A review study also mentions that many studies have been reported to be having a positive impact on conduct after receiving training for different domains

of social cognition including ToM (Njomboro, 2017). A study done by Helffenstein and Wechsler (1982) where Interpersonal Process Recall training was given to show improvement in interpersonal skills compared to the control group.

Bornhofen and McDonald (2008) also reported similar results after training patients, who had acquired brain injury to help them recognize emotions. The author finds the use of virtual means of training using different technologies, as it is found to help patients improve social behavior and found it more realistic and thus can be easy to use it for generalization.

With reference to the above review on ToM and the training of ToM, it is quite clear that the manuals dedicated solely to train patients with brain injury are very limited. In India, there are no manuals developed to help an SLP to provide treatment to overcome the impairment of ToM in adults with brain damage or injury. So the current study is an attempt to develop a manual including basic information about the Theory of Mind and the activities to train adults with brain damage.

## **Chapter 3**

### **Method**

The theory of mind is one of the factors which is affected in individuals with brain damage. The present study aimed to develop a manual consisting of activities to teach the theory of mind to enhance communication and to conduct a pilot study of the manual on individuals with brain damage for a better understanding of the manual in terms of its administration and assess the effectiveness in enhancing communication through the theory of mind.

#### **3.1 Research Design**

This study was on the development of a manual following application-based research.

#### **3.2 Participants**

In the present study, three participants were considered, Participant A was an individual with brain damage, and Participant B and Participant C were two neurotypicals. Neurotypicals included were one male and one female aged 57 years and 51 years respectively.

Participant A, an individual with brain damage diagnosed as Anomic Aphasia with Neurogenic Stuttering by a certified Speech-Language Pathologist in the Department of Clinical Services, All India Institute of Speech and Hearing, Mysuru was considered as a participant in the clinical group. Participant A acquired this condition after an incident of Middle Cerebral Artery (MCA) infarct confirmed through Computerized Tomography (CT Scan) neck angiogram revealing an abrupt cut-off of the proximal M1 segment of the left MCA territory infarct as described to secondary M1 occlusion. Magnetic Resonance Imaging (MRI) results had shown

that there was an acute left MCA territory infarct secondary to M1 occlusion. Participant M was a 35-year-old male and obtained a score of 90 as Aphasia Quotient (AQ) on the administration of Western Aphasia Battery (WAB) (Kertesz, 1982) and was diagnosed as Anomic Aphasia. Apart from the linguistic assessment, the cognitive assessment using Montreal Cognitive Assessment (MoCA) (Nasreddine et al., 2005) revealed a score of 22. MoCA being a language-dependent assessment tool, the participant's naming difficulties and word-finding difficulties explain low scores. The details of the scores for WAB and MoCA are mentioned in Table 1 and Table 2 respectively.



**Table 1***Score of Participant- A on the administration of WAB*

<b>WAB Subtest</b>	<b>Participant Score</b>	<b>Maximum Score</b>	<b>Total for Aphasia Quotient</b>
<b>Spontaneous Speech</b>			
a) <b>Information content</b>	9	10	17
	8	10	
b) <b>Fluency</b>	17	20	
<b>Total</b>			
<b>Auditory verbal comprehension</b>			
a) <b>Yes-No questions</b>	60	60	
	60	60	
b) <b>Word Recognition</b>	80	80	
	200	200	10
c) <b>Sequential commands</b>			
<b>Total</b>			
<b>Repetition</b>	92	100	9.2
<b>Naming</b>			
a. <b>Object Naming</b>	58	60	
b. <b>Word Fluency</b>	12	20	
c. <b>Sentence completion</b>	8	10	8.8
	10	10	
d. <b>Responsive Speech</b>	88	100	
<b>Total</b>			
		<b>Aphasia Quotient</b>	90
		<b>Diagnosis based on AQ</b>	Anomic Aphasia

**Table 2**  
*Scores of Participant A on Montreal Cognitive Assessment*

<b>Montreal Cognitive Assessment (MoCA)</b>	
Visuospatial/Executive	4/5
Naming	1/3
Attention	6/6
Language	2/3
Abstraction	0/2
Delayed Recall	3/5
Orientation	6/6
Total score	22/30
	<b>Mild cognitive</b>
<b>Impression</b>	<b>impairment</b>

On general observation, participants did not exhibit any signs of neglect or hemianopia. Concerning the associated problems, the participant did not exhibit any behavioral deficits like aggressiveness or temper tantrums. The participant would attend 2-3 hours of work every day and would adapt good communication strategies. However, the speech fluency was affected, and had to refrain from the nature of work/official correspondence. The participant showed good motivation in attending regular speech-language therapy and was receiving speech-language training sessions five days a week with each session of 45 minutes per day for about two months. The other detailed demographic information of Participant A is summarized in Table 3.

**Table 3***Demographic details of the Participant A*

<b>Variables</b>	<b>Participant detail</b>
Name	Participant A
Sex	Male
Age	35 years
Native language	Kannada
Languages known	Kannada, English
Years of education	12 years
Present/former occupation	Receptionist
Number of days post-morbid	4 months
Handedness	Right
Neglect	Absent
Hemiparesis	Absent
Hemianopia	Absent
Site of lesion on CT and MRI	Left MCA territory

The participant's consent was obtained for his participation in the present study through virtual mode. The participant was verbally informed about the purpose, procedure, and estimated duration of the administration of the training module with the instructions read to the participant in the Kannada language. An e-copy (Softcopy) of AIISH informal consent (Appendix- A) was taken from the participant. The participant had to follow specific inclusionary and exclusionary criteria to participate in the present study as listed below.

***Inclusionary criteria for individuals with aphasia (Participant- A)***

- Participants had been diagnosed with Anomic Aphasia with neurogenic stuttering.
- The participant obtained a score between the range of 25 – 21 on the administration of MoCA (Montreal Cognitive Assessment) (Nasreddine et al., 2005).
- The participant's native language is Kannada.
- The handedness is the right hand.
- The post morbid duration with 6 months.
- Participants completed a minimum 10 of years of formal education (high school).
- The participant with a history of a single episode of brain stroke due to cerebral vascular accident (CVA) and left Middle Cerebral Artery infarct confirmed with a Neurologist.
- The participant with a post morbid duration of at least 1 – 4 months during the time of administration of assessment tools and at the time of testing the manual.

***Exclusionary criteria for individuals with aphasia (Participant- A)***

- Participants with age-related vision problems, abnormal or uncorrected visual acuity, and poor dexterity.
- Participants with a known history of pre-morbid psychological, neurological, and other cognitive deficits.
- Participants not willing to provide a written or e-copy of the AIISH ethical consent.

**3.3 Procedure**

The study was conducted into two phases, PHASE 1: Construction of the treatment manual for training Theory of Mind and PHASE 2: Field test the treatment manual on an individual with brain damage.

**3.3.1 PHASE 1: Construction of the treatment manual for training Theory of Mind**

***3.3.1.1 Step I: Selection of target domain of Theory of Mind (ToM)***

Theory of mind is one of the most important components which help to have effective communication; however, it is often seen impaired in different conditions. Brain damage (focal or diffuse) is one such condition wherein communication might not be effective due to impaired ToM which is eventually because of the damage caused. In the present study, the ToM training manual is developed based on the tasks taken from Dennis et al. (2013). Authors have studied different types of Theory of Mind, namely (1). Affective Theory of Mind and (2). Cognitive Theory of Mind. The same idea has been put forth in preparing the activities which can be used on the Indian population and also make it more

structured to help clinicians who deal with individuals with brain damage showing deficits in Theory of Mind.

### ***3.3.1.2 Step 2: Preparation of the stimulus material***

(1). Affective Theory of Mind- This is mainly about understanding, that there are times where one might have to hide the feelings that the person has been feeling inside and display other expressions which are appropriate to the given situation, as well as the state of mind of the communication partner. This is said to be affected due to impaired Theory of Mind post brain injury or trauma. The task by Dennis et al., (2013) is the Emotional and Emotive Faces Task (EEFT) developed as a continued part of the task of comprehension which was developed by Dennis et al in 1993. Here the ability to analyze the emotional expression as well as the emotion which has been hidden purposely is studied.

Vignettes or short narratives involving different emotions like happy, yucky, scared, angry, and sad were developed in the Kannada language, based on the principle of Dennis et al., (2013). The narratives (two to three sentences) were formed by considering the cultural and ethnic factors of the target population. Narratives were constructed based on an individual's social situation. In order to make it more relatable, this includes home, office, restaurant, school, meeting, relative's house, etc. Later the narrative was translated into the Kannada language and cross-checked the translated version using an online site, English to Kannada Translation Tool powered by Google Translation Application Programming Interface (API). The narrative would be read to the participant, after listening to the narrative, the individual has to answer the question. These questions were also

framed in English and then translated into the Kannada language and cross-checked for any syntactic errors by a native Kannada speaker.

The questions for happy, yucky, scared, angry, and sad emotion were (1). '*concealment question*' which refers to the question related to why the character is hiding his or her emotion, followed by a (2). '*feel inside question*' which is a question related to what would be the feeling of the character when that incident took place (with reference to the vignette or narrative), and a (3). '*look on face question*' and this refers to how did the character look on his face as to what is the emotion that he chose to express or show with reference to the vignette or narrative read in the Kannada language. Table 3.4, shows the detail of the stimulus framed for training affective ToM.



**Table 4**

*Example of the stimulus of Affective Theory of Mind (English version)*

<b>HAPPY VIGNETTE</b>	Ram has fun playing a trick on his sister. So he takes his sister's favorite book and hides it. Ram does not want to show how he feels because his sister would be mad if she knew ram did it.
<b>Concealment question:</b>	What would be the expression of Ram's sisters' face, if they come to know how Ram feels?
<b>Feel inside question:</b>	How did Ram feel inside when his sister couldn't find the toy
<b>Look on face question:</b>	How did Ram look on his face, when his sister couldn't find her book?
<b>YUCKY VIGNETTE</b>	Ram is eating lunch with his friend who has made rice for him, which is undercooked. Ram does not want to show how he feels about roti in case his friend will not invite him to lunch.
<b>Concealment question:</b>	What would be the expression of Ram's friends' face, if they come to know how Ram feels?
<b>Feel inside question:</b>	How did Ram feel inside when his friend made him under cooked rice
<b>Look on face question:</b>	How did Ram look on his face inside when his friend made him under cooked rice
<b>SCARED VIGNETTE</b>	Ram is afraid because he scored less in the exam. Ram doesn't want to show how he feels because his dad will punish him if he comes to know about it.
<b>Concealment question:</b>	What would be the expression of Ram's fathers' face, if they come to know how Ram feels?
<b>Feel inside question:</b>	How did Ram feel inside when he got to know the marks he scored
<b>Look on face question:</b>	How did Ram look on his face when he got to know the marks he scored

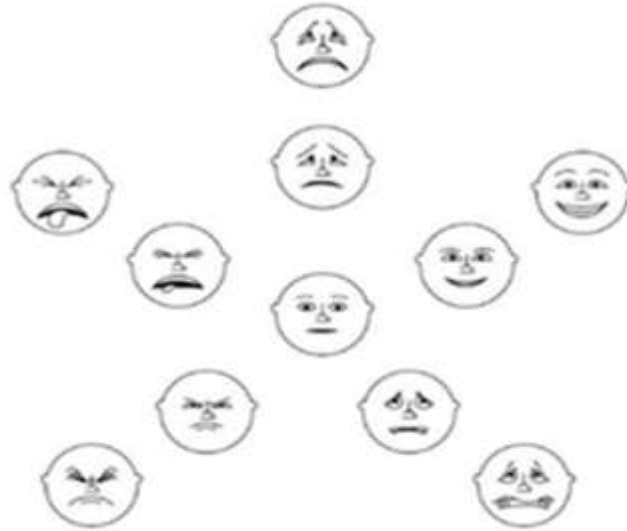
Table 4 continuation

<b>ANGRY VIGNETTE</b>	Ram feels mad because his friend accidentally tears a page of his book. Ram does not want to show how he feels because he knows, his friend did not tear the page on purpose. Ram's friend will be upset if he knows how Ram feels.
<b>Concealment question:</b>	What would be the expression of Ram's friends' face, if they come to know how Ram feels?
<b>Feel inside question:</b>	How did Ram feel inside after his friend tore the page
<b>Look on face question:</b>	How did Ram look on his face after his friend tore the page
<b>SAD VIGNETTE</b>	Ram feels unhappy because he tries to sit on his chair but he falls on the floor and hurts himself. He doesn't want to show how he feels because his classmates will laugh
<b>Concealment question:</b>	What would be the expression of Ram's classmates' face, if they come to know how Ram feels?
<b>Feel inside question:</b>	How did Ram feel inside when he fell
<b>Look on face question:</b>	How did Ram look on his face when he fell over.

In this 'Affective Theory of Mind' task, after asking concealment, feel inside, and look on face questions, a set of facial emotions were shown and the participants were expected to point to the emotion that they think is the answer. The set of emotions was adapted from the work done by Dennis et al, (2013). Thus, the vignettes or narratives of the manual were developed to elicit emotional responses such as (1) happy, (2) yucky, (3) scared, (4) angry, and (5) sad, as shown in Figure 1.

## Figure 1

*Set of facial emotions as responses*



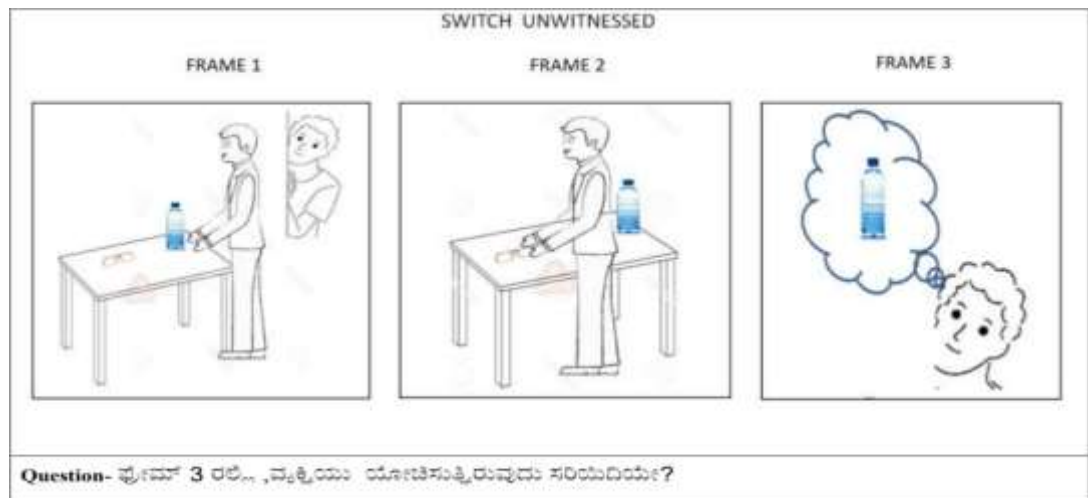
(2). Cognitive Theory of Mind- This involves the close-ended type and open-ended type. The close-ended type involves mind-reading of the communication partner, getting hold of the context, and carrying on the conversation. This helps to understand false beliefs, which is about -he thinks that, she feels that, etc. and to explain this further, it is about the belief and it says that a person can have a belief which might be opposite to what is actually happening. However, according to them, that is the truth. Task used by Dennis et al., (2013) is to answer by saying 'yes' or 'no' to the question asked based on the picture frames shown to the participant. A similar task has been used in the current study. Modifications have been made with respect to the selection of the objects to be used in the stimulus picture. Since this is the manual targeting adults with brain damage and especially in Kannada speakers, cultural and ethical aspects were considered.

Three picture frames are present under each condition. The frame includes a picture of some object, a man picking up an object, and an observer.

The picture stimulus was subcategorized based on four terms namely 'switch unwitnessed', 'switch witnessed', 'unswitched witnessed', and 'unswitched unwitnessed' based on the change in the activity shown in the picture. For example, change in the activity, the absence of the observer, or without the knowledge of the observer is called a switch unwitnessed as shown in Figure 2. Change in the activity shown in the picture, in the presence of the observer or with the knowledge of the observer is called switch witnessed. Unswitched witness refers to the condition where there would not be any change in the activity and the observer has witnessed this. Unswitched unwitnessed is when there is no change in the activity and the observer has not witnessed it. Instructions were given in Kannada, which is to carefully observe the picture frames and has to tell whether or not what the observer is thinking is correct or incorrect.

**Figure 2**

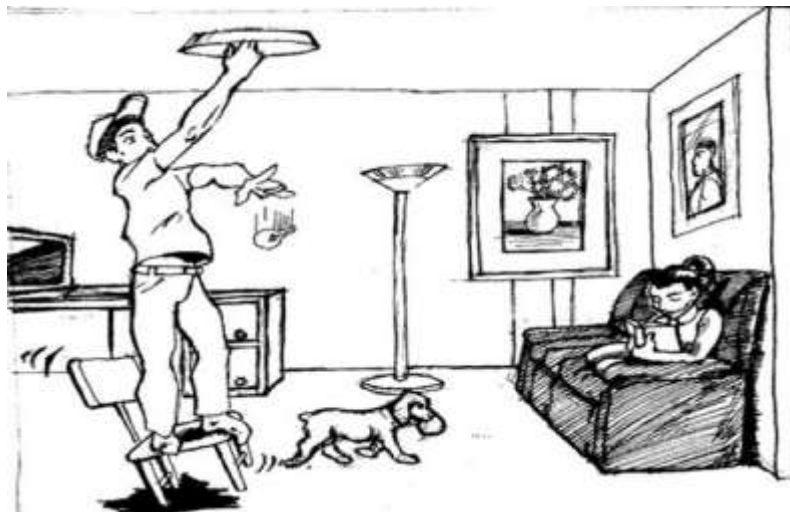
*Example of cognitive ToM- close-ended question*



The open-ended task for Cognitive Theory of Mind involved the participant explaining or describing to answer the question rather than saying it in one word. This includes two stimuli; this means two pictures were shown in total. These black and white pictures are hand-drawn by artists, however, the reference picture is from a site called Aphasia bank. Pictures were chosen by taking into consideration relevance with respect to the population with whom this manual is going to be used. An example of an open-ended task of cognitive ToM is as shown in Figure 3.

**Figure 3**

*Example of cognitive ToM- open-ended questions*



The constructed examiners manual (Appendix - B) where (where Appendix B1 has activities for Affective ToM, Appendix B2 has activities for cognitive ToM close ended Appendix B3 has activities for Cognitive ToM open ended) is for adults with brain damage in Kannada, different scenarios were noted which are appropriate to use with adults, the main intention here was to make the scenarios of the stimuli more related to individuals daily routine at home, by making use of objects that are commonly used to carry out their daily routine. The list of objects

was into the lexical categories like eatables, stationaries, clothing, utensils, and other personal belongings. To be more specific, the incidents that take place at home with siblings, father, and mother of the main character of the narrative have been represented in the scene of the picture narrative or vignette. Along with this, other picture scenarios considered were public places like hotels, offices, and traffic signals. Each picture had a main character to create a narrative resulting in particular responses. This was finally arranged in a word document and then converted to .pdf format. The entire set of stimuli for the constructed manual as well as target responses of each of the stimuli are given in Appendix C.

### **3.3.1.3 Step 3: Instruction and scoring**

Instructions for each task are given in the manual in both Kannada and English. The participant had to be instructed verbally. The scoring pattern is also given in detail in the manual (Appendix - D)(D1-Affective Theory of Mind) (D2-Cognitive Theory of Mind- Close-ended) (D3- Cognitive Theory of Mind- Open-Ended).

*For Affective Theory of Mind tasks verbatim instruction was ‘I will read out a small narrative. After listening to the narrative, I will ask you a few questions on the emotions of the main character of the narrative. The questions will be related to the hidden emotion and emotion displayed on the face of the main character. You have to select one appropriate emotion from a set of emotions displayed as an answer to the questions asked’.*

The scoring pattern for all three questions was separately rated. The two-point rating scale was used to rate all three questions where for choosing appropriate expression the participant would get a score- 1 and for inappropriate

expression, the participant would get a score- 0 for the ‘concealment question’ as well as ‘feel inside question’. For the ‘look on face question’, a score- 2 would be obtained for appropriate expression- and for choosing a neutral face/minimizing the felt emotion the participant would get a score- 1.

For close-ended Cognitive Theory of Mind, verbatim instruction was – *‘I will be showing a set of three picture frames (frame-1, frame-2, and frame-3), depicting an action. After which, you will be asked questions based on the scenes/action shown in the picture for which you have to answer by saying ‘Yes’ or ‘No’.*

The scoring pattern for close-ended Cognitive Theory of Mind was a score- 1 for correct answers and a score - 0 for incorrect answers.

For the open-ended Cognitive Theory of Mind, verbatim instruction was- *‘I will show you a picture depicting a scenario. After looking at the picture carefully, I will ask you questions, for which you have to give elaborated answers’.*

The scoring pattern for open-ended Cognitive Theory of Mind was a score of -1 for each description and the maximum score would be score – 3 and for not answering, a score of – 0 would be given.

#### **3.3.1.4 Step 4: Content validity of the constructed manual**

The constructed treatment manual for training Theory of Mind was subjected for content validation using a rating questionnaire developed by Goswami et al( 2010) consisting of twenty parameters to be rated on a 5 point rating scale like very poor-0, poor-1, fair-2, good-3, and excellent-4. Google form was prepared for easy documentation. The rating was majorly for the verbal narratives or vignette stimuli with their responsive emotional expressions for each stimulus of different types of ToM. This content validation was done by two Speech-Language

Pathologists (SLP's) with Master's Degree in Speech-Language Pathology. The parameters used to judge the content of the manual were "simplicity", "familiarity", "size of the picture", "color and appearance", "relevance", "iconicity" and "flexibility". The overall manual was validated on the parameters (Appendix – E). Along with the rating process, the validators were also given the liberty to suggest the changes that they think are appropriate to incorporate in the manual. Suggested changes were incorporated based on the need and if relevant to the validation processes. All the suggestions given by the validators were incorporated in the constructed manual and the manual was later administered to an individual with brain damage.

### **3.3.2 Phase 2: Field test of the treatment manual on an individual with brain damage.**

The constructed manual was administered to an individual with brain damage. The brain damage leading to a condition called aphasia was selected as a participant to administer the constructed manual on Theory of Mind. Written consent was taken from the participant before the administration of the manual.

#### ***Manual administration***

The manual was administered online, using Zoom. Total five sessions of forty-five minutes each were taken to administer the manual. Started with affective ToM followed by close-ended cognitive ToM and open-ended cognitive ToM.

**Affective ToM:** In the first session, participants were shown different facial emotion and explained what it stands for. Then, participants were asked to identify the emotions. The first session mainly concentrated on the correct identification of the emotion. Here participant was oriented to the picture of facial emotion with the corresponding lexical terms. After this, the participants were asked to name the



lexical term of the emotion shown to them and once the participants were able to do this, the next step that is the trial task was administered. The participants had a printout of the picture of facial emotion in his/her hand. The participants were then instructed to listen to the narrative and then answer the question by pointing at the correct emotion. Once the participants completed the trial task successfully, the training stimulus was narrated and was scored based on the responses. In the second session, training stimuli were shown one by one, and progression from one stimulus to another was done after obtaining the right answer in the first stimulus.

Cognitive ToM: This was administered soon after the completion of the affective ToM tasks. Participants were instructed in Kannada as to how to perform the task, after which trial stimulus was administered. Once the participants completed the trial task successfully, training stimuli were administered and were scored accordingly. Participants were free to reattempt to the stimulus where they went wrong. Cues were also given wherever required.

### **3.4 Scoring and analysis**

The scoring method was adapted by Dennis et al, (2013) for (1). Affective Theory of Mind and (2) Cognitive Theory of Mind (close and open-ended). For Affective Theory of Mind, the participant's responses were documented and the quantitative rating was done using a two-point perceptual rating as 'Appropriate Expression- 1 score, and Inappropriate Expression- 0 scores' for the concealment question and feel inside question. With reference to the Look on face question the quantitative rating was done using a two-point perceptual rating as 'Appropriate Expression- 2 score and Neutral face or minimizing the felt emotion- 1 score. Each

session of the speech therapy was video recorded and later analyzed and scores were tabulated for further analysis.

For Cognitive Theory of Mind (close-ended), the participant's responses were documented for all four ways of assessing cognitive theory of mind. For the Switched Witness, Switched Unwitnessed, Un-switched Witnessed, and Un-switched Un-witnessed, the observed responses scored by giving 1 for correct responses and 0 for incorrect responses. For Cognitive Theory of Mind (open-ended), the participants' responses were scored based on the description given based on the shown picture. Each correct response carried a score of 1. Scores of all the tasks were recorded in the score sheet available in the manual and subjected for further analysis as described in the following chapter.

## Chapter 4

### Result

The current study aims at developing a manual to train Theory of Mind (ToM) in individuals with brain damage, and carrying out a pilot study on one individual with brain damage. The constructed manual contains activities under two main categories (1). Affective ToM and (2). Cognitive ToM. There are five sets of stimuli consisting five narratives targeting five different emotions in each set, under Affective ToM, which has been adapted from the tasks developed by Dennis et al, 2013. Following this is the Cognitive ToM which has five sets of closed-ended questions followed by two open-ended questions. The results of the present study are documented under 1) Content validation of the developed manual 2) Pilot study in terms of administration of the manual on individuals with brain damage.

#### 4.1 Content validation of the constructed treatment manual

have been considered as validated response and is given in Table 6 The constructed treatment manual was subjected to content validation by a Speech-Language Pathologist. The responses of the validators were recorded by following the guidelines in the questionnaire developed by Goswami et al. (2010). The overall majority score obtained for the activities of the manual was considered as final for the content validation as shown in Table 5. and the detailed validation for the stimulus of each activity of the manual is shown in Appendix B. The entire manual was rated for parameters such as presentation, trainability, generalization, feasibility, volume, the scope of practice, and coverage of parameters where the majority ratings of the validators were found to be similar, which

**Table 5**

*The majority rating of the validators' for the tasks (stimuli) of 'Manual for Theory of Mind Activities'*

<b>Parameter</b>	<b>Affective ToM</b>		<b>Cognitive ToM(close ended)</b>		<b>Cognitive ToM(open ended)</b>	
	Validator 1	Validator 2	Validator 1	Validator 2	Validator 1	Validator 2
<b>Simplicity</b>	Good	Fair	Excellent	Good	Good	Fair
<b>Familiarity</b>	Excellent	Good	Excellent	Good	excellent	Good
<b>Size of the picture</b>	Excellent	Fair	excellent	Good	excellent	Good
<b>Colour and appearance</b>	Good	Good	Excellent	Good	good	good
<b>Arrangemen</b>	Good	Fair	Excellent	Good	Fair	Good
<b>Relevance</b>	Excellent	Good	Excellent	Good	Good	Good
<b>Iconicity</b>	Excellent	Good	Excellent	Good	Good	Good
<b>Flexibility</b>	Excellent	Good	Excellent	Good	Good	Good

**Table 6***Validators' rating for the manual*

<b>Parameters</b>	<b>Validator 1</b>	<b>Validator 2</b>
<b>Presentation</b>	Excellent	Good
<b>Accessibility</b>	Good	Good
<b>Trainability</b>	Good	Good
<b>Stimulability</b>	Good	Good
<b>Generalization</b>	Good	Good
<b>Feasibility</b>	Good	Good
<b>Scope of Practice</b>	Excellent	Good
<b>Scoring Pattern</b>	Good	Good
<b>Publications, outcomes and developers (Professional Background):</b>	Yes	Yes
<b>Coverage of parameters (Reception &amp; Expression):</b>	Excellent	Fair

#### **4.2. Performance on the administration of Affective Theory of Mind activities**

The task of the affective theory of mind was to recognize the facial emotions for the narrative provided by the examiner. The narratives were followed by three types of questions, the concealment question, look on face question, and feel inside question.

Before starting with the trial task, Participant A was shown different facial emotions and the lexical term for each of them, and after this, the participant was asked to recognize facial emotion by giving the lexical term, after training the participant for 15 minutes, he was able to name the happy, sad, yucky and neutral facial emotion correctly in the first attempt, thus, the participant was aware of the emotions. But he was confused between anger and scary emotions and named it interchangeably. However, he got the rest of the emotions (anger and scared) right in his second attempt. The participant was attentive to the narrative and answered the question by selecting the right emotion in the first attempt itself.

Participant A showed accurate responses for the trial stimulus. With reference to target or training stimuli, the task was carried out with five sets of training stimuli. Participant A showed accurate identification of all the five emotions for Set 4 and Set 5. In Set 1, there was incorrect identification of 'Yucky vignette emotion' and for Set 2, there was incorrect identification for 'Angry vignette emotion' and for Set 3, there was incorrect identification for 'Scared vignette emotion'. The responses of the neurotypicals were accurate for Set 2, Set 3, Set 4, and Set 5. There was incorrect identification for 'Scared vignette emotion' by Participant B and correct identification by Participant C.

Participant A was able to respond to the Feel Inside Question by accurately identifying all the emotions except yucky emotion. Participant A showed accurate identification of all the five emotions for Set 4 and Set 5. With reference to Set 1, there was incorrect identification for 'yucky vignette emotion' and in Set 2 incorrect identification for 'happy and yucky vignette emotion', and Set 3 incorrect identification was for 'angry vignette emotion'. The responses of the neurotypicals were accurate for all the emotions and at all the sets.

Compare to Concealment Question and Feel inside Question, the responses of Participant A for the Look on Face Question were relatively poorer. The response of Participant A incorrectly identifying the five facial emotions was scattered with reference to five-set of stimuli. In Set 1, Participant A incorrectly identified neutral emotion for 'angry vignette' and 'sad vignette' and correct identification of appropriate emotion for 'happy', 'yucky', and 'scared'. For Set 2, Participant A had correct identification of emotion for 'scared vignette emotion' and 'sad vignette emotion'. For Set 3, Participant A had correct identification of appropriate emotion for 'yucky vignette emotion' and 'sad vignette emotion'. For Set 4, Participant A had correct identification of appropriate emotion for 'happy', 'yucky', and 'sad'. Finally, for Set 5, Participant A had correct identification of appropriate emotion for 'yucky', 'angry', and 'sad'. From this, it was observed that Participant A had no difficulty in identification of 'yucky vignette emotion' and suggested this (yucky) emotion to be the easiest to identify when compared to other emotions like happy, sad, scared, and angry. The responses of the neurotypicals were better than the Participant A. For Set 1, both the neurotypical got the correct identification of appropriate emotion, however, Participant C had a response as

incorrect identification of neutral emotion for 'angry'. For Set 2, Participant B had incorrect identification of neutral emotion for 'happy' and 'yucky' vignette emotion. For Set 3, both Participant B and C had incorrect identification of neutral emotion for 'happy', and for Set 4, Participant B had incorrect identification of neutral emotion for 'happy'. Finally for Set 5, both the participant had correct identification of appropriate emotion for all the five emotions. The results of the 'affective theory of mind' are summarized in Table 7. However, repetition of the narrative was required in few vignettes, but the participants had to be very attentive throughout the set of tasks.





### **4.3. Performance on the administration of Cognitive (closed-ended) Theory of Mind activities**

The close-ended type of cognitive theory of mind involved mind-reading of the communication partner, getting hold of the context, and carrying on the conversation, and answer to the questions corresponding to the picture scene shown to them as 'yes' or 'no'. Participant A showed correct identification for all five sets of stimuli by providing accurate 'yes' and 'no' responses to the four choices of picture scene like switched unwitnessed, switched witnessed, unswitched unwitnessed and unswitched witnessed. A similar response was seen by the neurotypicals and there was no difference between Participant A, Participant B, and Participant C and they did not exhibit any difficulty in carrying out this task. The results of the cognitive theory of mind for closed-ended type are shown in Table 8.

**Table 8***Response and scoring of the participants for the cognitive (close-ended) theory of mind*

<b>Cognitive theory of mind (close-ended)</b>					
<b>Set no.</b>	<b>Stimul no.</b>	<b>Task</b>	<b>Score ( Correct response- 1 Wrong response-0 )</b>		
			<b>Participants</b>		
			<b>A</b>	<b>B</b>	<b>C</b>
<b>Set - 1</b>	1.1	Switch unwitnessed	1	1	1
	1.2	Switch witnessed	1	1	1
	1.3	Unswitch unwitnessed	1	1	1
	1.4	Unswitch witnessed	1	1	1
<b>Set - 2</b>	2.1	Switch unwitnessed	1	1	1
	2.2	Switch witnessed	1	1	1
	2.3	Unswitch unwitnessed	1	1	1
	2.4	Unswitch witnessed	1	1	1
<b>Set - 3</b>	3.1	Switch unwitnessed	1	1	1
	3.2	Switch witnessed	1	1	1
	3.3	Unswitch unwitnessed	1	1	1
	3.4	Unswitch witnessed	1	1	1
<b>Set - 4</b>	4.1	Switch unwitnessed	1	1	1
	4.2	Switch witnessed	1	1	1
	4.3	Unswitch unwitnessed	1	1	1
	4.4	Unswitch witnessed	1	1	1
<b>Set - 5</b>	5.1	Switch unwitnessed	1	1	1
	5.2	Switch witnessed	1	1	1
	5.3	Unswitch unwitnessed	1	1	1
	5.4	Unswitch witnessed	1	1	1
<b>Cognitive theory of mind (close-ended)- total</b>			<b>20 / 20/20</b>	<b>20/20</b>	
<b>Remark:</b>					

#### **4.4. Performance on the administration of Cognitive (Open Ended) Theory of Mind activities**

The open-ended task for Cognitive Theory of Mind involved the participant to explain or describe the emotional content of the picture shown to them as a stimulus. The description or explanation should be the answer to the questions (probe questions asked by the examiner) rather than saying it in one word. The description provided by Participant A for Question 1 and Question 2 for the picture stimulus 1 and 2 respectively is illustrated below in Table 9. Response of participant B and participant C is in Table 10 and 11 respectively.

**Table 9**

*Response of Participant A for of cognitive (open-ended) theory of mind*

<b>Stimulus 1</b>	
<b>Preferred descriptions</b>	<p>1. ಬೆಕ್ಕಿಗೆ ಬೆದರಿಕೆ ಹಾಕುವ ನಾಯಿಯನ್ನು ದೂರ ಕಳುಹಿಸಬಹುದಿತ್ತು.</p> <p>2. ಸಹಾಯ ಕೇಳುತ್ತಾ ಅಗ್ನಿಶಾಮಕ ಕೇಂದ್ರಕ್ಕೆ ಕರೆ ಮಾಡುತ್ತಿದ್ದೆ.</p> <p>3. ಮರವನ್ನು ಹತ್ತಿದ ವ್ಯಕ್ತಿಯು ಸುರಕ್ಷಿತವಾಗಿ ಕೆಳಗೆ ಏರಲು ಏಣಿಯ ವ್ಯವಸ್ಥೆ ನೀಡುತ್ತಿದ್ದ.</p>
<b>Response</b>	<p>ಒಂದು ಮರ ಇದೆ. ಒಬ್ಬ ವ್ಯಕ್ತಿ ಅಲ್ಲಿ ಹತ್ತಿದಾನೆ ಅಲ್ಲಿ ಆ ಆ ಬೆಕ್ ನ ಆ ಕೆಳಗಿಲ್ಲೇಕು ಅಂತ ಹತ್ತಿದಾನೆ. ಆ ಟಯ್ಮ್ ಅಲ್ಲಿ ಆ ನಾಯಿ ಆ ಆ ಮರದತ್ತ ಬಂದಿದೆ ಆ ಅವ್ನು ಅವ್ನು ಮಗ್ಗು ಆ ರೆಂಬೆ ಹಿಡ್ಕೊಂಡಿದಾರೆ. ನಾನ್ ಅಲ್ಲಿದ್ದೆದ್ದೆ ಸಿಂಪಲ್ ಆಗಿ ಆ ಆ ಆದೆ ಆ ಅಲ್ಲಿ ಬಿದ್ದಿರೋ ಏಣಿನ ಅಲ್ಲಿ ಅಟ್ಯಾಚ್ ಮಾಡಿ ಆ ಅದ್ರಲ್ಲಿ ಹತ್ತಿ ಅಲ್ಲಿಂದ ಹತ್ತ ಇದ್ದೆ ಹತ್ತಿ ಆ ಏಣಿ ಸಪೋರ್ಟ್ ಇಂದ ಬೆಕ್ಕನ್ನು ಇಳಿಸ್ತೆ ಇದ್ದೆ.</p>
<b>Verbatim transcription</b>	<p>/Ondu/ /mara/ /ide/ /obba/ /vyakthi/ /alli/ /hathidane/ /alli/ /aa/ /bekna/ /a/ /kelagilsbeku/ /antha/ /hattidane/./a/ /time/ /alli/ /aa/ /naayi/ /aaa/ /mardathra/ /bandied/ /aa/ /avn/ /avna/ /maglu/ /aarembe/ /hidkondidare/ /Naan/ /alliddidre/ /simple/ /ag/ /aaa/ /ade/ /aa/ /alli/ /biddiro/ /eenina/ /alli/ /attach/ /maadi/ /aa/ /adralli/ /hathi/ /allinda/ /haaththa/ /idde/ /hathi/ /aa/ /eni/ /support/ /inda/ /aa/ /bekkunna/ /ilstha/ /idde/</p>
<b>Score</b>	<b>1</b>

**Table 9 continuation.**

<b>Stimulus 2</b>	
<b>Preferred descriptions</b>	<p>1. ನಾನು ಎಚ್ಚರಿಕೆಯಿಂದ ಮತ್ತು ಹೆಚ್ಚು ಜವಾಬ್ದಾರಿಯಿಂದ ಇರುತ್ತಿದ್ದೆ.</p> <p>2. ಸಹಾಯಕ್ಕಾಗಿ ಕಿರುಚುತ್ತಿದ್ದೆ.</p> <p>3. ಅವನನ್ನು ಕೋಣೆಯ ಒಳಗೆ ಕೂಡಿ ಹಾಕಿ ಹೊರಗೆ ಬರಲು ಪ್ರಯತ್ನಿಸುತ್ತಿದ್ದೆ.</p>
<b>Response</b>	<p>ಅದು ಟಿವಿ, ಟಿವಿ ಆ ನೋಡ್ತಾ ಇದಾರೆ. ಒಬ್ಬ ಹುಡುಗ ಬರ್ತಾನೆ. ಅಲ್ಲ ಕಳ್ಳ ಕಳ್ಳ ಕಳ್ಳ ಬರ್ತಿದಾನೆ.</p> <p>ಇವು ಇವ್ರ ಪಾಡಿಗೆ ಇವು ಟಿವಿ ನೋಡ್ತಿದಾರೆ, ಅದೇ ಆ ನಾನ್ ಅಲ್ಲಿ ಅದೆ ಟಿವಿ ನೋಡದ್ ಬಿಟ್ಟಿಟ್ಟು ಅಲ್ಲಿ ಆ ಕಳ್ಳನ ಆ ಅವಾಯ್ಡ್ ಮಾಡ್ಬೇಕು ಅಂತ ಅಧ್ವ ಕಳ್ಳ ಬಂದ ಅಂತ ಅನಿಟ್ಟಿಟ್ಟು ಪೊಲೀಸ್ ಅವಿಗೆ ಕಂಪ್ಲೇಂಟ್ ಕೊಡ್ಬೇಕಾಗತ್ತೆ.</p>
<b>Verbatim transcription</b>	<p>/Iduu/ /olgade/ /kuthidare/ /adu/ /TV/ /TV/ /aa/ /nodtha/ /idare/</p> <p>/Obba/ /hudga/ /barthane/ /Alla/ /kalla/ /kalla/ /kalla/ /barthidane/</p> <p>/Kalla/ /bandi/ /ella/ /darode/ /maadthidane/ /ivru/ /ivr/ /paadig/</p> <p>/ivru/ /TV/ /nodthidare/ /Ade/ /aa/ /nan/ /alli/ /ade/ /TV/ /nodad/</p> <p>/bitbittu/ /alli/ /aa/ /kallana/ /aa/ /avoid/ /maadbeku/ /antha/ /athva/</p> <p>/kalla/ /banda/ /andbittu/ /police/ /avrge/ /complaint/</p> <p>/kodbekaagatte/</p>
<b>Score</b>	<b>2</b>

**Table 10***Response of Participant B for cognitive (open-ended) theory of mind.*

<b>Stimulus Set 1</b>	
<b>Preferred descriptions</b>	<ol style="list-style-type: none"> <li>1. ಬೆಕ್ಕಿಗೆ ಬೆದರಿಕೆ ಹಾಕುವ ನಾಯಿಯನ್ನು ದೂರ ಕಳುಹಿಸಬಹುದಿತ್ತು.</li> <li>2. ಸಹಾಯ ಕೇಳುತ್ತಾ ಅಗ್ನಿಶಾಮಕ ಕೇಂದ್ರಕ್ಕೆ ಕರೆ ಮಾಡುತ್ತಿದ್ದೆ.</li> <li>3. ಮರವನ್ನು ಹತ್ತಿದ ವ್ಯಕ್ತಿಯು ಸುರಕ್ಷಿತವಾಗಿ ಕೆಳಗೆ ಏರಲು ಏಣಿಯ ವ್ಯವಸ್ಥೆ ನೀಡುತ್ತಿದ್ದ.</li> </ol>
<b>Response</b>	<ol style="list-style-type: none"> <li>1.ನಾನು ನಾಯಿನ ಓಡ್ತು ಇದೆ</li> <li>2.ಯಾರಿಗಾದ್ರೂ ಹೆಲ್ಪ್ ಮಾಡಕ್ಕೆ ಕರಿತ ಇದೆ ಇರುತ್ತದೆ</li> <li>3. ಏಣಿ ಇಟ್ ಬಿಟ್ಟು ಕೆಳಗ್ ಬರಕ್ಕೆ ಸಹಾಯ ಮಾಡ್ತಿದೆ</li> </ol>
<b>Verbatim transcription</b>	<ol style="list-style-type: none"> <li>1./Naanu/ /naayina/ /odstha/ /idde/.</li> <li>2. /Yargaadru/ /help/ /madakke/ /karitha/ /idde/</li> <li>3./Eeni/ /itbittu/ /kelag/ /barakke/ /sahaaya/ /maadthidde/</li> </ol>
<b>Score</b>	<b>3</b>
<b>Stimulus Set 2</b>	
<b>Preferred descriptions</b>	<ol style="list-style-type: none"> <li>1.ಪೊಲೀಸ್ ಗೆ ಕರೆ ಮಾಡುತ್ತಿದ್ದೆ.</li> <li>2.ಸಹಾಯಕ್ಕಾಗಿ ಕಿರುಚುತ್ತಿದ್ದೆ.</li> <li>3. ಅವನನ್ನು ಕೋಣೆಯ ಒಳಗೆ ಕೂಡಿ ಹಾಕಿ ಹೊರಗೆ ಬರಲು ಪ್ರಯತ್ನಿಸುತ್ತಿದ್ದೆ.</li> </ol>
<b>Response</b>	<ol style="list-style-type: none"> <li>1.ನಾನು ಕಳ್ಳನ್ನ ಲಾಕ್ ಮಾಡ್ತಿದೆ.</li> <li>2.ಆಮೆಲೆ ಪೊಲೀಸ್ ಗೆ ಕರಿತ ಇದೆ.</li> <li>3.ಹಿಡಿಯಕ್ಕೆ ಟ್ರ್ಯಾ ಮಾಡ್ತ ಇದೆ.</li> </ol>

<b>Verbatim transcription</b>	1. /Naanu/ /kallana/ /lock/ /maadthidde/. 2. /Amele/ /police/ /ge/ /karitha/ /idde/. 3. /Hidiyakke/ /try/ /maadtha/ /idde/.
<b>Score</b>	<b>3</b>

**Table 11**

*Response of Participant C for cognitive (open ended) theory of mind.*

<b>Stimulus 1</b>	
<b>Preferred descriptions</b>	1. ಬೆಕ್ಕಿಗೆ ಬೆದರಿಕೆ ಹಾಕುವ ನಾಯಿಯನ್ನು ದೂರ ಕಳುಹಿಸಬಹುದಿತ್ತು. 2. ಸಹಾಯ ಕೇಳುತ್ತಾ ಅಗ್ನಿಶಾಮಕ ಕೇಂದ್ರಕ್ಕೆ ಕರೆ ಮಾಡುತ್ತಿದ್ದೆ. 3. ಮರವನ್ನು ಹತ್ತಿದ ವ್ಯಕ್ತಿಯು ಸುರಕ್ಷಿತವಾಗಿ ಕೆಳಗೆ ಏರಲು ಏಣಿಯ ವ್ಯವಸ್ಥೆ ನೀಡುತ್ತಿದ್ದೆ.
<b>Response</b>	1. ಯಾರಾದ್ರೂ ಕರಿತ ಇದೆ ಹೆಲ್ಪ್ ಮಾಡಕೆ, ಅಂದ್ರೆ ಬೇರೆ ಯಾರಾದ್ರೂ ಇನ್ಮ ಹುಶಾರಾಗಿ ಮರ ಹತ್ತಿ ಹೋಗವಿಗಿ 2. ಏಣಿ ಇಟ್ಟು ಕೆಳಗ್ ಬರಕೆ ಹೆಲ್ಪ್ ಮಾಡ್ತಿದ್ದೆ ಮತ್ತೆ 3 ನಾಯಿನ ದೂರ ಕಲ್ಪ್ತ ಇದೆ
<b>Verbatim transcription</b>	1./Yarnadru/ /karitha/ /idde/ /help/ /maadakke/,/andre/ /bere/ /yaradru/ /innu/ /husharigi/ /mara/ /hatti/ /hogavrige/. 2. /Eni/ /ittu/ /kelag/ /barakke/ /help/ /maadthidde/. 3./Matte/ /naayina/ /doora/ /kalstha/ /idde./
<b>Score</b>	<b>3</b>



Table 11 continuation	
<b>Stimulus 2</b>	
<b>Preferred descriptions</b>	<p>1. ಪೊಲೀಸ್ ಗೆ ಕರೆ ಮಾಡುತ್ತಿದ್ದೆ</p> <p>2. ಸಹಾಯಕ್ಕಾಗಿ ಕಿರುಚುತ್ತಿದ್ದೆ.</p> <p>3. ಅವನನ್ನು ಕೋಣೆಯ ಒಳಗೆ ಕೂಡಿ ಹಾಕಿ ಹೊರಗೆ ಬರಲು ಪ್ರಯತ್ನಿಸುತ್ತಿದ್ದೆ.</p>
<b>Response</b>	<p>1. ನಾನು ಕೂಗ್ತೆ ಇದ್ದೆ, ಅವಾಗ ಹತ್ತಿರ ಇರವು ಬರ್ತರೆ ಅಲ್ವ..</p> <p>2. ಕಿಟಕಿ ಎಲ್ಲ ಹಂಗೆ ಓಪೆನ್ ಇಡ್ತೆ ಇರ್ಲಿಲ್ಲ.</p> <p>3. ಪೊಲೀಸ್ ನ ಕರಿತ ಇದ್ದೆ.</p>
<b>Verbatim transcription</b>	<p>1. /Naanu/ /koogtha/ /idde/ /avaaga/ /hattira/ /iravru/ /bartha/ /alva/..</p> <p>2. /kitaki/ /ella/ /hange/ /open/ /idthirlilla/ /naanu/</p> <p>3. /Police/ /na/ /karithidde/.</p>
<b>Score</b>	<b>3</b>

In this task, though the client had repetitions and filled pauses which shows the presence of neurogenic stuttering, there was an attempt to answer by elaborating on what the participant would have done if he was witnessing or part of the given scenario. However, more cues would have helped him to give more descriptions. To conclude, in the “affective ToM task”, Participant A had difficulty answering the ‘look on face question’ and showed very good performance on “cognitive ToM”

close-ended tasks. In the open-ended task, the participant was able to give only one description for each of the stimuli, it is worthy to mention that, the participant had the idea of how to behave if he was a part of the given situation and gave an acceptable response.

## Chapter 5

### Discussion

The manual constructed in the present study aims at training individuals with impaired Theory of Mind (ToM), post brain injury. This manual consists of two domains which include the affective theory of mind and cognitive theory of mind.

The manual was administered on one participant (Participant A) with brain damage in comparison with two neuro-typical individuals (Participant B and C). Participant A was diagnosed with anomic aphasia who had suffered acute left Middle Cerebral Artery territory infarct. Though it is widely accepted that individuals with brain damage, possess impairment in theory of mind, and difficulty in understanding others' perspectives, and emotions, the nature of impairment differs from right hemisphere damage to left hemisphere damage. Participant A had difficulty in identifying the facial emotions like 'yucky', 'scared', and 'angry' for the concealment question of affective theory of mind. For the feel inside questions incorrect identification for 'happy', 'yucky' and 'angry', and for the look on face, there were scattered responses.

The findings suggest that it is ideal to think of acquired Right Hemisphere Damage (RHD) as (in some cases) a syndrome of the impaired theory of mind (Happe, 1999) (Dennis et al, 2012) (Byom & Turkstra, 2012). However, it is reported that individuals with severe TBI fail to perform well in the theory of mind tasks, and thus face challenges while having a conversation (Havet Thomassin et al., 2006) (Turkstra, 2008). Generally, when there is damage in the left hemisphere, tasks involving the theory of mind will be up to the mark and will be similar to the performance of normal individuals (Stuss, Gallup, & Alexander, 2001; Surian &

Siegal, 2001). Similar results were obtained in the current study where the individual with brain damage (Participant A) scored almost the same score as that of normal individuals (Participant B and C). Evidence with respect to the function of hemispheres done by Saxe and Wexler (2005) using functional Magnetic Resonance Imaging (fMRI) revealed that the right Temporo Parietal Junction and ventromedial prefrontal cortex (vmPFC) was found to be more active in the tasks that required mental state to be attributed, which is anyhow the finding of most of the studies. Participant A did not have any pathology to the Temporo Parietal regions and this could have facilitated in obtaining accurate responses for most of the tasks of Theory of Mind.

There are very limited studies that talk about types of aphasia and how is ToM in them. There are no studies that talk about anomic aphasia and ToM however, in case of individuals with severe damage to the language centers in the left hemisphere, along with severe deficit in processing and understanding grammatical aspects, production of grammar, performance on theory of mind was found to be intact despite having impaired linguistic components. This is one of the significant evidence with the left hemisphere having no much role to play (Varley & Siegal, 2000, Varley et al., 2001). Contrary to this, one of the studies explains ToM in Broca's aphasia, which suggested that ToM is impaired in individuals with Broca's aphasia. It is noteworthy that there are only a countable number of studies regarding this (tatsiou, 2019).

The first domain is 'Affective Theory of Mind'. Affective theory of mind involves, identifying the emotions and the need of hiding the emotion of an individual when it is inappropriate to display and also to show an emotion that is

considered to be appropriate considering the context of the conversation. Affective theory of mind is altered in individuals with brain damage as reported by Happe' and colleagues' (1999), Dennis et al, (2012), Byom and Turkstra (2012). Bibby and McDonald (2005) stated that individuals with TBI possess general weakness concerning ToM. Balaban et al (2016) investigated ToM abilities post RHD. Interestingly, very clear that ToM is affected in RHD. With respect to the theory of mind in aphasia, it is unlikely for them to possess evident impairment in identifying or understand different emotions. However, it depends on the site of the lesion. Participant A did not show obvious difficulty in affective ToM tasks, which supports the findings of previous studies. Stone et al, (1998), documents that in the case of individuals with left hemisphere damage, poor performance on affective ToM tasks was seen but only in individuals with damage to the orbitofrontal cortex region of the brain, and in case of damage to the ventromedial prefrontal cortex. Another study supporting frontal lobe lesions and theory of mind is done in patients with Parkinson's disease. In this study, they were given both theory of mind tasks and non- theory of mind tasks in a study done by Mengelberg et al,2003. They performed poorly in three theory of mind tasks out of four, but their performance was near normal in non-theory of mind tasks. In the brain imaging studies, it was found that there were lesions in the frontal lobe, especially in those areas which are involved in identifying emotions and attributing facial emotion. Even in this population, poor performance was associated with the frontal lobe lesions

This compliments the result of the current study where the patient has acute infarct in MCA territory relatively sparing vmPFC (ventromedial Pre Frontal Cortex) and this might have led to good performance in affective ToM tasks.

It is often mentioned in most of the studies that cognitive theory of mind is unaffected in the case of those with left hemisphere damage. Happe et al (1999) investigated by recruiting people having RHD and LHD and they concluded that it is very rarely noted that one can have impaired ToM post LHD. This shows that the ability to attribute the mental state remains intact. Nonetheless, Rowe et al. (2001) points out impaired cognitive ToM in the case of individuals with lesions in right or left Pre Frontal Cortex (PFC). The performance on cognitive ToM remains intact even if there is a lesion in vmPFC but affective ToM will be affected which means those with vmPFC lesion find it difficult to understand another person's affective state of mind and no difficulty is seen while representing the cognitive state of mind. According to Stone et al, (1998), good performance can be expected on first order and second-order ToM unless there is damage to the prefrontal cortex bilaterally, however in most of the cases cognitive ToM remains intact but and gets affected when there is RHD. In the current study, the performance of the neurotypicals as well the individual with brain damage got all the questions rated as correct and there were no mistakes made. If there is grammatical impairment due to brain injury, there is a need of training them to disambiguate particular terms, which represents thoughts of the third person, Seigal et al, (2006). But in the current study, there was no need for this as Participant A was well aware of the terms used in instruction and description of the task, which could be one of the reasons for good performance but at the same time, most of the argument that grammar or language performance has no core role in ToM. Seigal, (2000) put forth his opinion saying, language acts as scaffolding and has an effect on the performance of cognitive tasks, but once the person with aphasia attains stability, the support of language might not matter.

While answering the open-ended question, Participant A was able to think and answer appropriately, but could not come up with three measures that he could have taken if he were in the given scenario. One of the important factors here is that the participant was not having expressive aphasia and was able to answer effectively. However, Since the participant also had neurogenic stuttering, repetitions of the non-initial syllable, filled pauses were prominent, however, this did not interfere in providing accurate responses. Though there are very limited studies that talk about speech impairment, including neurogenic stuttering and theory of mind. One of the studies conducted by Falkman et al,2005 in which the performance of children with severe speech impairment on the theory of mind tasks was compared with normally developing children showed that difficulty in performing theory of mind tasks was seen in children with severe speech impairment. However, no studies are explaining the relation between the theory of mind and neurogenic stuttering in adults. Overall the result obtained after administering the manual on the individual with anomic aphasia, he did not exhibit any difficulty in performing tasks requiring usage of theory of mind which is exquisitely justified with the site of the lesion. This manual can be clinically utilized, to train theory of mind in those who have impaired theory of mind.

## Chapter 6

### Summary and Conclusion

The current study aimed at developing a manual to train individuals who possess impaired Theory of Mind (ToM) post brain damage or injury. Cerebrovascular disease, including conditions related to large infarcts, multiple microinfarcts, lacunes, subcortical arteriosclerotic leukoencephalopathy, and hemorrhages, road traffic accidents are few causes of brain injury.

In most of these individuals after suffering from damage to their brain different aspects including language, cognition, executive functions, visuospatial skills, theory of mind, etc. get affected and which eventually leads to impaired communication. Theory of Mind (ToM) is about understanding what other person might feel when a particular word, phrase, or sentence is used in the given context, considering other's perceptions. Keeping in his or her mind that, everybody has their point of view, which has to be considered while having a conversation, to not hurt anybody's feeling. This also talks about the need of hiding the emotion that one feels, to not affect or hurt the feeling of the communication partner. This helps one to have effortless communication.

In this present study, the constructed manual with activities for two types of theory of mind namely, 'affective theory of mind' and 'cognitive theory of mind' (close ended as well as open ended) have been developed to train ToM for individuals with brain damage.

Keeping the pandemic condition in mind, e copy of the manual was developed and virtual administration of the manual was carried out where tele rehabilitation was given for individuals with impaired Theory of mind. The



activities are adapted from the assessment material developed by Dennis et al (2013). Tasks have been modified in order to make them suitable and relevant to the Indian population and are in the Kannada language. The manual has five sets of stimuli in affective, and cognitive (closed-ended) along with one trial task in each respectively. In the case of cognitive (open-ended) ToM, there is one trial stimulus and two training stimuli. The constructed manual was subjected for the content validation by two speech-language pathologists and suggestions recommended by them were incorporated and the manual was administered on two neurotypical individuals and one individual with brain damage. Two neurotypicals included were one male and one female with the age 57 years and 51 years respectively. The other participant was 35 years old male (Participant A) who suffered Left Middle Cerebral Artery (MCA) infarct. After the speech and language evaluation, Participant A was diagnosed with Anomic Aphasia with dysarthria and acquired neurogenic stuttering whose aphasia quotient was 90. The manual was administered virtually using Zoom platform and the responses were recorded in the score sheet.

Affective ToM is all about identifying the emotions and also understanding the need of hiding emotion based on the narrative (5 sets) read to them and answering three questions namely 'concealment,' 'feel inside' and 'look on' question. These questions were related to different emotions namely happy, sad, angry, yucky, scared, and neutral. In the case of the concealment question, Participant A showed accurate identification of all the five emotions for Set 4 and Set 5. With reference to Set 1, there was incorrect identification of 'Yucky vignette emotion' and for Set 2, there was incorrect identification for 'Angry vignette emotion' and for Set 3, there was incorrect identification for 'Scared vignette

emotion'. The responses of the neurotypicals were accurate for Set 2, Set 3, Set 4, and Set 5. In the case of the feel inside question there was difficulty identifying yucky emotion in the first and in Set 2 and Participant A failed to answer happy and yucky vignette however gradually he performed better and no errors were seen in Set 4 and 5. In the case of cognitive theory of mind close-ended, where they were supposed to carefully look at the picture and answer to the question asked by saying either 'yes' or 'no', there was no much difference in terms of the response of the participants. There were accurate responses for all the stimulus sets. In open-ended tasks of cognitive theory of mind, there was a difference in performance and dysfluencies were evident in the individual with brain injury (Participant A) as he had acquired neurogenic stuttering as well.

Participant A did not show obvious difficulty in affective ToM tasks, which supports the findings of other studies which state that impaired ToM is mainly seen as a result of RHD or damage to the frontal lobe of either hemisphere. Stone et al, (1998), documents that in the case of individuals with left hemisphere damage, poor performance on affective ToM tasks was seen but only in individuals with damage to the orbitofrontal cortex region of the brain, and in case of damage to the ventromedial prefrontal cortex. It is often mentioned in most of the studies that cognitive theory of mind is unaffected in the case of those with left hemisphere damage (Happe et al 1999).

The constructed manual is, mainly to train individuals with brain damage who have impaired theory of mind. It gives a better idea about the role of the theory of mind and its impact on communication. The stimuli in the manual are mainly based on the situations that are encountered in daily life situations which is why it

is relatable. The stimuli are culturally appropriate in connection with the target population. This training manual can be used alongside other training manuals or material by speech-language pathologists which helps in holistic improvement of the individual which improves the overall quality of life.

### **6.1 Implication of the study:**

The results of the current study provide us insight about the performance of individual who has left hemisphere injury in tasks which require them to use the theory of mind. Though statements cannot be made only with a limited number of participants, they can still be used on individuals whose theory of mind is impaired. After analyzing the results, it gives us an idea about which aspect of the theory of mind is affected. Hence, the manual can also be used to obtain the baseline performance which enables tracking the improvement. By tackling theory of mind along with other difficulties post-stroke, the excellence in communication improves further. Thus it is clinically very useful. Researchers can further improve the manual by probing more on the generalization effect after the completion of the training program.

### **6.2 Limitations:**

The pilot study that was attempted in this study, did not yield sufficient data and thus generalization of the outcome could not be appreciated. Before administration of the manual, an appropriate baseline assessment protocol to evaluate the theory of mind ability of participants was not determined. Data to study the effectiveness of the manual is not available as there was no pre and post-test available. A statistical study was not carried on to study the effectiveness of the constructed manual.

### **6.3 Future directions:**

There is scope to refine the manual in terms of adding more stimuli and working on complexity with an objective method of scoring the participants' responses. Another important future direction is to carry on field testing using the developed manual by administering it in individuals with brain damage to obtain the normative data. This can be administered to individuals with different sites of brain damage and analyze the trend. Reaction time can be added to each domain or type and then normative can be established for the same.

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## Appendix - A

All India Institute of Speech and Hearing, Naimisham Campus,  
Manasagangothri, Mysore-570006.

### CONSENT FORM

#### Dissertation on

#### **“Development of a Manual for Theory of Mind in persons with brain damage in Kannada”**

You are invited to participate in the study titled “Development of a Manual for Theory of Mind in persons with brain damage in Kannada”. This study is conducted by Ms. Ashritha.M.Hegde, a postgraduate student of the All India Institute of Speech and Hearing, under the guidance of Dr. Hema. N. Assistant Professor, Department of Speech-Language Sciences, All India Institute of Speech and Hearing. The study aims to develop and validate a treatment manual to treat the theory of mind impairment and conduct a pilot study to test the utility of the constructed manual. Participant and caregiver will be interviewed to obtain demographic details and necessary medical information prior to confirming eligibility for the study. Once eligible, the participant will be provided therapy sessions for training for theory of mind for 5 sessions, 45 minutes each via tele-mode (Zoom app), and sessions will be recorded for further analysis. The identity of the participant will not be revealed at any time, and the videos will be maintained confidential. The data obtained from the sessions will not be disclosed, and the access will be limited to individuals who are working on the project. Participation in this study is voluntary. You can refuse to participate or withdraw at any point in the study without penalty or loss of benefits to which you are otherwise entitled. The procedures of the study are non-invasive, and no risks are associated.

#### **Informed Consent**

I have read the foregoing information, or it has been read to me in the language I understand. I have had the opportunity to ask questions about it, and any questions that I have asked have been answered to my satisfaction. I consent voluntarily to participate in this study.

I, \_\_\_\_\_, consent to be participant of this investigation/study/program.

Name, Email ID, age, and address of the participant

Name of the investigator

# **APPENDIX-B**

## **Examiners Manual**

### **MANUAL FOR THEORY OF MIND ACTIVITIES FOR PERSONS WITH BRAIN DAMAGE**

## **Examiners Manual**

### **What is Theory of Mind(ToM)?**

Theory of mind is the ability to assess and assign mental states of oneself and others. It also includes identifying and understanding different facial emotions. To have effective communication, understanding other's feelings, intentions, emotions, reactions plays a salient role.

### **Why is Theory of Mind important?**

It is important to be the interlocutor of one's mental states as a means of navigating the social atmosphere successfully. The ability to accurately recognize, analyze, and make conclusions about the mental states of others is a key component of successful social navigation, according to the ToM.

### **What is the purpose of the manual developed for training 'Theory of Mind'?**

The manual which has activities to work on the theory of mind in individuals with brain damage is to help speech-language pathologists to train patients to enhance their communication skills.

## **APPENDIX-B1 -AFFECTIVE TOM**

### **Manual for theory of mind activities for persons with brain damage**

**Affective TOM:** is simply the knowledge about emotions and showing an ability to understand and share the feelings of another. This includes emotive expression and emotive communication. Emotive expression is the emotion that a character actually feels and emotive communication refers to the emotion that a character chooses consciously to display socially. This is what we want people to think we feel. One of the widely used tasks to check this is by Emotional and Emotive Faces Task (EEFT) given by (Dennis et al., 2013). This task is adapted here. The narrative used here targets five emotions which are- happy, sad, anger, yucky, scared. Along with this, a neutral emotion is also used as this is the most commonly expressed emotion in various contexts. ToM helps to improve the ability to recognize the emotion and to understand what a person is feeling in a given situation. This task helps to modulate emotional expression based on what and the receiver perceives in a social context.

#### **Task description:**

The clinician will read a small narrative/ vignette which revolves around one character. Vignette targeting happy, yucky, angry, scared, and sad emotions. After listening to this, three questions will be asked to the individual. The ability to make a judgment about emotions and recognizing emotions is examined by asking ‘concealment questions’ a question about the reason for hiding his/her emotion in the given context, ‘feel inside questions’ is about the emotion that is felt deep inside and ‘look on face question’ is the emotion that is expressed by a person. After asking each question a picture of a set of facial emotions will be shown. This picture consists of eleven emotions including a varying degree of five emotions (moderately happy, very happy, moderately sad, very sad, moderately angry, very angry, moderately yucky, very yucky, moderately scared, very scared) and a facial emotion which is neutral. He/ she has to select the emotion that they think is the answer, by pointing at it.

**Instruction:**

*“I will read out a small narrative. After listening to the narrative, I will ask you few questions on the emotions of the main character of the narrative. The questions will be related to the hidden emotion and emotion displayed on the face of the main character. You have to select one appropriate emotion from the set of emotions displayed as an answer to the questions asked.”*

**Administration and scoring:**

The narrative has to be read out one by one. If they have difficulty carrying out the task, the narrative can be read again. After listening to the narrative, three questions have to be asked. Multiple trials can be given to them to help them carry out the task. All three questions are rated separately. The two-point rating scale is used to rate all three questions where for choosing appropriate expression they will be scored- 1 and for inappropriate expression, he/ she will be scored -0 for ‘concealment question’ as well as ‘feel inside question’. For ‘look on face question’, a score of 2 will be given for appropriate Expression- and for choosing a neutral face/minimizing the felt emotion they will be scored 1.




**General rules:**






The individual should be made to sit comfortably. The room should have an appropriate environment with a proper lighting facility. They should be familiarized with different emotions before scoring them for training tasks.

**Pre-trial:**

Includes, recognition of emotion and associating it with the appropriate lexical terms. The clinician will have to teach them what each of the facial emotions stands for by showing the picture of the emotion. The individual has to be tested later by asking them to point to the emotion asked by the clinician. Once they are getting it right, individuals are asked to carry out the trial task.







Pre-trial task:

Facial emotion	Lexical terms
 A line drawing of a face with a sad expression. The eyes are slanted downwards, and the mouth is a simple downward curve.	Very sad
 A line drawing of a face with a yucky expression. The eyes are squinted and slanted downwards, and the mouth is open with the tongue sticking out.	Very yucky
 A line drawing of a face with a scared expression. The eyes are wide open and looking upwards, and the mouth is open with the teeth showing.	Very scared
 A line drawing of a face with an angry expression. The eyes are slanted downwards and squinted, and the mouth is a simple downward curve.	Very angry
 A line drawing of a face with a happy expression. The eyes are slanted upwards, and the mouth is a wide, open smile.	Very happy

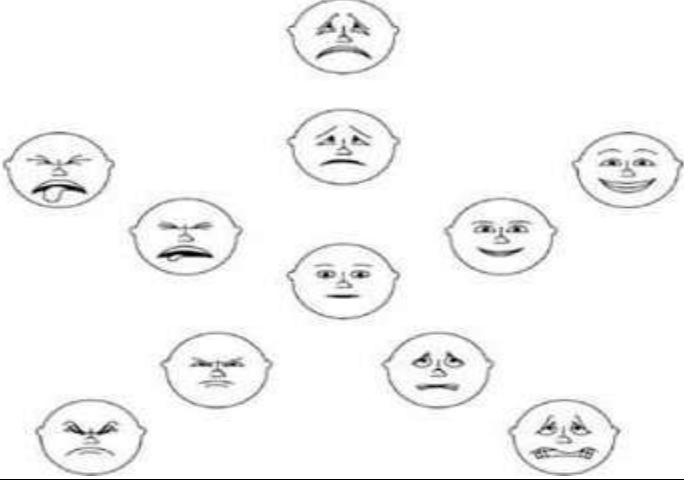
 A line drawing of a face with a sad expression. The eyebrows are slanted upwards at the inner corners, and the mouth is a simple downward curve.	Moderately sad
 A line drawing of a face with a disgusted expression. The eyes are squinted, and the mouth is open with the tongue sticking out.	Moderately yucky
 A line drawing of a face with a scared expression. The eyes are wide open, and the mouth is a small, downturned curve.	Moderately scared
 A line drawing of a face with a happy expression. The eyes are slightly squinted, and the mouth is a simple upward curve.	Moderately happy
 A line drawing of a face with a neutral expression. The eyes are straight, and the mouth is a simple horizontal line.	Neutral

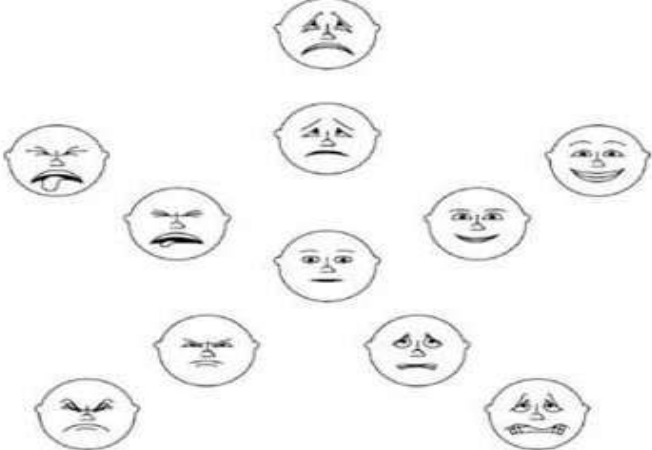
**TRIAL STIMULUS:**

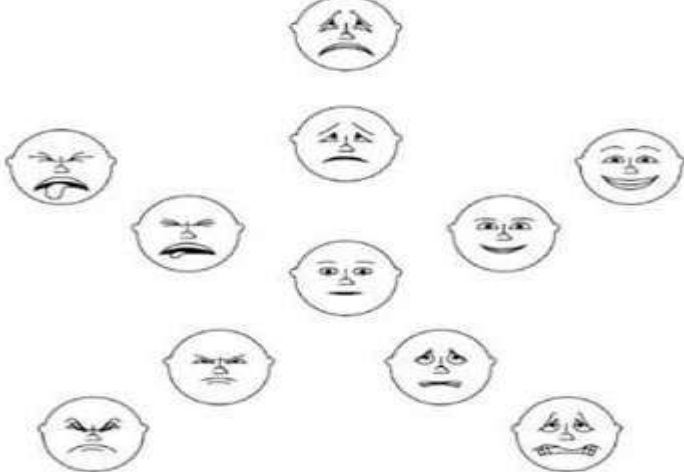
Once individual is able to recognise the facial emotion and to associate it to the lexical term, in the training task a short narrative will be read out to the individual. After listening to it, two questions will be asked. This includes look on face question and feel inside question.

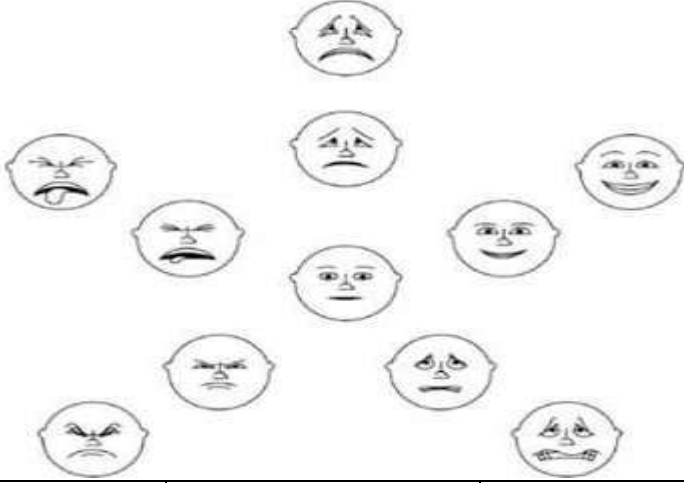
<b>TRIAL</b>		
<b>Instruction</b>	<p>ನಾನು ನಿಮಗೆ ಒಂದು ಸಣ್ಣ ಕಥೆಯನ್ನು ಓದುತ್ತೇನೆ. ಕಥೆಯನ್ನು ಕೇಳಿದ ನಂತರ ಕಥೆಯಲ್ಲಿನ ಮುಖ್ಯ ಪಾತ್ರದ ಭಾವನೆಗಳ ಬಗ್ಗೆ ಕೆಲವು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳುತ್ತೇನೆ. ಆ ಪ್ರಶ್ನೆಗಳು, ಕಥೆಯ ಒಂದು ನಿರ್ದಿಷ್ಟ ಪಾತ್ರದ ಗುಪ್ತ ಭಾವನೆ (ಮನಸಿನಲ್ಲಿನ ಭಾವನೆ) ಹಾಗೂ ವ್ಯಕ್ತಪಡಿಸಿದ (ಮುಖದಲ್ಲಿ ತೋರುತ್ತಿರುವ) ಭಾವನೆಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಿದ್ದಾಗಿರುತ್ತದೆ. ಆ ಪ್ರಶ್ನೆಗೆ ಉತ್ತರವಾಗಿ, ನಾನು ನಿಮಗೆ ತೋರಿಸುವ ವಿವಿಧ ಮುಖ ಚಹರೆಗಳಲ್ಲಿ ಒಂದನ್ನು ನೀವು ಆರಿಸಬೇಕಾಗುತ್ತದೆ.</p>	
<b>Stimuli</b>	<p>ಕಾವ್ಯಾ ತನ್ನ ಜನ್ಮದಿನದಂದು ತನ್ನ ಸ್ನೇಹಿತನಿಂದ ಉಡುಗೊರೆಯನ್ನು ಪಡೆದಳು, ಆದರೆ ಅವಳು ಉಡುಗೊರೆಯನ್ನು ಇಷ್ಟಪಡಲಿಲ್ಲ. ಅವಳು ಅದನ್ನು ಅವಳ ಮುಖದ ಮೇಲೆ ತೋರಿಸಲು ಇಷ್ಟಪಡುವುದಿಲ್ಲ ಏಕೆಂದರೆ ಅವಳು ಹೇಗೆ ಭಾವಿಸುತ್ತಾಳೆಂದು ಅವಳ ಸ್ನೇಹಿತ ತಿಳಿದುಕೊಳ್ಳಬೇಕೆಂದು ಅವಳು ಬಯಸುವುದಿಲ್ಲ.</p>	
<b>Task to identify the emotion</b>	1. ಅವಳ ಮುಖದ ಭಾವನೆ ಹೇಗಿರಬಹುದು?	2. ಅವಳೊಳಗಿನ ಭಾವನೆ ಹೇಗಿರಬಹುದು?
<b>Facial emotions</b>	 	 
<b>Expected response</b>		

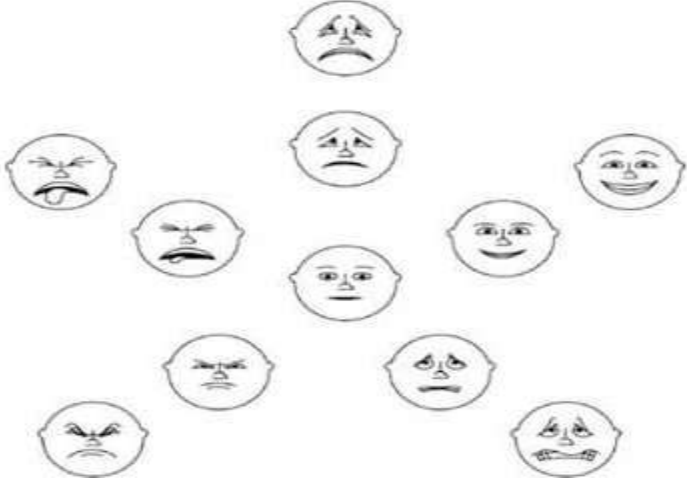


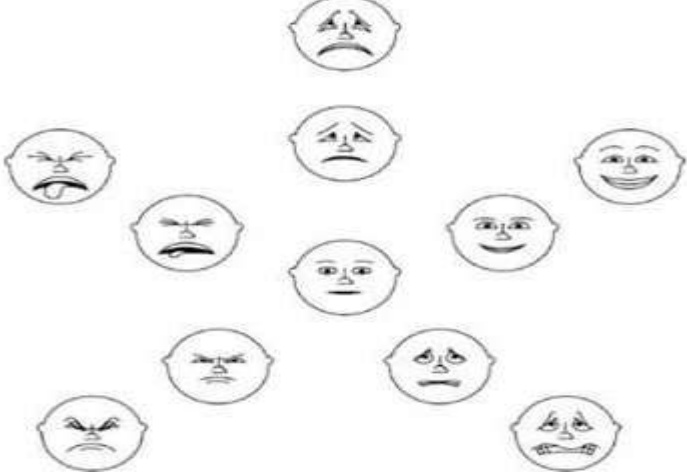
<b>SET 1</b>			
<b>1.1 HAPPY VIGNETTE EMOTION</b>			
<b>Instruction</b>	<p>ನಾನು ನಿಮಗೆ ಒಂದು ಸಣ್ಣ ಕಥೆಯನ್ನು ಓದುತ್ತೇನೆ, ಕಥೆಯನ್ನು ಕೇಳಿದ ನಂತರ ಕಥೆಯಲ್ಲಿನ ಮುಖ್ಯ ಪಾತ್ರದ ಭಾವನೆಗಳ ಬಗ್ಗೆ ಕೆಲವು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳುತ್ತೇನೆ. ಆ ಪ್ರಶ್ನೆಗಳು, ಕಥೆಯ ಒಂದು ನಿರ್ದಿಷ್ಟ ಪಾತ್ರದ ಗುಪ್ತ ಭಾವನೆ (ಮನಸಿನಲ್ಲಿನ ಭಾವನೆ) ಹಾಗೂ ವ್ಯಕ್ತಪಡಿಸಿದ (ಮುಖದಲ್ಲಿ ತೋರುತ್ತಿರುವ) ಭಾವನೆಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಿದ್ದಾಗಿರುತ್ತದೆ. ಆ ಪ್ರಶ್ನೆಗೆ ಉತ್ತರವಾಗಿ, ನಾನು ನಿಮಗೆ ತೋರಿಸುವ ವಿವಿಧ ಮುಖ ಚಹರೆಗಳಲ್ಲಿ ಒಂದನ್ನು ನೀವು ಆರಿಸಬೇಕಾಗುತ್ತದೆ.</p>		
<b>Stimuli</b>	<p>ರಾಮ್ ತನ್ನ ಸಹೋದರಿಯ ಮೇಲೆ ಮೋಜಿನ ಆಟವಾಡುತ್ತಿದ್ದಾನೆ. ಆದ್ದರಿಂದ ಅವನು ತನ್ನ ಸಹೋದರಿಯ ನೆಚ್ಚಿನ ಪುಸ್ತಕವನ್ನು ತೆಗೆದುಕೊಂಡು ಅದನ್ನು ಮರೆಮಾಡುತ್ತಾನೆ. ರಾಮ್ ತನ್ನ ಮನಸ್ಸಿನ ಭಾವನೆಯನ್ನು ಮುಖದಲ್ಲಿ ವ್ಯಕ್ತಪಡಿಸಲು ಬಯಸುವುದಿಲ್ಲ ಏಕೆಂದರೆ, ಇದು ರಾಮ್ ಮಾಡಿದನೆಂದು ತಿಳಿದರೆ ಅವನ ಸಹೋದರಿ ಕೋಪಗೊಳ್ಳುತ್ತಾಳೆ.</p>		
<b>Task to identify the emotion</b>	1. Concealment question:	2. Feel inside question:	3. Look on face question:
	ರಾಮ್‌ಗೆ ಏನು ಅನಿಸುತ್ತಿದೆ ಎಂದು ತಿಳಿದರೆ ರಾಮನ ಸಹೋದರಿಯ ಮುಖದ ಭಾವನೆ ಹೇಗಿರುತ್ತದೆ?	ತನ್ನ ತಂಗಿಗೆ ಪುಸ್ತಕ ಸಿಗದಿದ್ದಾಗ ರಾಮ್‌ಗೆ ಹೇಗೆ ಅನಿಸಿತು?	ರಾಮ್‌ನ ತಂಗಿಗೆ ಪುಸ್ತಕ ಸಿಗದಿದ್ದಾಗ ರಾಮ್‌ನ ಮುಖದಲ್ಲಿ ಯಾವ ಭಾವನೆ ಇತ್ತು?
<b>Facial emotions</b>			
<b>Quantitative Rating</b>	Appropriate Expression- 1 Inappropriate Expression- 0	Appropriate Expression- 1 Inappropriate Expression- 0	Appropriate Expression- 2 Neutral face/minimizing the felt emotion - 1
<b>Score</b>			

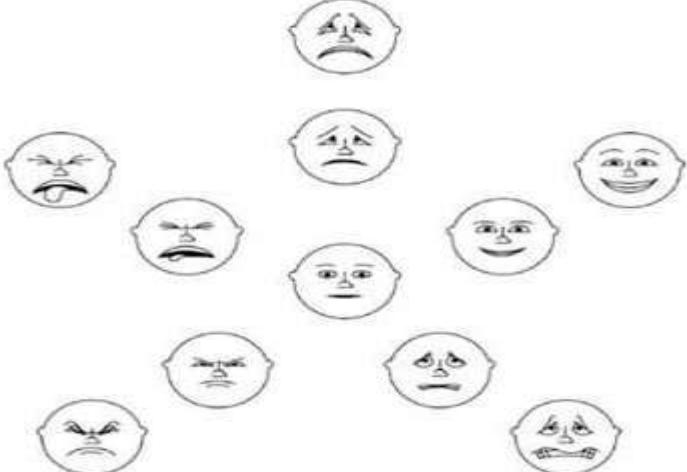
<b>SET 1</b>			
<b>1.2. YUCKY VIGNETTE EMOTION</b>			
<b>Instruction</b>	<p>ನಾನು ನಿಮಗೆ ಒಂದು ಸಣ್ಣ ಕಥೆಯನ್ನು ಓದುತ್ತೇನೆ, ಕಥೆಯನ್ನು ಕೇಳಿದ ನಂತರ ಕಥೆಯಲ್ಲಿನ ಮುಖ್ಯ ಪಾತ್ರದ ಭಾವನೆಗಳ ಬಗ್ಗೆ ಕೆಲವು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳುತ್ತೇನೆ. ಆ ಪ್ರಶ್ನೆಗಳು, ಕಥೆಯ ಒಂದು ನಿರ್ದಿಷ್ಟ ಪಾತ್ರದ ಗುಪ್ತ ಭಾವನೆ (ಮನಸಿನಲ್ಲಿನ ಭಾವನೆ) ಹಾಗೂ ವ್ಯಕ್ತಪಡಿಸಿದ (ಮುಖದಲ್ಲಿ ತೋರುತ್ತಿರುವ) ಭಾವನೆಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಿದ್ದಾಗಿರುತ್ತದೆ. ಆ ಪ್ರಶ್ನೆಗೆ ಉತ್ತರವಾಗಿ, ನಾನು ನಿಮಗೆ ತೋರಿಸುವ ವಿವಿಧ ಮುಖ ಚಹರೆಗಳಲ್ಲಿ ಒಂದನ್ನು ನೀವು ಆರಿಸಬೇಕಾಗುತ್ತದೆ.</p>		
<b>Stimuli</b>	<p>ರಾಮ್ ತನ್ನ ಸ್ನೇಹಿತನೊಂದಿಗೆ ಊಟ ತಿನ್ನುತ್ತಿದ್ದಾನೆ, ರಾಮ್‌ನ ಸ್ನೇಹಿತ ರಾಮ್‌ಗಾಗಿ ಊಟ ತಂದಿದ್ದಾನೆ. ರಾಮ್ ಅದನ್ನು ತಿಂದಾಗ ಅನ್ನ ಸರಿಯಾಗಿ ಬೆಂದಿರುವುದಿಲ್ಲವೆಂದು ಗೊತ್ತಾಗುತ್ತದೆ. ಆದರೂ, ತನ್ನ ಸ್ನೇಹಿತ, ಇನ್ನು ಮುಂದೆ ತನ್ನನ್ನು ಊಟಕ್ಕೆ ಆಹ್ವಾನಿಸದೆ ಇರಬಹುದು ಎಂಬ ಕಾರಣದಿಂದ ರಾಮ್ ತನ್ನ ಮನಸ್ಸಿನ ಭಾವನೆಯನ್ನು ಮುಖದಲ್ಲಿ ವ್ಯಕ್ತಪಡಿಸಲು ಬಯಸುವುದಿಲ್ಲ.</p>		
<b>Task to identify the emotion</b>	1. Concealment question:	2. Feel inside question:	3. Look on face question:
	ರಾಮ್‌ಗೆ ಏನು ಅನಿಸುತ್ತಿದೆ ಎಂದು ತಿಳಿದರೆ ರಾಮ್‌ನ ಸ್ನೇಹಿತನ ಮುಖದ ಮುಖದ ಭಾವನೆ ಹೇಗಿರುತ್ತದೆ?	ತನ್ನ ಸ್ನೇಹಿತ ತನಗಾಗಿ ತಂದಿರುವ ಅನ್ನ ಸರಿಯಾಗಿ ಬೆಂದಿರುವುದಿಲ್ಲವೆಂದು ಗೊತ್ತಾದಾಗ ರಾಮ್ ಗೆ ಹೇಗೆ ಅನಿಸಿತು ?	ತನ್ನ ಸ್ನೇಹಿತ ತನಗಾಗಿ ತಂದಿರುವ ಅನ್ನ ಸರಿಯಾಗಿ ಬೆಂದಿಲ್ಲವೆಂದು ಗೊತ್ತಾದಾಗ ರಾಮ್ ನ ಮುಖದಲ್ಲಿ ಯಾವ ಭಾವನೆ ಇತ್ತು?
<b>Facial emotions</b>			
<b>Quantitative Rating</b>	Appropriate Expression- 1 Inappropriate Expression- 0	Appropriate Expression- 1 Inappropriate Expression- 0	Appropriate Expression- 2 Neutral face/minimizing the felt emotion - 1
<b>Score</b>			

<b>SET 1</b>			
<b>1.3. SCARED VIGNETTE EMOTION</b>			
<b>Instruction</b>	<p>ನಾನು ನಿಮಗೆ ಒಂದು ಸಣ್ಣ ಕಥೆಯನ್ನು ಓದುತ್ತೇನೆ, ಕಥೆಯನ್ನು ಕೇಳಿದ ನಂತರ ಕಥೆಯಲ್ಲಿನ ಮುಖ್ಯ ಪಾತ್ರದ ಭಾವನೆಗಳ ಬಗ್ಗೆ ಕೆಲವು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳುತ್ತೇನೆ. ಆ ಪ್ರಶ್ನೆಗಳು, ಕಥೆಯ ಒಂದು ನಿರ್ದಿಷ್ಟ ಪಾತ್ರದ ಗುಪ್ತ ಭಾವನೆ (ಮನಸಿನಲ್ಲಿನ ಭಾವನೆ) ಹಾಗೂ ವ್ಯಕ್ತಪಡಿಸಿದ (ಮುಖದಲ್ಲಿ ತೋರುತ್ತಿರುವ) ಭಾವನೆಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಿದ್ದಾಗಿರುತ್ತದೆ. ಆ ಪ್ರಶ್ನೆಗೆ ಉತ್ತರವಾಗಿ, ನಾನು ನಿಮಗೆ ತೋರಿಸುವ ವಿವಿಧ ಮುಖ ಚಹರೆಗಳಲ್ಲಿ ಒಂದನ್ನು ನೀವು ಆರಿಸಬೇಕಾಗುತ್ತದೆ.</p>		
<b>Stimuli</b>	<p>ರಾಮ್, ಪರೀಕ್ಷೆಯಲ್ಲಿ ಕಡಿಮೆ ಅಂಕ ಗಳಿಸಿದ್ದರಿಂದ ಹೆದರಿದ್ದಾನೆ. ಆದರೆ, ರಾಮ್ ತನ್ನ ಮನಸ್ಸಿನ ಭಾವನೆಯನ್ನು ಮುಖದಲ್ಲಿ ವ್ಯಕ್ತಪಡಿಸಲು ಬಯಸುವುದಿಲ್ಲ, ಏಕೆಂದರೆ ಅದರ ಬಗ್ಗೆ ತಿಳಿದರೆ ಅವನ ತಂದೆ ಅವನನ್ನು ಶಿಕ್ಷಿಸುತ್ತಾರೆ.</p>		
<b>Task to identify the emotion</b>	1. Concealment question:	2. Feel inside question:	3. Look on face question:
	ರಾಮ್‌ಗೆ ಏನು ಅನಿಸುತ್ತಿದೆ ಎಂದು ತಿಳಿದರೆ ರಾಮ್‌ನ ತಂದೆಯ ಮುಖದ ಭಾವನೆ ಹೇಗಿರುತ್ತದೆ?	ತಾನು ಗಳಿಸಿದ ಅಂಕಗಳನ್ನು ತಿಳಿದುಕೊಂಡಾಗ ರಾಮ್‌ಗೆ ಹೇಗೆ ಅನಿಸಿತು?	ತಾನು ಗಳಿಸಿದ ಅಂಕಗಳನ್ನು ತಿಳಿದಾಗ ರಾಮ್‌ನ ಮುಖದಲ್ಲಿ ಯಾವ ಭಾವನೆ ಇತ್ತು?
<b>Facial emotions</b>			
<b>Quantitative Rating</b>	Appropriate Expression- 1 Inappropriate Expression- 0	Appropriate Expression- 1 Inappropriate Expression- 0	Appropriate Expression- 2 Neutral face/minimizing the felt emotion - 1
<b>Score</b>			

<b>SET 1</b>			
<b>1.4. ANGRY VIGNETTE EMOTION</b>			
<b>Instruction</b>	<p>ನಾನು ನಿಮಗೆ ಒಂದು ಸಣ್ಣ ಕಥೆಯನ್ನು ಓದುತ್ತೇನೆ. ಕಥೆಯನ್ನು ಕೇಳಿದ ನಂತರ ಕಥೆಯಲ್ಲಿನ ಮುಖ್ಯ ಪಾತ್ರದ ಭಾವನೆಗಳ ಬಗ್ಗೆ ಕೆಲವು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳುತ್ತೇನೆ. ಆ ಪ್ರಶ್ನೆಗಳು, ಕಥೆಯ ಒಂದು ನಿರ್ದಿಷ್ಟ ಪಾತ್ರದ ಗುಪ್ತ ಭಾವನೆ (ಮನಸಿನಲ್ಲಿನ ಭಾವನೆ) ಹಾಗೂ ವ್ಯಕ್ತಪಡಿಸಿದ (ಮುಖದಲ್ಲಿ ತೋರುತ್ತಿರುವ) ಭಾವನೆಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಿದ್ದಾಗಿರುತ್ತದೆ. ಆ ಪ್ರಶ್ನೆಗೆ ಉತ್ತರವಾಗಿ, ನಾನು ನಿಮಗೆ ತೋರಿಸುವ ವಿವಿಧ ಮುಖ ಚಿಹ್ನೆಗಳಲ್ಲಿ ಒಂದನ್ನು ನೀವು ಆರಿಸಬೇಕಾಗುತ್ತದೆ.</p>		
<b>Stimuli</b>	<p>ರಾಮ್‌ನ ಸ್ನೇಹಿತ ಆಕಸ್ಮಿಕವಾಗಿ ರಾಮ್‌ನ ಪುಸ್ತಕದ ಪುಟವನ್ನು ಹರಿದು ಹಾಕಿದ್ದರಿಂದ ರಾಮ್ ಕೋಪಗೊಂಡಿದ್ದಾನೆ. ಆದರೆ ಅವನ ಸ್ನೇಹಿತ ಉದ್ದೇಶಪೂರ್ವಕವಾಗಿ ಪುಟವನ್ನು ಹರಿದು ಹಾಕಲಿಲ್ಲವಾದ್ದರಿಂದ ರಾಮ್, ತನ್ನ ಮನಸ್ಸಿನ ಭಾವನೆಯನ್ನು ಮುಖದಲ್ಲಿ ವ್ಯಕ್ತಪಡಿಸಲು ಬಯಸುವುದಿಲ್ಲ. ಏಕೆಂದರೆ ರಾಮ್ ಗೆ ಏನನ್ನಿಸುತ್ತಿದೆ ಎಂದು ತಿಳಿದರೆ, ರಾಮ್ ನ ಸ್ನೇಹಿತ ಅಸಮಾಧಾನಗೊಳ್ಳುತ್ತಾನೆ.</p>		
<b>Task to identify the emotion</b>	1. Concealment question:	2. Feel inside question:	3. Look on face question:
	ರಾಮ್‌ಗೆ ಏನು ಅನಿಸುತ್ತಿದೆ ಎಂದು ತಿಳಿದರೆ ರಾಮ್‌ನ ಸ್ನೇಹಿತನ ಮುಖದ ಭಾವನೆ ಹೇಗಿರುತ್ತದೆ?	ತನ್ನ ಸ್ನೇಹಿತ, ಪುಸ್ತಕದ ಪುಟವನ್ನು ಹರಿದು ಹಾಕಿದಾಗ ರಾಮ್‌ಗೆ ಹೇಗೆ ಅನಿಸಿತು?	ತನ್ನ ಸ್ನೇಹಿತ, ಪುಸ್ತಕದ ಪುಟವನ್ನು ಹರಿದು ಹಾಕಿದಾಗ ರಾಮ್‌ನ ಮುಖದಲ್ಲಿ ಯಾವ ಭಾವನೆ ಇತ್ತು?
<b>Facial emotions</b>			
<b>Quantitative Rating</b>	Appropriate Expression- 1 Inappropriate Expression- 0	Appropriate Expression- 1 Inappropriate Expression- 0	Appropriate Expression- 2 Neutral face/minimizing the felt emotion - 1
<b>Score</b>			

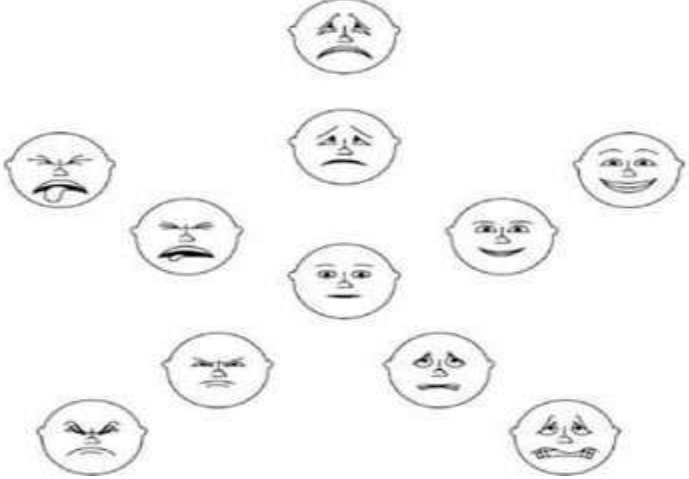
<b>SET 1</b>			
<b>1.5. SAD VIGNETTE EMOTION</b>			
<b>Instruction</b>	<p>ನಾನು ನಿಮಗೆ ಒಂದು ಸಣ್ಣ ಕಥೆಯನ್ನು ಓದುತ್ತೇನೆ, ಕಥೆಯನ್ನು ಕೇಳಿದ ನಂತರ ಕಥೆಯಲ್ಲಿನ ಮುಖ್ಯ ಪಾತ್ರದ ಭಾವನೆಗಳ ಬಗ್ಗೆ ಕೆಲವು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳುತ್ತೇನೆ. ಆ ಪ್ರಶ್ನೆಗಳು, ಕಥೆಯ ಒಂದು ನಿರ್ದಿಷ್ಟ ಪಾತ್ರದ ಗುಪ್ತ ಭಾವನೆ (ಮನಸ್ಸಿನಲ್ಲಿನ ಭಾವನೆ) ಹಾಗೂ ವ್ಯಕ್ತಪಡಿಸಿದ (ಮುಖದಲ್ಲಿ ತೋರುತ್ತಿರುವ) ಭಾವನೆಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಿದ್ದಾಗಿರುತ್ತದೆ. ಆ ಪ್ರಶ್ನೆಗೆ ಉತ್ತರವಾಗಿ, ನಾನು ನಿಮಗೆ ತೋರಿಸುವ ವಿವಿಧ ಮುಖ ಚಿಹ್ನೆಗಳಲ್ಲಿ ಒಂದನ್ನು ನೀವು ಆರಿಸಬೇಕಾಗುತ್ತದೆ.</p>		
<b>Stimuli</b>	<p>ರಾಮ್ ತನ್ನ ಕುರ್ಚಿಯ ಮೇಲೆ ಕುಳಿತುಕೊಳ್ಳುವಾಗ ನೆಲದ ಮೇಲೆ ಬಿದ್ದು ತನ್ನನ್ನು ತಾನೇ ನೋಯಿಸಿಕೊಳ್ಳುತ್ತಾನೆ. ಅವನ ಸಹಪಾಠಿಗಳು ನಗುತ್ತಾರೆ ಎಂಬ ಕಾರಣದಿಂದ, ತನಗೆ ನೋವಾದರೂ, ತನ್ನ ಮನಸ್ಸಿನ ಭಾವನೆಯನ್ನು ಮುಖದಲ್ಲಿ ವ್ಯಕ್ತಪಡಿಸಲು ಬಯಸುವುದಿಲ್ಲ.</p>		
<b>Task to identify the emotion</b>	1. Concealment question:	2. Feel inside question:	3. Look on face question:
	ರಾಮ್‌ಗೆ ಏನು ಅನಿಸುತ್ತಿದೆ ಎಂದು ತಿಳಿದರೆ ರಾಮ್‌ನ ಸಹಪಾಠಿಗಳ ಮುಖದ ಭಾವನೆ ಹೇಗಿರುತ್ತದೆ?	ರಾಮ್ ನೆಲದ ಮೇಲೆ ಬಿದ್ದಾಗ ಅವನಿಗೆ ಹೇಗೆ ಅನಿಸಿತು?	ರಾಮ್ ನೆಲದ ಮೇಲೆ ಬಿದ್ದಾಗ ಅವನ ಮುಖದಲ್ಲಿ ಯಾವ ಭಾವನೆ ಇತ್ತು?
<b>Facial emotions</b>			
<b>Quantitative Rating</b>	Appropriate Expression- 1 Inappropriate Expression- 0	Appropriate Expression- 1 Inappropriate Expression- 0	Appropriate Expression- 2 Neutral face/minimizing the felt emotion - 1
<b>Score</b>			

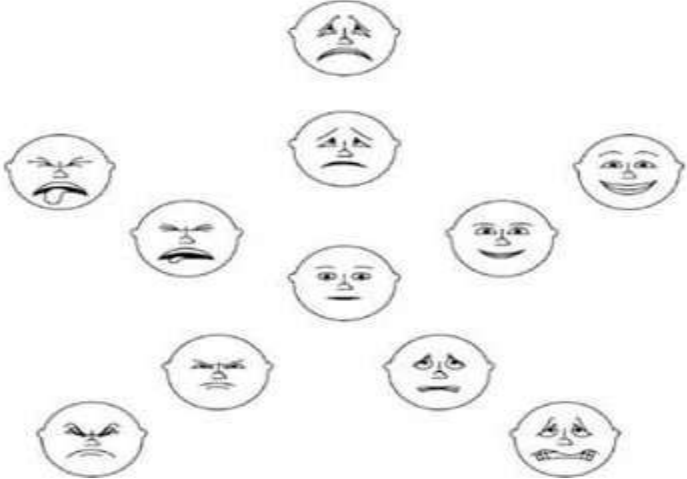
<b>SET 2</b>			
<b>2.1 HAPPY VIGNETTE EMOTION</b>			
<b>Instruction</b>	<p>ನಾನು ನಿಮಗೆ ಒಂದು ಸಣ್ಣ ಕಥೆಯನ್ನು ಓದುತ್ತೇನೆ.ಕಥೆಯನ್ನು ಕೇಳಿದ ನಂತರ ಕಥೆಯಲ್ಲಿನ ಮುಖ್ಯ ಪಾತ್ರದ ಭಾವನೆಗಳ ಬಗ್ಗೆ ಕೆಲವು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳುತ್ತೇನೆ. ಆ ಪ್ರಶ್ನೆಗಳು, ಕಥೆಯ ಒಂದು ನಿರ್ದಿಷ್ಟ ಪಾತ್ರದ ಗುಪ್ತ ಭಾವನೆ (ಮನಸ್ಸಿನಲ್ಲಿನ ಭಾವನೆ) ಹಾಗೂ ವ್ಯಕ್ತಪಡಿಸಿದ (ಮುಖದಲ್ಲಿ ತೋರುತ್ತಿರುವ) ಭಾವನೆಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಿದ್ದಾಗಿರುತ್ತದೆ. ಆ ಪ್ರಶ್ನೆಗೆ ಉತ್ತರವಾಗಿ ,ನಾನು ನಿಮಗೆ ತೋರಿಸುವ ವಿವಿಧ ಮುಖ ಚಿಹ್ನೆಗಳಲ್ಲಿ ಒಂದನ್ನು ನೀವು ಆರಿಸಬೇಕಾಗುತ್ತದೆ.</p>		
<b>Stimuli</b>	<p>ದೇವ್ ಇತರರ ವಸ್ತುಗಳನ್ನು ಎಸೆಯುವುದನ್ನು ಆನಂದಿಸುತ್ತಾನೆ. ಆದ್ದರಿಂದ ಅವನು ಆಡುವಾಗ ತನ್ನ ತಾಯಿಯ ಫೋನ್ ಎಸೆಯುತ್ತಾನೆ. ದೇವ್ ತನ್ನ ಮನಸ್ಸಿನ ಭಾವನೆಯನ್ನು ಮುಖದಲ್ಲಿ ವ್ಯಕ್ತಪಡಿಸಲು ಬಯಸುವುದಿಲ್ಲ. ಏಕೆಂದರೆ ದೇವ್ ಅದನ್ನು ಎಸೆದಿದ್ದಾನೆಂದು ತಿಳಿದಿದರೆ ದೇವ್ ನ ತಾಯಿ ಅವನಿಗೆ ಗದರಿಸುತ್ತಾಳೆ.</p>		
<b>Task to identify the emotion</b>	1. Concealment question:	2. Feel inside question:	3. Look on face question:
	ದೇವ್ ಗೆ ಏನು ಅನಿಸುತ್ತಿದೆ ಎಂದು ತಿಳಿದರೆ ದೇವ್ ನ ತಾಯಿಯ ಮುಖದ ಭಾವನೆ ಹೇಗಿರುತ್ತದೆ?	ದೇವ್ ನ ತಾಯಿಗೆ ಫೋನ್ ಸಿಗದಿದ್ದಾಗ ದೇವ್ ಗೆ ಹೇಗೆ ಅನಿಸಿತು?	ದೇವ್ ನ ತಾಯಿಗೆ ಫೋನ್ ಸಿಗದಿದ್ದಾಗ ಅವನ ಮುಖದಲ್ಲಿ ಯಾವ ಭಾವನೆ ಇತ್ತು?
<b>Facial emotions</b>			
<b>Quantitative Rating</b>	Appropriate Expression- 1 Inappropriate Expression- 0	Appropriate Expression- 1 Inappropriate Expression- 0	Appropriate Expression- 2 Neutral face/minimizing the felt emotion - 1
<b>Score</b>			

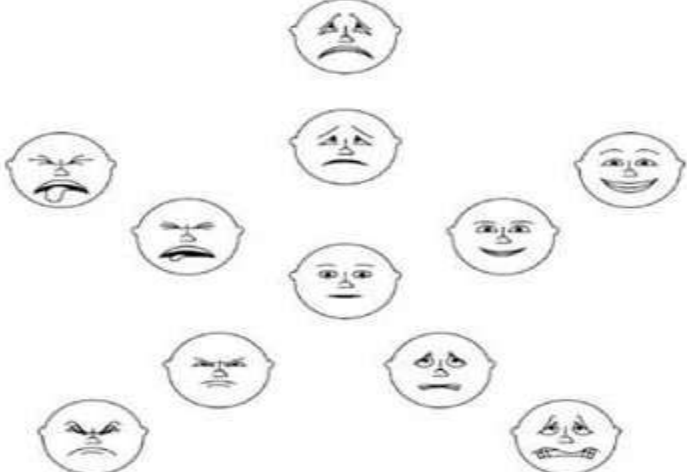
<b>SET 2</b>			
<b>2.2. YUCKY VIGNETTE EMOTION</b>			
<b>Instruction</b>	<p>ನಾನು ನಿಮಗೆ ಒಂದು ಸಣ್ಣ ಕಥೆಯನ್ನು ಓದುತ್ತೇನೆ, ಕಥೆಯನ್ನು ಕೇಳಿದ ನಂತರ ಕಥೆಯಲ್ಲಿನ ಮುಖ್ಯ ಪಾತ್ರದ ಭಾವನೆಗಳ ಬಗ್ಗೆ ಕೆಲವು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳುತ್ತೇನೆ. ಆ ಪ್ರಶ್ನೆಗಳು, ಕಥೆಯ ಒಂದು ನಿರ್ದಿಷ್ಟ ಪಾತ್ರದ ಗುಪ್ತ ಭಾವನೆ (ಮನಸಿನಲ್ಲಿನ ಭಾವನೆ) ಹಾಗೂ ವ್ಯಕ್ತಪಡಿಸಿದ (ಮುಖದಲ್ಲಿ ತೋರುತ್ತಿರುವ) ಭಾವನೆಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಿದ್ದಾಗಿರುತ್ತದೆ. ಆ ಪ್ರಶ್ನೆಗೆ ಉತ್ತರವಾಗಿ, ನಾನು ನಿಮಗೆ ತೋರಿಸುವ ವಿವಿಧ ಮುಖ ಚಿಹ್ನೆಗಳಲ್ಲಿ ಒಂದನ್ನು ನೀವು ಆರಿಸಬೇಕಾಗುತ್ತದೆ.</p>		
<b>Stimuli</b>	<p>ದೇವ್ ತನ್ನ ಚಿಕ್ಕಪ್ಪನ ಮನೆಗೆ ಭೇಟಿ ನೀಡುತ್ತಾನೆ, ಅವರ ಮನೆಯಲ್ಲಿ ಬಹಳ ಧೂಳು ಇರುವುದನ್ನು ದೇವ್ ಗಮನಿಸುತ್ತಾನೆ. ದೇವ್, ತನ್ನ ಚಿಕ್ಕಪ್ಪನಿಗೆ ಬೇಜಾರಾಗಬಹುದು ಎಂಬ ಕಾರಣಕ್ಕೆ ತನ್ನ ಮನಸ್ಸಿನ ಭಾವನೆಯನ್ನು ಮುಖದಲ್ಲಿ ವ್ಯಕ್ತಪಡಿಸಲು ಬಯಸುವುದಿಲ್ಲ.</p>		
<b>Task to identify the emotion</b>	1. Concealment question:	2. Feel inside question:	3. Look on face question:
	<p>ದೇವ್ ಗೆ ಏನು ಅನಿಸುತ್ತಿದೆ ಎಂದು ತಿಳಿದರೆ ದೇವ್ ನ ಚಿಕ್ಕಪ್ಪನ ಮುಖದ ಭಾವನೆ ಹೇಗಿರುತ್ತದೆ?</p>	<p>ಚಿಕ್ಕಪ್ಪನ ಮನೆಯನ್ನು ನೋಡಿದಾಗ ದೇವ್ ಗೆ ಹೇಗೆ ಅನಿಸಿತು?</p>	<p>ಚಿಕ್ಕಪ್ಪನ ಮನೆಯನ್ನು ನೋಡಿದಾಗ ದೇವ್ ನ ಮುಖದಲ್ಲಿ ಯಾವ ಭಾವನೆ ಇತ್ತು?</p>
<b>Facial emotions</b>			
<b>Quantitative Rating</b>	<p>Appropriate Expression- 1 Inappropriate Expression- 0</p>	<p>Appropriate Expression- 1 Inappropriate Expression- 0</p>	<p>Appropriate Expression- 2 Neutral face/minimizing the felt emotion - 1</p>
<b>Score</b>			

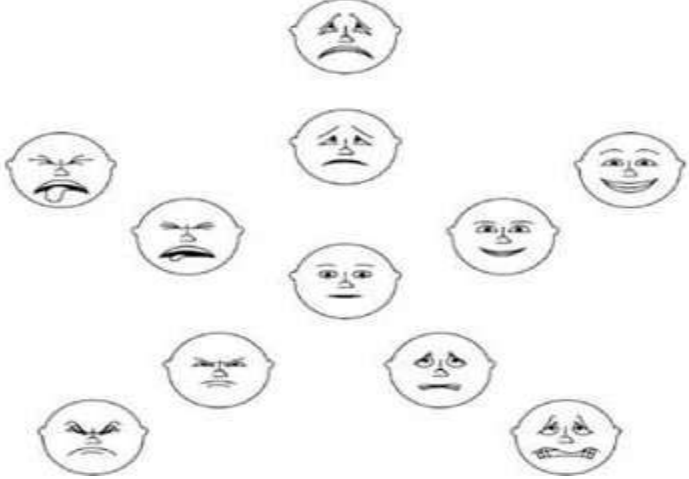
<b>SET 2</b>			
<b>2.3. SCARED VIGNETTE EMOTION</b>			
<b>Instruction</b>	<p>ನಾನು ನಿಮಗೆ ಒಂದು ಸಣ್ಣ ಕಥೆಯನ್ನು ಓದುತ್ತೇನೆ, ಕಥೆಯನ್ನು ಕೇಳಿದ ನಂತರ ಕಥೆಯಲ್ಲಿನ ಮುಖ್ಯ ಪಾತ್ರದ ಭಾವನೆಗಳ ಬಗ್ಗೆ ಕೆಲವು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳುತ್ತೇನೆ. ಆ ಪ್ರಶ್ನೆಗಳು, ಕಥೆಯ ಒಂದು ನಿರ್ದಿಷ್ಟ ಪಾತ್ರದ ಗುಪ್ತ ಭಾವನೆ (ಮನಸಿನಲ್ಲಿನ ಭಾವನೆ) ಹಾಗೂ ವ್ಯಕ್ತಪಡಿಸಿದ (ಮುಖದಲ್ಲಿ ತೋರುತ್ತಿರುವ) ಭಾವನೆಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಿದ್ದಾಗಿರುತ್ತದೆ. ಆ ಪ್ರಶ್ನೆಗೆ ಉತ್ತರವಾಗಿ, ನಾನು ನಿಮಗೆ ತೋರಿಸುವ ವಿವಿಧ ಮುಖ ಚಹರೆಗಳಲ್ಲಿ ಒಂದನ್ನು ನೀವು ಆರಿಸಬೇಕಾಗುತ್ತದೆ.</p>		
<b>Stimuli</b>	<p>ದೇವ್ ,ಚಾಕೋಲೇಟ್ ಅನ್ನು ಫ್ರಿಡ್ಜ್ ನಿಂದ ಕದ್ದ ನಂತರ ಅದು ತನ್ನ ತಂಗಿಯದೆಂದು ತಿಳಿದು, ಹೆದರಿಕೊಂಡಿದ್ದಾನೆ. ಅವನ ತಂಗಿ, ಹಾಗೂ ಅಮ್ಮ ಚಾಕೋಲೇಟ್‌ನ್ನು ಹುಡುಕುತ್ತಿದ್ದಾರೆ. ದೇವ್ ತನ್ನ ಮನಸ್ಸಿನ ಭಾವನೆಯನ್ನು ಮುಖದಲ್ಲಿ ವ್ಯಕ್ತಪಡಿಸಲು ಬಯಸುವುದಿಲ್ಲ. ಏಕೆಂದರೆ, ದೇವ್ ಈ ಕೆಲಸವನ್ನು ಮಾಡಿದ್ದಾನೆ ಎಂದು ತಿಳಿದರೆ, ಅವನ ತಾಯಿ ಕೋಪಗೊಂಡು ಅವನನ್ನು ಶಿಕ್ಷಿಸುತ್ತಾಳೆ.</p>		
<b>Task to identify the emotion</b>	1. Concealment question:	2. Feel inside question:	3. Look on face question:
	ದೇವ್ ಗೆ ಏನು ಅನಿಸುತ್ತಿದೆ ಎಂದು ತಿಳಿದರೆ ದೇವ್ ನ ತಾಯಿಯ ಮುಖದ ಭಾವನೆ ಹೇಗಿರುತ್ತದೆ?	ಚಾಕೋಲೇಟ್ ತನ್ನ ಸಹೋದರಿಯೆಂದು ತಿಳಿದುಬಂದಾಗ ದೇವ್ ಗೆ ಹೇಗೆ ಅನಿಸಿತು?	ದೇವ್ ಗೆ , ಅವನ ತಾಯಿ ಐಸ್ ಕ್ರೀಮ್ ಖರೀದಿಸಲು ನಿರಾಕರಿಸಿದಾಗ ದೇವ್ ನ ಮುಖದಲ್ಲಿ ಯಾವ ಭಾವನೆ ಇತ್ತು?
<b>Facial emotions</b>			
<b>Quantitative Rating</b>	Appropriate Expression- 1 Inappropriate Expression- 0	Appropriate Expression- 1 Inappropriate Expression- 0	Appropriate Expression- 2 Neutral face/minimizing the felt emotion - 1
<b>Score</b>			

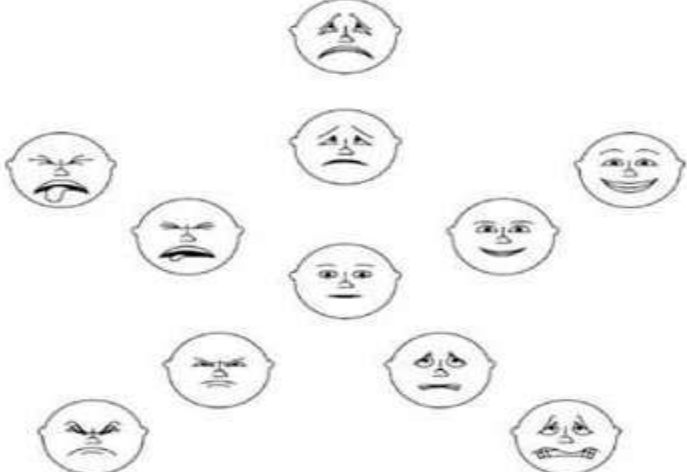


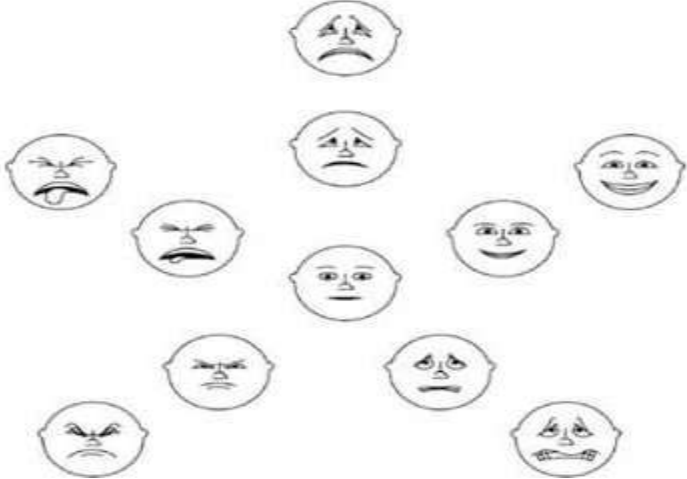
SET 2			
2.4. ANGRY VIGNETTE EMOTION			
<b>Instruction</b>	<p>ನಾನು ನಿಮಗೆ ಒಂದು ಸಣ್ಣ ಕಥೆಯನ್ನು ಓದುತ್ತೇನೆ, ಕಥೆಯನ್ನು ಕೇಳಿದ ನಂತರ ಕಥೆಯಲ್ಲಿನ ಮುಖ್ಯ ಪಾತ್ರದ ಭಾವನೆಗಳ ಬಗ್ಗೆ ಕೆಲವು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳುತ್ತೇನೆ. ಆ ಪ್ರಶ್ನೆಗಳು, ಕಥೆಯ ಒಂದು ನಿರ್ದಿಷ್ಟ ಪಾತ್ರದ ಗುಪ್ತ ಭಾವನೆ (ಮನಸಿನಲ್ಲಿನ ಭಾವನೆ) ಹಾಗೂ ವ್ಯಕ್ತಪಡಿಸಿದ (ಮುಖದಲ್ಲಿ ತೋರುತ್ತಿರುವ) ಭಾವನೆಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಿದ್ದಾಗಿರುತ್ತದೆ. ಆ ಪ್ರಶ್ನೆಗೆ ಉತ್ತರವಾಗಿ, ನಾನು ನಿಮಗೆ ತೋರಿಸುವ ವಿವಿಧ ಮುಖ ಚಹರೆಗಳಲ್ಲಿ ಒಂದನ್ನು ನೀವು ಆರಿಸಬೇಕಾಗುತ್ತದೆ.</p>		
<b>Stimuli</b>	<p>ದೇವ್ ಅನಾರೋಗ್ಯದಿಂದ ಬಳಲುತ್ತಿದ್ದರಿಂದ ಅವನ ತಾಯಿ, ಅವನಿಗೆ ಐಸ್ ಕ್ರೀಮ್ ಖರೀದಿಸಲು ನಿರಾಕರಿಸಿದರು. ಇದರಿಂದಾಗಿ ದೇವ್ ಸಿಟ್ಟಾಗಿದ್ದಾನೆ. ದೇವ್ ತನ್ನ ಮನಸ್ಸಿನ ಭಾವನೆಯನ್ನು ಮುಖದಲ್ಲಿ ವ್ಯಕ್ತಪಡಿಸಲು ಬಯಸುವುದಿಲ್ಲ ಏಕೆಂದರೆ, ಇದರಿಂದಾಗಿ ಅವನ ತಾಯಿಗೆ ಅಸಮಾಧಾನವಾಗುತ್ತದೆ.</p>		
<b>Task to identify the emotion</b>	1. Concealment question:	2. Feel inside question:	3. Look on face question:
	<p>ದೇವ್ ಗೆ ಏನು ಅನಿಸುತ್ತಿದೆ ಎಂದು ತಿಳಿದರೆ ದೇವ್ ನ ತಾಯಿಯ ಮುಖದ ಭಾವನೆ ಹೇಗಿರುತ್ತದೆ?</p>	<p>ದೇವ್ ಗೆ, ಅವನ ತಾಯಿ ಐಸ್ ಕ್ರೀಮ್ ಖರೀದಿಸಲು ನಿರಾಕರಿಸಿದಾಗ ಹೇಗೆ ಅನಿಸಿತು?</p>	<p>ದೇವ್ ಗೆ, ಅವನ ತಾಯಿ ಐಸ್ ಕ್ರೀಮ್ ಖರೀದಿಸಲು ನಿರಾಕರಿಸಿದಾಗ ದೇವ್ ನ ಮುಖದಲ್ಲಿ ಯಾವ ಭಾವನೆ ಇತ್ತು?</p>
<b>Facial emotions</b>			
<b>Quantitative Rating</b>	<p>Appropriate Expression- 1 Inappropriate Expression- 0</p>	<p>Appropriate Expression- 1 Inappropriate Expression- 0</p>	<p>Appropriate Expression- 2 Neutral face/minimizing the felt emotion - 1</p>
<b>Score</b>			

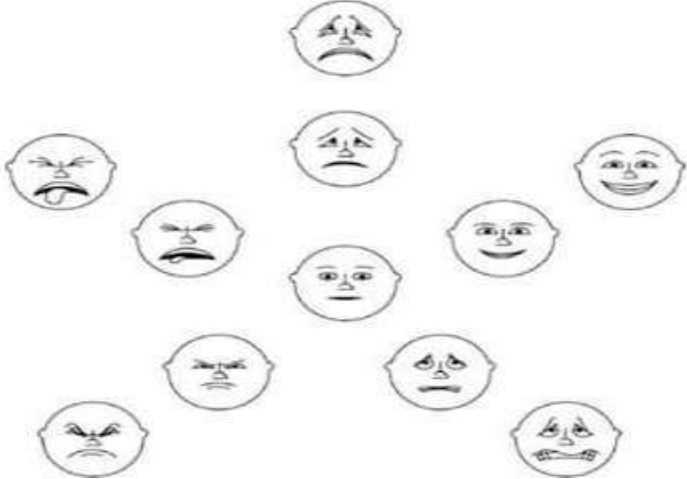
<b>SET 2</b>			
<b>2.5. SAD VIGNETTE EMOTION</b>			
<b>Instruction</b>	<p>ನಾನು ನಿಮಗೆ ಒಂದು ಸಣ್ಣ ಕಥೆಯನ್ನು ಓದುತ್ತೇನೆ. ಕಥೆಯನ್ನು ಕೇಳಿದ ನಂತರ ಕಥೆಯಲ್ಲಿನ ಮುಖ್ಯ ಪಾತ್ರದ ಭಾವನೆಗಳ ಬಗ್ಗೆ ಕೆಲವು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳುತ್ತೇನೆ. ಆ ಪ್ರಶ್ನೆಗಳು, ಕಥೆಯ ಒಂದು ನಿರ್ದಿಷ್ಟ ಪಾತ್ರದ ಗುಪ್ತ ಭಾವನೆ (ಮನಸಿನಲ್ಲಿನ ಭಾವನೆ) ಹಾಗೂ ವ್ಯಕ್ತಪಡಿಸಿದ (ಮುಖದಲ್ಲಿ ತೋರುತ್ತಿರುವ) ಭಾವನೆಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಿದ್ದಾಗಿರುತ್ತದೆ. ಆ ಪ್ರಶ್ನೆಗೆ ಉತ್ತರವಾಗಿ, ನಾನು ನಿಮಗೆ ತೋರಿಸುವ ವಿವಿಧ ಮುಖ ಚಿಹ್ನೆಗಳಲ್ಲಿ ಒಂದನ್ನು ನೀವು ಆರಿಸಬೇಕಾಗುತ್ತದೆ.</p>		
<b>Stimuli</b>	<p>ಓಟದ ಸ್ಪರ್ಧೆಯಲ್ಲಿ ಸೋತ ಕಾರಣ ದೇವ್ ದುಃಖಿತನಾಗಿದ್ದಾನೆ. ದೇವ್ ತನ್ನ ಮನಸ್ಸಿನ ಭಾವನೆಯನ್ನು ಮುಖದಲ್ಲಿ ವ್ಯಕ್ತಪಡಿಸಲು ಬಯಸುವುದಿಲ್ಲ. ಏಕೆಂದರೆ, ದೇವ್ ಗೆ ಏನು ಅನಿಸುತ್ತಿದೆ ಎಂದು ತಿಳಿದರೆ ಅವನ ಸಹಪಾಠಿಗಳು ಅವನನ್ನು ಗೇಲಿ ಮಾಡುತ್ತಾರೆ.</p>		
<b>Task to identify the emotion</b>	1. Concealment question:	2. Feel inside question:	3. Look on face question:
	ದೇವ್ ಗೆ ಏನು ಅನಿಸುತ್ತಿದೆ ಎಂದು ತಿಳಿದರೆ ದೇವ್ ನ ಸಹಪಾಠಿಗಳ ಮುಖದ ಭಾವನೆ ಹೇಗಿರುತ್ತದೆ?	ಓಟದ ಸ್ಪರ್ಧೆಯಲ್ಲಿ ಸೋತಾಗ ದೇವ್ ಗೆ ಹೇಗೆ ಅನಿಸಿತು?	ಓಟದ ಸ್ಪರ್ಧೆಯಲ್ಲಿ ಸೋತಾಗ ದೇವ್ ನ ಮುಖದಲ್ಲಿ ಯಾವ ಭಾವನೆ ಇತ್ತು?
<b>Facial emotions</b>			
<b>Quantitative Rating</b>	Appropriate Expression- 1 Inappropriate Expression- 0	Appropriate Expression- 1 Inappropriate Expression- 0	Appropriate Expression- 2 Neutral face/minimizing the felt emotion - 1
<b>Score</b>			

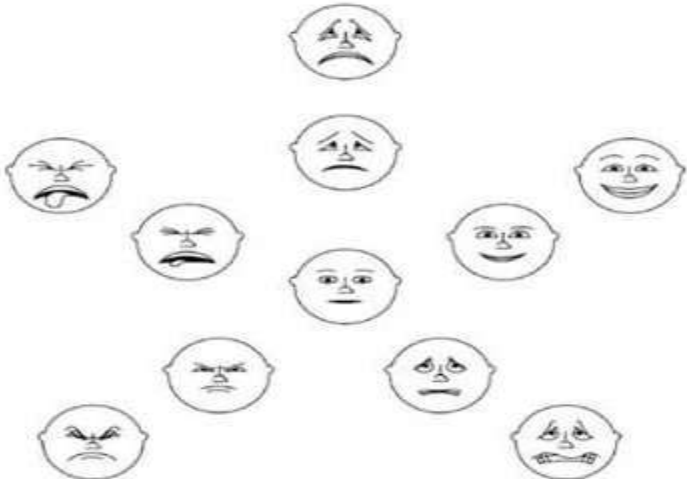
<b>SET 3</b>			
<b>3.1 HAPPY VIGNETTE EMOTION</b>			
<b>Instruction</b>	<p>ನಾನು ನಿಮಗೆ ಒಂದು ಸಣ್ಣ ಕಥೆಯನ್ನು ಓದುತ್ತೇನೆ, ಕಥೆಯನ್ನು ಕೇಳಿದ ನಂತರ ಕಥೆಯಲ್ಲಿನ ಮುಖ್ಯ ಪಾತ್ರದ ಭಾವನೆಗಳ ಬಗ್ಗೆ ಕೆಲವು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳುತ್ತೇನೆ. ಆ ಪ್ರಶ್ನೆಗಳು, ಕಥೆಯ ಒಂದು ನಿರ್ದಿಷ್ಟ ಪಾತ್ರದ ಗುಪ್ತ ಭಾವನೆ (ಮನಸಿನಲ್ಲಿನ ಭಾವನೆ) ಹಾಗೂ ವ್ಯಕ್ತಪಡಿಸಿದ (ಮುಖದಲ್ಲಿ ತೋರುತ್ತಿರುವ) ಭಾವನೆಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಿದ್ದಾಗಿರುತ್ತದೆ. ಆ ಪ್ರಶ್ನೆಗೆ ಉತ್ತರವಾಗಿ, ನಾನು ನಿಮಗೆ ತೋರಿಸುವ ವಿವಿಧ ಮುಖ ಚಹರೆಗಳಲ್ಲಿ ಒಂದನ್ನು ನೀವು ಆರಿಸಬೇಕಾಗುತ್ತದೆ.</p>		
<b>Stimuli</b>	<p>ಸುಂದರ್ ತನ್ನ ಸ್ನೇಹಿತನ ಮೇಲೆ ತಮಾಷೆ ಮಾಡಲು ಇಷ್ಟಪಡುತ್ತಾನೆ. ಆದ್ದರಿಂದ ಅವನ ಕಾರಿನ ಕೀಲಿಯನ್ನು ಮುಚ್ಚಿಡುತ್ತಾನೆ. ಸುಂದರ್ ತನ್ನ ಮನಸ್ಸಿನ ಭಾವನೆಯನ್ನು ಮುಖದಲ್ಲಿ ವ್ಯಕ್ತಪಡಿಸಲು ಬಯಸುವುದಿಲ್ಲ. ಏಕೆಂದರೆ ಇದನ್ನು ಸುಂದರ್ ಮಾಡಿದ್ದಾನೆಂದು ತಿಳಿದರೆ ಅವನ ಸ್ನೇಹಿತ ಕೋಪಗೊಳ್ಳುತ್ತಾನೆ.</p>		
<b>Task to identify the emotion</b>	1. Concealment question:	2. Feel inside question:	3. Look on face question:
	<p>ಸುಂದರ್‌ಗೆ ಏನು ಅನಿಸುತ್ತಿದೆ ಎಂದು ತಿಳಿದರೆ ಸುಂದರ್‌ನ ಸ್ನೇಹಿತನ ಮುಖದ ಭಾವನೆ ಹೇಗಿರುತ್ತದೆ?</p>	<p>ತನ್ನ ಸ್ನೇಹಿತ ಕೀಲಿಯನ್ನು ಹುಡುಕಲಾಗದಿದ್ದಾಗ ಸುಂದರ್ ಗೆ ಹೇಗೆ ಅನಿಸಿತು?</p>	<p>ತನ್ನ ಸ್ನೇಹಿತ ಕೀಲಿಯನ್ನು ಹುಡುಕಲಾಗದಿದ್ದಾಗ ಸುಂದರ್ ನ ಮುಖದಲ್ಲಿ ಯಾವ ಭಾವನೆ ಇತ್ತು?</p>
<b>Facial emotions</b>			
<b>Quantitative Rating</b>	<p>Appropriate Expression- 1 Inappropriate Expression- 0</p>	<p>Appropriate Expression- 1 Inappropriate Expression- 0</p>	<p>Appropriate Expression- 2 Neutral face/minimizing the felt emotion - 1</p>
<b>Score</b>			

<b>SET 3</b>			
<b>3.2. YUCKY VIGNETTE EMOTION</b>			
<b>Instruction</b>	<p>ನಾನು ನಿಮಗೆ ಒಂದು ಸಣ್ಣ ಕಥೆಯನ್ನು ಓದುತ್ತೇನೆ, ಕಥೆಯನ್ನು ಕೇಳಿದ ನಂತರ ಕಥೆಯಲ್ಲಿನ ಮುಖ್ಯ ಪಾತ್ರದ ಭಾವನೆಗಳ ಬಗ್ಗೆ ಕೆಲವು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳುತ್ತೇನೆ. ಆ ಪ್ರಶ್ನೆಗಳು, ಕಥೆಯ ಒಂದು ನಿರ್ದಿಷ್ಟ ಪಾತ್ರದ ಗುಪ್ತ ಭಾವನೆ (ಮನಸಿನಲ್ಲಿನ ಭಾವನೆ) ಹಾಗೂ ವ್ಯಕ್ತಪಡಿಸಿದ (ಮುಖದಲ್ಲಿ ತೋರುತ್ತಿರುವ) ಭಾವನೆಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಿದ್ದಾಗಿರುತ್ತದೆ. ಆ ಪ್ರಶ್ನೆಗೆ ಉತ್ತರವಾಗಿ, ನಾನು ನಿಮಗೆ ತೋರಿಸುವ ವಿವಿಧ ಮುಖ ಚಿಹ್ನೆಗಳಲ್ಲಿ ಒಂದನ್ನು ನೀವು ಆರಿಸಬೇಕಾಗುತ್ತದೆ.</p>		
<b>Stimuli</b>	<p>ತೊಳೆಯದ ಅಂಗಿಯನ್ನು ಧರಿಸಿ ಬಂದ ಕಾರಣ ಸುಂದರ್‌ನ ಸ್ನೇಹಿತ ಗಬ್ಬು ನಾರುತ್ತಿದ್ದಾನೆ. ಅವನಿಗೆ ಅದು ಅಸಹ್ಯಕರವೆಂದೆನಿಸುತ್ತದೆ. ಆದರೆ ಸುಂದರ್ ತನ್ನ ಮನಸ್ಸಿನ ಭಾವನೆಯನ್ನು ಮುಖದಲ್ಲಿ ವ್ಯಕ್ತಪಡಿಸಲು ಬಯಸುವುದಿಲ್ಲ. ಏಕೆಂದರೆ ಅವನ ಸ್ನೇಹಿತನಿಗೆ, ಸುಂದರ್ ಗೆ ಹೇಗೆ ಅನಿಸುತ್ತಿದೆ ಎಂದು ತಿಳಿದರೆ ಬೇಸರವಾಗುತ್ತದೆ.</p>		
<b>Task to identify the emotion</b>	1. Concealment question:	2. Feel inside question:	3. Look on face question:
	<p>ಸುಂದರ್‌ಗೆ ಏನು ಅನಿಸುತ್ತಿದೆ ಎಂದು ತಿಳಿದರೆ ಸುಂದರ್‌ನ ಸ್ನೇಹಿತನ ಮುಖದ ಭಾವನೆ ಹೇಗಿರುತ್ತದೆ?</p>	<p>ಸುಂದರ್‌ನ ಸ್ನೇಹಿತ ಧರಿಸಿದ್ದ ಅಂಗಿಯ ಕಾರಣದಿಂದಾಗಿ ತನ್ನ ಸ್ನೇಹಿತ ಗಬ್ಬು ನಾರುತ್ತಿದ್ದಾಗ ಸುಂದರ್‌ಗೆ ಹೇಗೆ ಅನಿಸಿತು?</p>	<p>ಸುಂದರ್‌ನ ಸ್ನೇಹಿತ ಧರಿಸಿದ್ದ ಅಂಗಿಯ ಕಾರಣದಿಂದಾಗಿ ತನ್ನ ಸ್ನೇಹಿತ ಗಬ್ಬು ನಾರುತ್ತಿದ್ದಾಗ ಸುಂದರ್ ನ ಮುಖದಲ್ಲಿ ಯಾವ ಭಾವನೆ ಇತ್ತು?</p>
<b>Facial emotions</b>			
<b>Quantitative Rating</b>	<p>Appropriate Expression- 1 Inappropriate Expression- 0</p>	<p>Appropriate Expression- 1 Inappropriate Expression- 0</p>	<p>Appropriate Expression- 2 Neutral face/minimizing the felt emotion - 1</p>
<b>Score</b>			

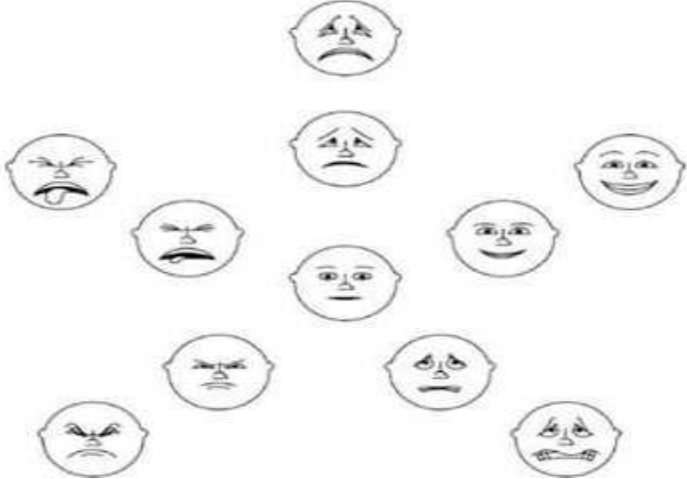
<b>SET 3</b>			
<b>3.3. SCARED VIGNETTE EMOTION</b>			
<b>Instruction</b>	<p>ನಾನು ನಿಮಗೆ ಒಂದು ಸಣ್ಣ ಕಥೆಯನ್ನು ಓದುತ್ತೇನೆ, ಕಥೆಯನ್ನು ಕೇಳಿದ ನಂತರ ಕಥೆಯಲ್ಲಿನ ಮುಖ್ಯ ಪಾತ್ರದ ಭಾವನೆಗಳ ಬಗ್ಗೆ ಕೆಲವು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳುತ್ತೇನೆ. ಆ ಪ್ರಶ್ನೆಗಳು, ಕಥೆಯ ಒಂದು ನಿರ್ದಿಷ್ಟ ಪಾತ್ರದ ಗುಪ್ತ ಭಾವನೆ (ಮನಸಿನಲ್ಲಿನ ಭಾವನೆ) ಹಾಗೂ ವ್ಯಕ್ತಪಡಿಸಿದ (ಮುಖದಲ್ಲಿ ತೋರುತ್ತಿರುವ) ಭಾವನೆಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಿದ್ದಾಗಿರುತ್ತದೆ. ಆ ಪ್ರಶ್ನೆಗೆ ಉತ್ತರವಾಗಿ, ನಾನು ನಿಮಗೆ ತೋರಿಸುವ ವಿವಿಧ ಮುಖ ಚಿಹ್ನೆಗಳಲ್ಲಿ ಒಂದನ್ನು ನೀವು ಆರಿಸಬೇಕಾಗುತ್ತದೆ.</p>		
<b>Stimuli</b>	<p>ಡ್ರೈವಿಂಗ್ ಲೈಸೆನ್ಸ್ ಇಲ್ಲದೆ ಬೈಕು ಸವಾರಿ ಮಾಡುತ್ತಿರುವುದರಿಂದ ಸುಂದರ್ ಹೆದರುತ್ತಾನೆ. ಇದನ್ನು ಅವನ ಮುಖದಲ್ಲಿ ವ್ಯಕ್ತಪಡಿಸಲು ಬಯಸುವುದಿಲ್ಲ, ಏಕೆಂದರೆ ತಪಾಸಣೆ ನಡೆಸುತ್ತಿರುವ ಟ್ರಾಫಿಕ್ ಪೊಲೀಸರು ಅನುಮಾನಿಸಿದರೆ ಆತನನ್ನು ವಿಚಾರಣೆಗೆ ಒಳಪಡಿಸಬಹುದು.</p>		
<b>Task to identify the emotion</b>	1. Concealment question:	2. Feel inside question:	3. Look on face question:
	<p>ಸುಂದರ್‌ಗೆ ಏನು ಅನಿಸುತ್ತಿದೆ ಎಂದು ತಿಳಿದರೆ ಪೊಲೀಸರ ಮುಖದ ಭಾವನೆ ಹೇಗಿರುತ್ತದೆ?</p>	<p>ಪೊಲೀಸರು ಜನರನ್ನು ವಿಚಾರಿಸುತ್ತಿರುವುದನ್ನು ನೋಡಿದ ಸುಂದರ್‌ಗೆ ಹೇಗೆ ಅನಿಸಿತು?</p>	<p>ಪೊಲೀಸರು ಜನರನ್ನು ವಿಚಾರಿಸುತ್ತಿರುವುದನ್ನು ನೋಡಿದ ಸುಂದರ್ ನ ಮುಖದಲ್ಲಿ ಯಾವ ಭಾವನೆ ಇತ್ತು?</p>
<b>Facial emotions</b>			
<b>Quantitative Rating</b>	<p>Appropriate Expression- 1 Inappropriate Expression- 0</p>	<p>Appropriate Expression- 1 Inappropriate Expression- 0</p>	<p>Appropriate Expression- 2 Neutral face/minimizing the felt emotion - 1</p>
<b>Score</b>			

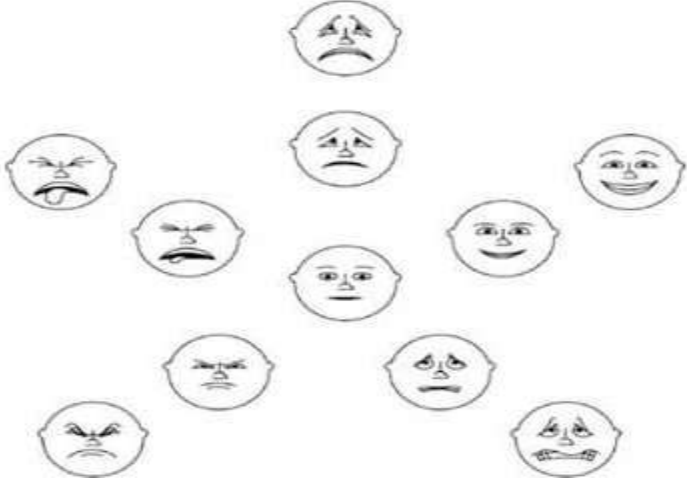
<b>SET 3</b>			
<b>3.4. ANGRY VIGNETTE EMOTION</b>			
<b>Instruction</b>	<p>ನಾನು ನಿಮಗೆ ಒಂದು ಸಣ್ಣ ಕಥೆಯನ್ನು ಓದುತ್ತೇನೆ, ಕಥೆಯನ್ನು ಕೇಳಿದ ನಂತರ ಕಥೆಯಲ್ಲಿನ ಮುಖ್ಯ ಪಾತ್ರದ ಭಾವನೆಗಳ ಬಗ್ಗೆ ಕೆಲವು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳುತ್ತೇನೆ. ಆ ಪ್ರಶ್ನೆಗಳು, ಕಥೆಯ ಒಂದು ನಿರ್ದಿಷ್ಟ ಪಾತ್ರದ ಗುಪ್ತ ಭಾವನೆ (ಮನಸಿನಲ್ಲಿನ ಭಾವನೆ) ಹಾಗೂ ವ್ಯಕ್ತಪಡಿಸಿದ (ಮುಖದಲ್ಲಿ ತೋರುತ್ತಿರುವ) ಭಾವನೆಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಿದ್ದಾಗಿರುತ್ತದೆ. ಆ ಪ್ರಶ್ನೆಗೆ ಉತ್ತರವಾಗಿ, ನಾನು ನಿಮಗೆ ತೋರಿಸುವ ವಿವಿಧ ಮುಖ ಚಿಹ್ನೆಗಳಲ್ಲಿ ಒಂದನ್ನು ನೀವು ಆರಿಸಬೇಕಾಗುತ್ತದೆ.</p>		
<b>Stimuli</b>	<p>ಸುಂದರ್ ತನ್ನ ಸ್ನೇಹಿತನ ಹೋಟೆಲ್ ಗೆ ಭೇಟಿ ನೀಡಿ, ಒಂದು ಕಪ್ ಕಾಫಿ ಆರ್ಡರ್ ಮಾಡುತ್ತಾನೆ, ಅದು ಒಳ್ಳೆಯ ರುಚಿಯನ್ನು ಹೊಂದಿರದ ಕಾರಣ ಅವನು ಕೋಪಗೊಳ್ಳುತ್ತಾನೆ. ಆದರೆ ಇದನ್ನು ಅವನ ಮುಖದಲ್ಲಿ ವ್ಯಕ್ತಪಡಿಸಲು ಬಯಸುವುದಿಲ್ಲವೆಂದರೆ ಸುಂದರ್ ಗೆ ಹೇಗೆ ಅನಿಸುತ್ತಿದೆ ಎಂದು ತಿಳಿದರೆ ಅವನ ಸ್ನೇಹಿತನು ಅಸಮಾಧಾನಗೊಳ್ಳುತ್ತಾನೆ.</p>		
<b>Task to identify the emotion</b>	1. Concealment question:	2. Feel inside question:	3. Look on face question:
	ಸುಂದರ್‌ಗೆ ಏನು ಅನಿಸುತ್ತಿದೆ ಎಂದು ತಿಳಿದರೆ ಸುಂದರ್‌ನ ಸ್ನೇಹಿತನ ಮುಖದ ಭಾವನೆ ಹೇಗಿರುತ್ತದೆ?	ಕಾಫಿ ಕುಡಿದಾಗ ಸುಂದರ್ ಗೆ ಹೇಗೆ ಅನಿಸಿತು?	ಕಾಫಿ ಕುಡಿದಾಗ ಸುಂದರ್ ನ ಮುಖದಲ್ಲಿ ಯಾವ ಭಾವನೆ ಇತ್ತು?
<b>Facial emotions</b>			
<b>Quantitative Rating</b>	Appropriate Expression- 1 Inappropriate Expression- 0	Appropriate Expression- 1 Inappropriate Expression- 0	Appropriate Expression- 2 Neutral face/minimizing the felt emotion - 1
<b>Score</b>			

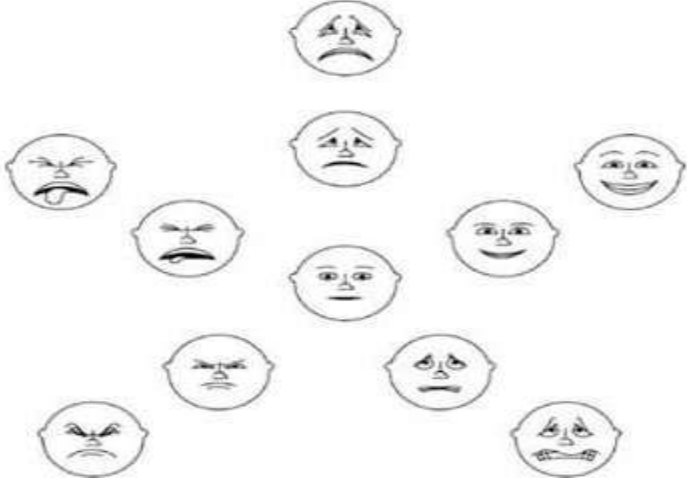
<b>SET 3</b>			
<b>3.5. SAD VIGNETTE EMOTION</b>			
<b>Instruction</b>	<p>ನಾನು ನಿಮಗೆ ಒಂದು ಸಣ್ಣ ಕಥೆಯನ್ನು ಓದುತ್ತೇನೆ, ಕಥೆಯನ್ನು ಕೇಳಿದ ನಂತರ ಕಥೆಯಲ್ಲಿನ ಮುಖ್ಯ ಪಾತ್ರದ ಭಾವನೆಗಳ ಬಗ್ಗೆ ಕೆಲವು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳುತ್ತೇನೆ. ಆ ಪ್ರಶ್ನೆಗಳು, ಕಥೆಯ ಒಂದು ನಿರ್ದಿಷ್ಟ ಪಾತ್ರದ ಗುಪ್ತ ಭಾವನೆ (ಮನಸಿನಲ್ಲಿನ ಭಾವನೆ) ಹಾಗೂ ವ್ಯಕ್ತಪಡಿಸಿದ (ಮುಖದಲ್ಲಿ ತೋರುತ್ತಿರುವ) ಭಾವನೆಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಿದ್ದಾಗಿರುತ್ತದೆ. ಆ ಪ್ರಶ್ನೆಗೆ ಉತ್ತರವಾಗಿ, ನಾನು ನಿಮಗೆ ತೋರಿಸುವ ವಿವಿಧ ಮುಖ ಚಿಹ್ನೆಗಳಲ್ಲಿ ಒಂದನ್ನು ನೀವು ಆರಿಸಬೇಕಾಗುತ್ತದೆ.</p>		
<b>Stimuli</b>	<p>ತನ್ನ ಕಚೇರಿಯಲ್ಲಿ ಬಡ್ಡಿ ನೀಡದ ಕಾರಣ ಸುಂದರ್‌ಗೆ ಅತ್ಯಪ್ಪಿ ಇದೆ. ಇದನ್ನು ಅವನ ಮುಖದಲ್ಲಿ ವ್ಯಕ್ತಪಡಿಸಲು ಬಯಸುವುದಿಲ್ಲ, ಏಕೆಂದರೆ ಸಭೆಯಲ್ಲಿರುವ ಅವನ ಸಹೋದ್ಯೋಗಿಗಳು ಅವನಿಗೆ ಹೇಗೆ ಅನಿಸುತ್ತದೆ ಎಂದು ತಿಳಿದರೆ, ಅವನನ್ನು ಗೇಲಿ ಮಾಡಬಹುದು.</p>		
<b>Task to identify the emotion</b>	1. Concealment question:	2. Feel inside question:	3. Look on face question:
	<p>ಸುಂದರ್‌ಗೆ ಏನು ಅನಿಸುತ್ತಿದೆ ಎಂದು ತಿಳಿದರೆ ಸುಂದರ್‌ನ ಸಹೋದ್ಯೋಗಿಯ ಮುಖದ ಭಾವನೆ ಹೇಗಿರುತ್ತದೆ?</p>	<p>ತನ್ನ ಕಚೇರಿಯಲ್ಲಿ ಬಡ್ಡಿ ನೀಡದಿದ್ದಾಗ ಸುಂದರ್‌ಗೆ ಹೇಗೆ ಅನಿಸಿತು?</p>	<p>ತನ್ನ ಕಚೇರಿಯಲ್ಲಿ ಬಡ್ಡಿ ನೀಡದಿದ್ದಾಗ ಸುಂದರ್‌ನ ಮುಖದಲ್ಲಿ ಯಾವ ಭಾವನೆ ಇತ್ತು?</p>
<b>Facial emotions</b>			
<b>Quantitative Rating</b>	<p>Appropriate Expression- 1 Inappropriate Expression- 0</p>	<p>Appropriate Expression- 1 Inappropriate Expression- 0</p>	<p>Appropriate Expression- 2 Neutral face/minimizing the felt emotion - 1</p>
<b>Score</b>			

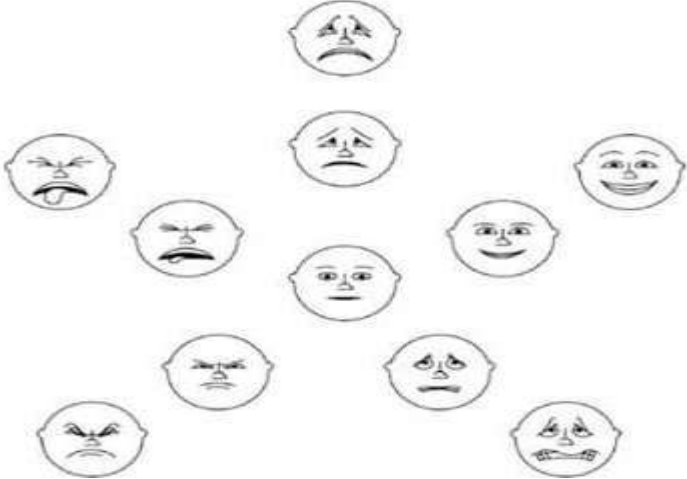
<b>SET 4</b>			
<b>4.1 HAPPY VIGNETTE EMOTION</b>			
<b>Instruction</b>	<p>ನಾನು ನಿಮಗೆ ಒಂದು ಸಣ್ಣ ಕಥೆಯನ್ನು ಓದುತ್ತೇನೆ, ಕಥೆಯನ್ನು ಕೇಳಿದ ನಂತರ ಕಥೆಯಲ್ಲಿನ ಮುಖ್ಯ ಪಾತ್ರದ ಭಾವನೆಗಳ ಬಗ್ಗೆ ಕೆಲವು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳುತ್ತೇನೆ. ಆ ಪ್ರಶ್ನೆಗಳು, ಕಥೆಯ ಒಂದು ನಿರ್ದಿಷ್ಟ ಪಾತ್ರದ ಗುಪ್ತ ಭಾವನೆ (ಮನಸಿನಲ್ಲಿನ ಭಾವನೆ) ಹಾಗೂ ವ್ಯಕ್ತಪಡಿಸಿದ (ಮುಖದಲ್ಲಿ ತೋರುತ್ತಿರುವ) ಭಾವನೆಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಿದ್ದಾಗಿರುತ್ತದೆ. ಆ ಪ್ರಶ್ನೆಗೆ ಉತ್ತರವಾಗಿ, ನಾನು ನಿಮಗೆ ತೋರಿಸುವ ವಿವಿಧ ಮುಖ ಚಿಹ್ನೆಗಳಲ್ಲಿ ಒಂದನ್ನು ನೀವು ಆರಿಸಬೇಕಾಗುತ್ತದೆ.</p>		
<b>Stimuli</b>	<p>ಗೀತಾ ತನ್ನ ಮ್ಯಾನೇಜರ್‌ಗೆ ತಾನು ಅನಾರೋಗ್ಯದಿಂದ ಬಳಲುತ್ತಿದ್ದೇನೆ, ಎಂದು ಸುಳ್ಳು ಹೇಳಿ, ಒಂದು ಸಮಾರಂಭಕ್ಕೆ ಹೋಗಲು ರಜೆ ಪಡೆಯುತ್ತಾಳೆ. ಗೀತಾಗೆ ಅನುಮತಿ ಸಿಕ್ಕಿದಂಥೆ ಆಕೆ ಸಂಭ್ರಮದಲ್ಲಿದ್ದಾಳೆ, ಆದರೆ ಅವಳ ಮುಖದ ಮೇಲೆ ಇದನ್ನು ವ್ಯಕ್ತಪಡಿಸಲು ಅವಳು ಬಯಸುವುದಿಲ್ಲ, ಏಕೆಂದರೆ ಅವಳು ಸುಳ್ಳು ಹೇಳಿದಳು ಎಂದು ತಿಳಿದರೆ ಅವಳ ಮ್ಯಾನೇಜರ್ ಸಿಟ್ಟಾಗುತ್ತಾರೆ.</p>		
<b>Task to identify the emotion</b>	1. Concealment question:	2. Feel inside question:	3. Look on face question:
	ಗೀತಾಗೆ ಏನು ಅನಿಸುತ್ತಿದೆ ಎಂದು ತಿಳಿದರೆ ಗೀತಾ ಅವರ ಮ್ಯಾನೇಜರ್‌ನ ಮುಖದ ಭಾವನೆ ಹೇಗಿರುತ್ತದೆ?	ಒಂದು ದಿನ ರಜೆ ತೆಗೆದುಕೊಳ್ಳಲು ಮ್ಯಾನೇಜರ್ ಅನುಮತಿ ನೀಡಿದಾಗ ಗೀತಾಗೆ ಹೇಗೆ ಅನಿಸಿತು?	ಒಂದು ದಿನ ರಜೆ ತೆಗೆದುಕೊಳ್ಳಲು ಮ್ಯಾನೇಜರ್ ಅನುಮತಿ ನೀಡಿದಾಗ ಗೀತಾಳ ಮುಖದಲ್ಲಿ ಯಾವ ಭಾವನೆ ಇತ್ತು?
<b>Facial emotions</b>			
<b>Quantitative Rating</b>	Appropriate Expression- 1 Inappropriate Expression- 0	Appropriate Expression- 1 Inappropriate Expression- 0	Appropriate Expression- 2 Neutral face/minimizing the felt emotion - 1
<b>Score</b>			

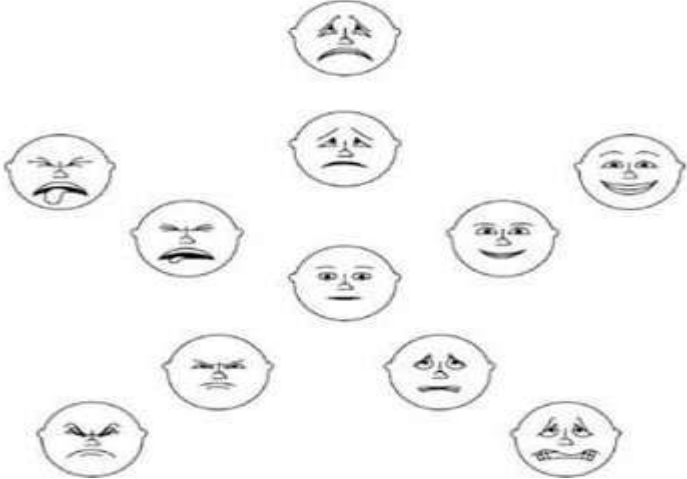


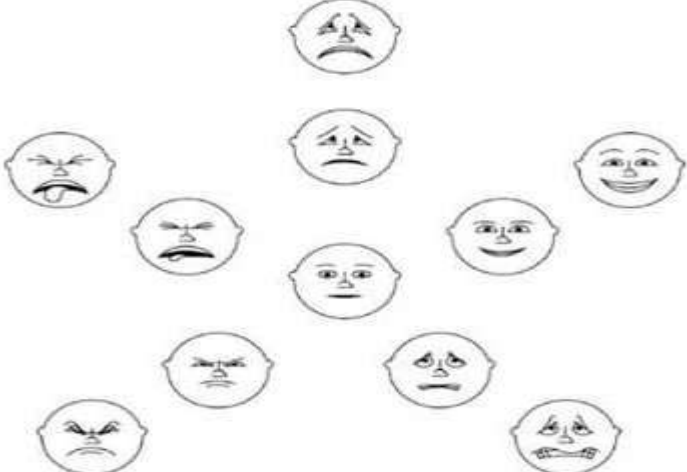
<b>SET 4</b>			
<b>4.2. YUCKY VIGNETTE EMOTION</b>			
<b>Instruction</b>	<p>ನಾನು ನಿಮಗೆ ಒಂದು ಸಣ್ಣ ಕಥೆಯನ್ನು ಓದುತ್ತೇನೆ, ಕಥೆಯನ್ನು ಕೇಳಿದ ನಂತರ ಕಥೆಯಲ್ಲಿನ ಮುಖ್ಯ ಪಾತ್ರದ ಭಾವನೆಗಳ ಬಗ್ಗೆ ಕೆಲವು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳುತ್ತೇನೆ. ಆ ಪ್ರಶ್ನೆಗಳು, ಕಥೆಯ ಒಂದು ನಿರ್ದಿಷ್ಟ ಪಾತ್ರದ ಗುಪ್ತ ಭಾವನೆ (ಮನಸಿನಲ್ಲಿನ ಭಾವನೆ) ಹಾಗೂ ವ್ಯಕ್ತಪಡಿಸಿದ (ಮುಖದಲ್ಲೇ ತೋರುತ್ತಿರುವ) ಭಾವನೆಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಿದ್ದಾಗಿರುತ್ತದೆ. ಆ ಪ್ರಶ್ನೆಗೆ ಉತ್ತರವಾಗಿ, ನಾನು ನಿಮಗೆ ತೋರಿಸುವ ವಿವಿಧ ಮುಖ ಚಿಹ್ನೆಗಳಲ್ಲಿ ಒಂದನ್ನು ನೀವು ಆರಿಸಬೇಕಾಗುತ್ತದೆ.</p>		
<b>Stimuli</b>	<p>ಗೀತಾಳ ಸ್ನೇಹಿತನಿಗೆ ಉಗುರು ಕಚ್ಚುವ ಅಭ್ಯಾಸವಿದೆ. ಗೀತಾ ತನ್ನ ಸ್ನೇಹಿತ , ಒಂದು ಸಭೆಯ ಮಧ್ಯೆ ಉಗುರು ಕಚ್ಚುವುದನ್ನು ನೋಡುತ್ತಾಳೆ. ಗೀತಾಗೆ ಇದರಿಂದ ಹೇಸಿಗೆಯಾಗುತ್ತದೆ ಆದರೆ ಅವಳ ಮುಖದ ಮೇಲೆ ಇದನ್ನು ವ್ಯಕ್ತಪಡಿಸಲು ಅವಳು ಬಯಸುವುದಿಲ್ಲ ಏಕೆಂದರೆ ಗೀತಾಗೆ ಹೇಗೆ ಅನಿಸುತ್ತದೆ ಎಂದು ಅವಳ ಸ್ನೇಹಿತನಿಗೆ ತಿಳಿದರೆ, ಅವನಿಗೆ ಅಸಮಾಧಾನವಾಗುತ್ತದೆ.</p>		
<b>Task to identify the emotion</b>	1. Concealment question:	2. Feel inside question:	3. Look on face question:
	ಗೀತಾಗೆ ಏನು ಅನಿಸುತ್ತಿದೆ ಎಂದು ತಿಳಿದರೆ ಗೀತಾಳ ಸ್ನೇಹಿತನ ಮುಖದ ಭಾವನೆ ಹೇಗಿರುತ್ತದೆ?	ತನ್ನ ಸ್ನೇಹಿತ ತನ್ನ ಉಗುರು ಕಚ್ಚುವುದನ್ನು ನೋಡಿದಾಗ ಗೀತಾಗೆ ಹೇಗೆ ಅನಿಸಿತು?	ತನ್ನ ಸ್ನೇಹಿತ ತನ್ನ ಉಗುರು ಕಚ್ಚುವುದನ್ನು ನೋಡಿದಾಗ ಗೀತಾಳ ಮುಖದಲ್ಲೇ ಯಾವ ಭಾವನೆ ಇತ್ತು?
<b>Facial emotions</b>			
<b>Quantitative Rating</b>	Appropriate Expression- 1 Inappropriate Expression- 0	Appropriate Expression- 1 Inappropriate Expression- 0	Appropriate Expression- 2 Neutral face/minimizing the felt emotion - 1
<b>Score</b>			

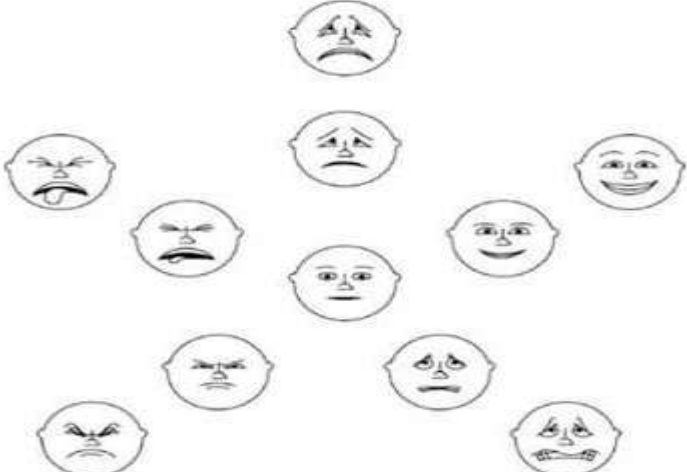
<b>SET 4</b>			
<b>4.3. SCARED VIGNETTE EMOTION</b>			
<b>Instruction</b>	<p>ನಾನು ನಿಮಗೆ ಒಂದು ಸಣ್ಣ ಕಥೆಯನ್ನು ಓದುತ್ತೇನೆ, ಕಥೆಯನ್ನು ಕೇಳಿದ ನಂತರ ಕಥೆಯಲ್ಲಿನ ಮುಖ್ಯ ಪಾತ್ರದ ಭಾವನೆಗಳ ಬಗ್ಗೆ ಕೆಲವು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳುತ್ತೇನೆ. ಆ ಪ್ರಶ್ನೆಗಳು, ಕಥೆಯ ಒಂದು ನಿರ್ದಿಷ್ಟ ಪಾತ್ರದ ಗುಪ್ತ ಭಾವನೆ (ಮನಸಿನಲ್ಲಿನ ಭಾವನೆ) ಹಾಗೂ ವ್ಯಕ್ತಪಡಿಸಿದ (ಮುಖದಲ್ಲಿ ತೋರುತ್ತಿರುವ) ಭಾವನೆಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಿದ್ದಾಗಿರುತ್ತದೆ. ಆ ಪ್ರಶ್ನೆಗೆ ಉತ್ತರವಾಗಿ, ನಾನು ನಿಮಗೆ ತೋರಿಸುವ ವಿವಿಧ ಮುಖ ಚಿಹ್ನೆಗಳಲ್ಲಿ ಒಂದನ್ನು ನೀವು ಆರಿಸಬೇಕಾಗುತ್ತದೆ.</p>		
<b>Stimuli</b>	<p>ಗೀತಾ ತನ್ನ ಗಂಡನ ನೆಚ್ಚಿನ ಶರ್ಟ್‌ನ್ನು ಇಸ್ರೈ ಮಾಡುವಾಗ ಸುಡುತ್ತಾಳೆ ಇದರಿಂದಾಗಿ ಅವಳು ಹೆದರಿದ್ದಾಳೆ. ಆದರೆ ಅವಳ ಮುಖದ ಮೇಲೆ ಇದನ್ನು ವ್ಯಕ್ತಪಡಿಸಲು ಅವಳು ಬಯಸುವುದಿಲ್ಲ ಏಕೆಂದರೆ, ಆದದ್ದನ್ನು ತಿಳಿದರೆ ಅವನು ಕೋಪಗೊಳ್ಳುತ್ತಾನೆ.</p>		
<b>Task to identify the emotion</b>	1. Concealment question:	2. Feel inside question:	3. Look on face question:
	ಗೀತಾಳಿಗೆ ಏನು ಅನಿಸುತ್ತಿದೆ ಎಂದು ತಿಳಿದರೆ ಗೀತಾಳ ಗಂಡನ ಮುಖದ ಭಾವನೆ ಹೇಗಿರುತ್ತದೆ?	ಶರ್ಟ್ ಸುಟ್ಟುಹೋಗಿದೆ ಎಂದು ತಿಳಿದಾಗ ಗೀತಾಗೆ ಹೇಗೆ ಅನಿಸಿತು?	ಶರ್ಟ್ ಸುಟ್ಟುಹೋಗಿದೆ ಎಂದು ತಿಳಿದಾಗ ಗೀತಾಳ ಮುಖದಲ್ಲಿ ಯಾವ ಭಾವನೆ ಇತ್ತು?
<b>Facial emotions</b>			
<b>Quantitative Rating</b>	Appropriate Expression- 1 Inappropriate Expression- 0	Appropriate Expression- 1 Inappropriate Expression- 0	Appropriate Expression- 2 Neutral face/minimizing the felt emotion - 1
<b>Score</b>			

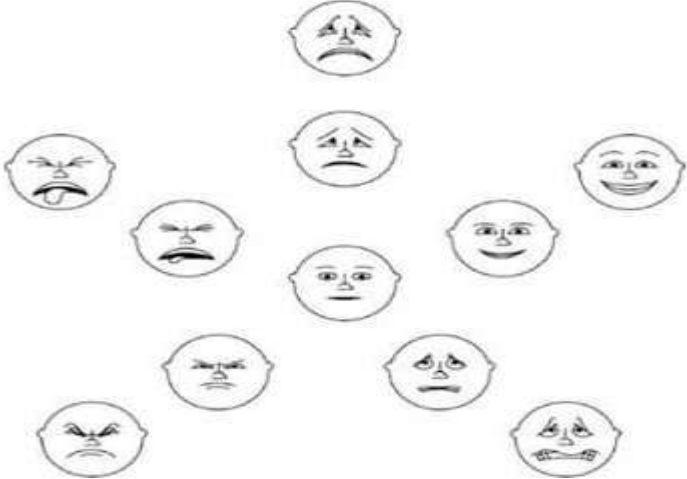
<b>SET 4</b>			
<b>4.4. ANGRY VIGNETTE EMOTION</b>			
<b>Instruction</b>	<p>ನಾನು ನಿಮಗೆ ಒಂದು ಸಣ್ಣ ಕಥೆಯನ್ನು ಓದುತ್ತೇನೆ, ಕಥೆಯನ್ನು ಕೇಳಿದ ನಂತರ ಕಥೆಯಲ್ಲಿನ ಮುಖ್ಯ ಪಾತ್ರದ ಭಾವನೆಗಳ ಬಗ್ಗೆ ಕೆಲವು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳುತ್ತೇನೆ. ಆ ಪ್ರಶ್ನೆಗಳು, ಕಥೆಯ ಒಂದು ನಿರ್ದಿಷ್ಟ ಪಾತ್ರದ ಗುಪ್ತ ಭಾವನೆ (ಮನಸಿನಲ್ಲಿನ ಭಾವನೆ) ಹಾಗೂ ವ್ಯಕ್ತಪಡಿಸಿದ (ಮುಖದಲ್ಲಿ ತೋರುತ್ತಿರುವ) ಭಾವನೆಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಿದ್ದಾಗಿರುತ್ತದೆ. ಆ ಪ್ರಶ್ನೆಗೆ ಉತ್ತರವಾಗಿ, ನಾನು ನಿಮಗೆ ತೋರಿಸುವ ವಿವಿಧ ಮುಖ ಚಿಹ್ನೆಗಳಲ್ಲಿ ಒಂದನ್ನು ನೀವು ಆರಿಸಬೇಕಾಗುತ್ತದೆ.</p>		
<b>Stimuli</b>	<p>ಗೀತಾಳ ಸಹೋದ್ಯೋಗಿ ಆಕೆಯ ಮೇಲೆ ನೀರು ಚೆಲ್ಲಿದಳು. ಹಾಗಾಗಿ ಗೀತಾ ಕೋಪಗೊಂಡಿದ್ದಾಳೆ ಆದರೆ ಗೀತಾ ಇದನ್ನು ತನ್ನ ಮುಖದ ಮೇಲೆ ವ್ಯಕ್ತಪಡಿಸಲು ಬಯಸುವುದಿಲ್ಲ, ಏಕೆಂದರೆ ಅವಳ ಸಹೋದ್ಯೋಗಿ ಅದನ್ನು ಉದ್ದೇಶಪೂರ್ವಕವಾಗಿ ಮಾಡಿಲ್ಲ ಎಂದು ಗೀತಾಗೆ ತಿಳಿದಿದೆ, ಮತ್ತು ಗೀತಾಗೆ ಹೇಗೆ ಅನಿಸುತ್ತಿದೆ ಎಂದು ತಿಳಿದರೆ ಆಕೆಯ ಸಹೋದ್ಯೋಗಿಗೆ ಬೇಸರವಾಗುತ್ತದೆ.</p>		
<b>Task to identify the emotion</b>	1. Concealment question:	2. Feel inside question:	3. Look on face question:
	ಗೀತಾಗೆ ಏನು ಅನಿಸುತ್ತಿದೆ ಎಂದು ತಿಳಿದರೆ ಗೀತಾಳ ಸಹೋದ್ಯೋಗಿಯ ಮುಖದ ಭಾವನೆ ಹೇಗಿರುತ್ತದೆ?	ತನ್ನ ಮೇಲೆ ನೀರು ಚೆಲ್ಲಿದಾಗ ಗೀತಾಗೆ ಹೇಗೆ ಅನಿಸಿತು?	ತನ್ನ ಮೇಲೆ ನೀರು ಚೆಲ್ಲಿದಾಗ ಗೀತಾಳ ಮುಖದಲ್ಲಿ ಯಾವ ಭಾವನೆ ಇತ್ತು?
<b>Facial emotions</b>			
<b>Quantitative Rating</b>	Appropriate Expression- 1 Inappropriate Expression- 0	Appropriate Expression- 1 Inappropriate Expression- 0	Appropriate Expression- 2 Neutral face/minimizing the felt emotion - 1
<b>Score</b>			

<b>SET 4</b>			
<b>4.5. SAD VIGNETTE EMOTION</b>			
<b>Instruction</b>	<p>ನಾನು ನಿಮಗೆ ಒಂದು ಸಣ್ಣ ಕಥೆಯನ್ನು ಓದುತ್ತೇನೆ, ಕಥೆಯನ್ನು ಕೇಳಿದ ನಂತರ ಕಥೆಯಲ್ಲಿನ ಮುಖ್ಯ ಪಾತ್ರದ ಭಾವನೆಗಳ ಬಗ್ಗೆ ಕೆಲವು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳುತ್ತೇನೆ. ಆ ಪ್ರಶ್ನೆಗಳು, ಕಥೆಯ ಒಂದು ನಿರ್ದಿಷ್ಟ ಪಾತ್ರದ ಗುಪ್ತ ಭಾವನೆ (ಮನಸಿನಲ್ಲಿನ ಭಾವನೆ) ಹಾಗೂ ವ್ಯಕ್ತಪಡಿಸಿದ (ಮುಖದಲ್ಲಿ ತೋರುತ್ತಿರುವ) ಭಾವನೆಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಿದ್ದಾಗಿರುತ್ತದೆ. ಆ ಪ್ರಶ್ನೆಗೆ ಉತ್ತರವಾಗಿ, ನಾನು ನಿಮಗೆ ತೋರಿಸುವ ವಿವಿಧ ಮುಖ ಚಿಹ್ನೆಗಳಲ್ಲಿ ಒಂದನ್ನು ನೀವು ಆರಿಸಬೇಕಾಗುತ್ತದೆ.</p>		
<b>Stimuli</b>	<p>ಗೀತಾಳ ಮಗಳು, ಗೀತಾಳ ನೆಚ್ಚಿನ ಬಳೆಯನ್ನು ತನ್ನ ಶಾಲೆಯ ಸಮಾರಂಭವೊಂದರಲ್ಲಿ ಭಾಗವಹಿಸಿದ್ದಾಗ ಕಳೆದುಹಾಕಿದ್ದಾಳೆ. ಇದರಿಂದಾಗಿ ಗೀತಾ ದುಃಖಿತಳಾಗಿದ್ದಾಳೆ. ಆದರೆ ಗೀತಾ ಇದನ್ನು ತನ್ನ ಮುಖದ ಮೇಲೆ ವ್ಯಕ್ತಪಡಿಸಲು ಬಯಸುವುದಿಲ್ಲ, ಏಕೆಂದರೆ ಗೀತಾಗೆ ಹೇಗೆ ಅನಿಸುತ್ತಿದೆ ಎಂದು ತಿಳಿದರೆ ಅವಳ ಮಗಳಿಗೆ ಬೇಸರವಾಗುತ್ತದೆ.</p>		
<b>Task to identify the emotion</b>	1. Concealment question:	2. Feel inside question:	3. Look on face question:
	ಗೀತಾಗೆ ಏನು ಅನಿಸುತ್ತಿದೆ ಎಂದು ತಿಳಿದರೆ ಗೀತಾಳ ಮುಖದ ಭಾವನೆ ಹೇಗಿರುತ್ತದೆ?	ತನ್ನ ಬಳೆ ಕಳೆದುಹೋಗಿದೆ ಎಂದು ತಿಳಿದಾಗ ಗೀತಾಗೆ ಹೇಗೆ ಅನಿಸಿತು?	ತನ್ನ ಬಳೆ ಕಳೆದುಹೋಗಿದೆ ಎಂದು ತಿಳಿದಾಗ ಗೀತಾಳ ಮುಖದಲ್ಲಿ ಯಾವ ಭಾವನೆ ಇತ್ತು?
<b>Facial emotions</b>			
<b>Quantitative Rating</b>	Appropriate Expression- 1 Inappropriate Expression- 0	Appropriate Expression- 1 Inappropriate Expression- 0	Appropriate Expression- 2 Neutral face/minimizing the felt emotion - 1
<b>Score</b>			

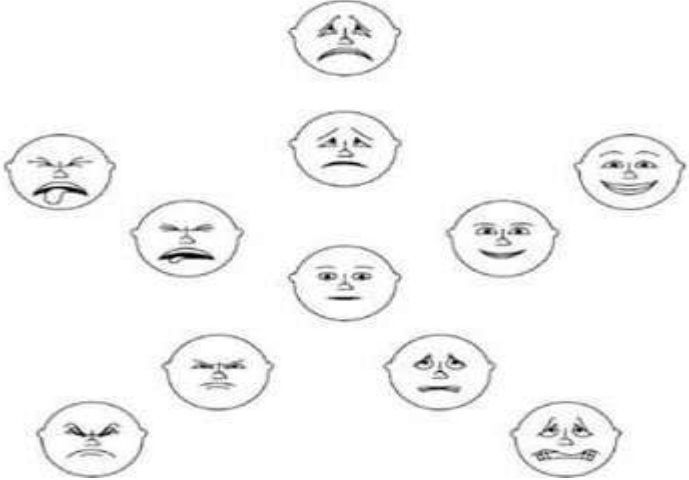
<b>SET 5</b>			
<b>5.1 HAPPY VIGNETTE EMOTION</b>			
<b>Instruction</b>	<p>ನಾನು ನಿಮಗೆ ಒಂದು ಸಣ್ಣ ಕಥೆಯನ್ನು ಓದುತ್ತೇನೆ, ಕಥೆಯನ್ನು ಕೇಳಿದ ನಂತರ ಕಥೆಯಲ್ಲಿನ ಮುಖ್ಯ ಪಾತ್ರದ ಭಾವನೆಗಳ ಬಗ್ಗೆ ಕೆಲವು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳುತ್ತೇನೆ. ಆ ಪ್ರಶ್ನೆಗಳು, ಕಥೆಯ ಒಂದು ನಿರ್ದಿಷ್ಟ ಪಾತ್ರದ ಗುಪ್ತ ಭಾವನೆ (ಮನಸಿನಲ್ಲಿನ ಭಾವನೆ) ಹಾಗೂ ವ್ಯಕ್ತಪಡಿಸಿದ (ಮುಖದಲ್ಲಿ ತೋರುತ್ತಿರುವ) ಭಾವನೆಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಿದ್ದಾಗಿರುತ್ತದೆ. ಆ ಪ್ರಶ್ನೆಗೆ ಉತ್ತರವಾಗಿ, ನಾನು ನಿಮಗೆ ತೋರಿಸುವ ವಿವಿಧ ಮುಖ ಚಿಹ್ನೆಗಳಲ್ಲಿ ಒಂದನ್ನು ನೀವು ಆರಿಸಬೇಕಾಗುತ್ತದೆ.</p>		
<b>Stimuli</b>	<p>ರಾಜು ತನ್ನ ಸಹೋದರನ ಲ್ಯಾಪ್‌ಟಾಪ್ ಅನ್ನು ಅವನಿಗೆ ತಿಳಿಯದಂತೆ ತೆಗೆದುಕೊಳ್ಳುತ್ತಾನೆ. ರಾಜು ತನ್ನ ಸಹೋದರ ಲ್ಯಾಪ್‌ಟಾಪ್ ಹುಡುಕುವುದನ್ನು ನೋಡಿ ಅದನ್ನು ಆನಂದಿಸುತ್ತಿದ್ದಾನೆ. ಇದನ್ನು ಮುಖದ ಮೇಲೆ ವ್ಯಕ್ತಪಡಿಸಲು ರಾಜು ಬಯಸುವುದಿಲ್ಲ, ಏಕೆಂದರೆ ಅದು ತನ್ನ ಸಹೋದರನನ್ನು ಕೋಪಗೊಳಿಸುತ್ತದೆ.</p>		
<b>Task to identify the emotion</b>	1. Concealment question:	2. Feel inside question:	3. Look on face question:
	ರಾಜುಗೆ ಏನು ಅನಿಸುತ್ತಿದೆ ಎಂದು ತಿಳಿದರೆ ರಾಜುವಿನ ಸಹೋದರನ ಮುಖದ ಭಾವನೆ ಹೇಗಿರುತ್ತದೆ?	ತನ್ನ ಸಹೋದರ ಲ್ಯಾಪ್ ಟಾಪ್ ಹುಡುಕುತ್ತಿರುವಾಗ ರಾಜುಗೆ ಹೇಗೆ ಅನಿಸಿತು?	ತನ್ನ ಸಹೋದರ ಲ್ಯಾಪ್ ಟಾಪ್ ಹುಡುಕುತ್ತಿರುವಾಗ ರಾಜುವಿನ ಮುಖದಲ್ಲಿ ಯಾವ ಭಾವನೆ ಇತ್ತು?
<b>Facial emotions</b>			
<b>Quantitative Rating</b>	Appropriate Expression- 1 Inappropriate Expression- 0	Appropriate Expression- 1 Inappropriate Expression- 0	Appropriate Expression- 2 Neutral face/minimizing the felt emotion - 1
<b>Score</b>			

<b>SET 5</b>			
<b>5.2. YUCKY VIGNETTE EMOTION</b>			
<b>Instruction</b>	<p>ನಾನು ನಿಮಗೆ ಒಂದು ಸಣ್ಣ ಕಥೆಯನ್ನು ಓದುತ್ತೇನೆ, ಕಥೆಯನ್ನು ಕೇಳಿದ ನಂತರ ಕಥೆಯಲ್ಲಿನ ಮುಖ್ಯ ಪಾತ್ರದ ಭಾವನೆಗಳ ಬಗ್ಗೆ ಕೆಲವು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳುತ್ತೇನೆ. ಆ ಪ್ರಶ್ನೆಗಳು, ಕಥೆಯ ಒಂದು ನಿರ್ದಿಷ್ಟ ಪಾತ್ರದ ಗುಪ್ತ ಭಾವನೆ (ಮನಸಿನಲ್ಲಿನ ಭಾವನೆ) ಹಾಗೂ ವ್ಯಕ್ತಪಡಿಸಿದ (ಮುಖದಲ್ಲಿ ತೋರುತ್ತಿರುವ) ಭಾವನೆಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಿದ್ದಾಗಿರುತ್ತದೆ. ಆ ಪ್ರಶ್ನೆಗೆ ಉತ್ತರವಾಗಿ, ನಾನು ನಿಮಗೆ ತೋರಿಸುವ ವಿವಿಧ ಮುಖ ಚಿಹ್ನೆಗಳಲ್ಲಿ ಒಂದನ್ನು ನೀವು ಆರಿಸಬೇಕಾಗುತ್ತದೆ.</p>		
<b>Stimuli</b>	<p>ರಾಜು ಮತ್ತು ಅವನ ಮಾವ ವಾಕ್ ಮಾಡಲು ಹೋಗುತ್ತಾರೆ. ಅವರು, ರಾಜುವಿನೊಂದಿಗೆ ತಮಾಶೆ ಮಾಡುತ್ತ ಮಾತನಾಡುತ್ತಲೇ ರಸ್ತೆಯ ಮೇಲೆಯೇ ಉಗುಳುತ್ತಾರೆ. ಇದನ್ನು ಕಂಡು ರಾಜುಗೆ ಹೇಸಿಗೆಯಾಗುತ್ತದೆ. ಆದರೆ ಇದನ್ನು ತನ್ನ ಮುಖದ ಮೇಲೆ ವ್ಯಕ್ತಪಡಿಸಲು ರಾಜು ಬಯಸುವುದಿಲ್ಲ, ಏಕೆಂದರೆ ಅದು ತನ್ನ ಮಾವನನ್ನು ಅಸಮಾಧಾನಗೊಳಿಸಬಹುದು.</p>		
<b>Task to identify the emotion</b>	1. Concealment question:	2. Feel inside question:	3. Look on face question:
	ರಾಜುಗೆ ಏನು ಅನಿಸುತ್ತಿದೆ ಎಂದು ತಿಳಿದರೆ ಅವನ ಮಾವನ ಮುಖದ ಭಾವನೆ ಹೇಗಿರುತ್ತದೆ?	ತನ್ನ ಮಾವ ರಸ್ತೆಯಲ್ಲಿ ಉಗುಳುವುದನ್ನು ನೋಡಿದ ರಾಜುಗೆ ಹೇಗೆ ಅನಿಸಿತು?	ತನ್ನ ಮಾವ ರಸ್ತೆಯಲ್ಲಿ ಉಗುಳುವುದನ್ನು ನೋಡಿದಾಗ ರಾಜುವಿನ ಮುಖದಲ್ಲಿ ಯಾವ ಭಾವನೆ ಇತ್ತು?
<b>Facial emotions</b>			
<b>Quantitative Rating</b>	Appropriate Expression- 1 Inappropriate Expression- 0	Appropriate Expression- 1 Inappropriate Expression- 0	Appropriate Expression- 2 Neutral face/minimizing the felt emotion - 1
<b>Score</b>			

<b>SET 5</b>			
<b>5.3. SCARED VIGNETTE EMOTION</b>			
<b>Instruction</b>	<p>ನಾನು ನಿಮಗೆ ಒಂದು ಸಣ್ಣ ಕಥೆಯನ್ನು ಓದುತ್ತೇನೆ, ಕಥೆಯನ್ನು ಕೇಳಿದ ನಂತರ ಕಥೆಯಲ್ಲಿನ ಮುಖ್ಯ ಪಾತ್ರದ ಭಾವನೆಗಳ ಬಗ್ಗೆ ಕೆಲವು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳುತ್ತೇನೆ. ಆ ಪ್ರಶ್ನೆಗಳು, ಕಥೆಯ ಒಂದು ನಿರ್ದಿಷ್ಟ ಪಾತ್ರದ ಗುಪ್ತ ಭಾವನೆ (ಮನಸಿನಲ್ಲಿನ ಭಾವನೆ) ಹಾಗೂ ವ್ಯಕ್ತಪಡಿಸಿದ (ಮುಖದಲ್ಲೇ ತೋರುತ್ತಿರುವ) ಭಾವನೆಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಿದ್ದಾಗಿರುತ್ತದೆ. ಆ ಪ್ರಶ್ನೆಗೆ ಉತ್ತರವಾಗಿ, ನಾನು ನಿಮಗೆ ತೋರಿಸುವ ವಿವಿಧ ಮುಖ ಚಿಹ್ನೆಗಳಲ್ಲಿ ಒಂದನ್ನು ನೀವು ಆರಿಸಬೇಕಾಗುತ್ತದೆ.</p>		
<b>Stimuli</b>	<p>ರಾಜು ತನ್ನ ಕಛೇರಿಯ ಕೆಲಸವನ್ನು ಇನ್ನೂ ಪೂರ್ಣಗೊಳಿಸದ ಕಾರಣ ಅವನಿಗೆ ಭಯವಾಗುತ್ತದೆ. ಆದರೆ ಸಭೆಯಲ್ಲಿ ಕೆಲಸದ ಬಗ್ಗೆ ಕೇಳಿದಾಗ ಎಲ್ಲರಂತೆ ಈತನೂ ಸಮಾಧಾನಕರವಾದ ರೀತಿಯಲ್ಲಿದ್ದು, ತನಗಿರುವ ಭಯವನ್ನು ಮುಖದ ಮೇಲೆ ವ್ಯಕ್ತಪಡಿಸಲು ರಾಜು ಬಯಸುವುದಿಲ್ಲ, ಏಕೆಂದರೆ ಅವನು ತನ್ನ ಕೆಲಸವನ್ನು ಪೂರ್ಣಗೊಳಿಸಿಲ್ಲವೆಂದು ತಿಳಿದರೆ ಮ್ಯಾನೇಜರ್ ಸಿಟ್ಟಾಗುತ್ತಾರೆ.</p>		
<b>Task to identify the emotion</b>	1. Concealment question:	2. Feel inside question:	3. Look on face question:
	ರಾಜುಗೆ ಏನು ಅನಿಸುತ್ತಿದೆ ಎಂದು ತಿಳಿದರೆ ಅವನ ಮ್ಯಾನೇಜರ್ ನ ಮುಖದ ಭಾವನೆ ಹೇಗಿರುತ್ತದೆ?	ಸಭೆಯಲ್ಲಿ ಪಾಲ್ಗೊಳ್ಳುವಾಗ ರಾಜುಗೆ ಹೇಗೆ ಅನಿಸಿತ್ತಿತ್ತು?	ಸಭೆಯಲ್ಲಿ ಪಾಲ್ಗೊಳ್ಳುವಾಗ ರಾಜುವಿನ ಮುಖದಲ್ಲೇ ಯಾವ ಭಾವನೆ ಇತ್ತು?
<b>Facial emotions</b>			
<b>Quantitative Rating</b>	Appropriate Expression- 1 Inappropriate Expression- 0	Appropriate Expression- 1 Inappropriate Expression- 0	Appropriate Expression- 2 Neutral face/minimizing the felt emotion - 1
<b>Score</b>			

<b>SET 5</b>			
<b>5.4. ANGRY VIGNETTE EMOTION</b>			
<b>Instruction</b>	<p>ನಾನು ನಿಮಗೆ ಒಂದು ಸಣ್ಣ ಕಥೆಯನ್ನು ಓದುತ್ತೇನೆ, ಕಥೆಯನ್ನು ಕೇಳಿದ ನಂತರ ಕಥೆಯಲ್ಲಿನ ಮುಖ್ಯ ಪಾತ್ರದ ಭಾವನೆಗಳ ಬಗ್ಗೆ ಕೆಲವು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳುತ್ತೇನೆ. ಆ ಪ್ರಶ್ನೆಗಳು, ಕಥೆಯ ಒಂದು ನಿರ್ದಿಷ್ಟ ಪಾತ್ರದ ಗುಪ್ತ ಭಾವನೆ (ಮನಸಿನಲ್ಲಿನ ಭಾವನೆ) ಹಾಗೂ ವ್ಯಕ್ತಪಡಿಸಿದ (ಮುಖದಲ್ಲಿ ತೋರುತ್ತಿರುವ) ಭಾವನೆಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಿದ್ದಾಗಿರುತ್ತದೆ. ಆ ಪ್ರಶ್ನೆಗೆ ಉತ್ತರವಾಗಿ, ನಾನು ನಿಮಗೆ ತೋರಿಸುವ ವಿವಿಧ ಮುಖ ಚಿಹ್ನೆಗಳಲ್ಲಿ ಒಂದನ್ನು ನೀವು ಆರಿಸಬೇಕಾಗುತ್ತದೆ.</p>		
<b>Stimuli</b>	<p>ತನ್ನ ಮನೆಯ ಬಳಿ ಆಟವಾಡುವ ಮಕ್ಕಳು ತನ್ನ ಕಾರಿನ ಗಾಜನ್ನು ಒಡೆದಿದ್ದರಿಂದ ರಾಜು ಕೋಪಗೊಂಡಿದ್ದಾನೆ. ಆದರೆ ಇದನ್ನು ರಾಜು ತನ್ನ ಮುಖದ ಮೇಲೆ ವ್ಯಕ್ತಪಡಿಸಲು ಬಯಸುವುದಿಲ್ಲ, ಏಕೆಂದರೆ ಗಾಜನ್ನು ಒಡೆದಿರುವವನು ಅವನ ಸ್ನೇಹಿತನ ಮಗ. ಹಾಗೂ ರಾಜುವಿನ ಸ್ನೇಹಿತನು ಇದನ್ನು ಗಂಭೀರವಾಗಿ ಪರಿಗಣಿಸದೆ ನಗುತ್ತಿದ್ದಾನೆ, ಆದ್ದರಿಂದ ರಾಜುಗೆ ಹೇಗೆ ಅನಿಸುತ್ತಿದೆ ಎಂದು ತಿಳಿದರೆ ಅವನ ಸ್ನೇಹಿತನು ಅಸಮಾಧಾನಗೊಳ್ಳುತ್ತಾನೆ.</p>		
<b>Task to identify the emotion</b>	1. Concealment question:	2. Feel inside question:	3. Look on face question:
	ರಾಜುಗೆ ಏನು ಅನಿಸುತ್ತಿದೆ ಎಂದು ತಿಳಿದರೆ ಅವನ ಸ್ನೇಹಿತನ ಮುಖದ ಭಾವನೆ ಹೇಗಿರುತ್ತದೆ?	ತನ್ನ ಕಾರಿನ ಗಾಜು ಒಡೆದಾಗ ರಾಜುಗೆ ಹೇಗೆ ಅನಿಸಿತು?	ತನ್ನ ಕಾರಿನ ಗಾಜು ಒಡೆದಾಗ ರಾಜುವಿನ ಮುಖದಲ್ಲಿ ಯಾವ ಭಾವನೆ ಇತ್ತು?
<b>Facial emotions</b>			
<b>Quantitative Rating</b>	Appropriate Expression- 1 Inappropriate Expression- 0	Appropriate Expression- 1 Inappropriate Expression- 0	Appropriate Expression- 2 Neutral face/minimizing the felt emotion - 1
<b>Score</b>			



<b>SET 5</b>			
<b>5.5. SAD VIGNETTE EMOTION</b>			
<b>Instruction</b>	<p>ನಾನು ನಿಮಗೆ ಒಂದು ಸಣ್ಣ ಕಥೆಯನ್ನು ಓದುತ್ತೇನೆ. ಕಥೆಯನ್ನು ಕೇಳಿದ ನಂತರ ಕಥೆಯಲ್ಲಿನ ಮುಖ್ಯ ಪಾತ್ರದ ಭಾವನೆಗಳ ಬಗ್ಗೆ ಕೆಲವು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳುತ್ತೇನೆ. ಆ ಪ್ರಶ್ನೆಗಳು, ಕಥೆಯ ಒಂದು ನಿರ್ದಿಷ್ಟ ಪಾತ್ರದ ಗುಪ್ತ ಭಾವನೆ (ಮನಸಿನಲ್ಲಿನ ಭಾವನೆ) ಹಾಗೂ ವ್ಯಕ್ತಪಡಿಸಿದ (ಮುಖದಲ್ಲಿ ತೋರುತ್ತಿರುವ) ಭಾವನೆಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಿದ್ದಾಗಿರುತ್ತದೆ. ಆ ಪ್ರಶ್ನೆಗೆ ಉತ್ತರವಾಗಿ, ನಾನು ನಿಮಗೆ ತೋರಿಸುವ ವಿವಿಧ ಮುಖ ಚಿಹ್ನೆಗಳಲ್ಲಿ ಒಂದನ್ನು ನೀವು ಆರಿಸಬೇಕಾಗುತ್ತದೆ.</p>		
<b>Stimuli</b>	<p>ರಾಜು ತನ್ನ ಕೆಲಸವನ್ನು ಕಳೆದುಕೊಂಡ ಕಾರಣ ಅವನಿಗೆ ಅಸಮಾಧಾನವಾಗಿದೆ. ಆದರೆ ಇದನ್ನು ರಾಜು ತನ್ನ ಮುಖದ ಮೇಲೆ ವ್ಯಕ್ತಪಡಿಸಲು ಬಯಸುವುದಿಲ್ಲ. ಏಕೆಂದರೆ ಅವನ ಪ್ರೇಶಕರು ಅವನಿಗಾಗಿ ಸಂತೋಷದಿಂದ ಕಾಯುತ್ತಿದ್ದಾರೆ ಹಾಗಾಗಿ ರಾಜುಗೆ ಹೇಗೆ ಅನಿಸುತ್ತಿದೆ ಎಂದು ಅವನ ಪ್ರೇಷಕರಿಗೆ ತಿಳಿದರೆ ಅವರಿಗೆ ಬೇಸರವಾಗುತ್ತದೆ.</p>		
<b>Task to identify the emotion</b>	1. Concealment question:	2. Feel inside question:	3. Look on face question:
	ರಾಜುಗೆ ಏನು ಅನಿಸುತ್ತಿದೆ ಎಂದು ತಿಳಿದರೆ ಅವನ ಪ್ರೇಷಕರ ಮುಖದ ಭಾವನೆ ಹೇಗಿರುತ್ತದೆ?	ತನ್ನ ಕೆಲಸ ಕಳೆದುಕೊಂಡಾಗ ರಾಜುಗೆ ಹೇಗೆ ಅನಿಸಿತು?	ತನ್ನ ಕೆಲಸ ಕಳೆದುಕೊಂಡಾಗ ರಾಜುವಿನ ಮುಖದಲ್ಲಿ ಯಾವ ಭಾವನೆ ಇತ್ತು?
<b>Facial emotions</b>			
<b>Quantitative Rating</b>	Appropriate Expression- 1 Inappropriate Expression- 0	Appropriate Expression- 1 Inappropriate Expression- 0	Appropriate Expression- 2 Neutral face/minimizing the felt emotion - 1
<b>Score</b>			

## **APPENDIX-B2**

### **COGNITIVE TOM TRAINING MATERIAL (Closed Ended)**

**General description:**

Cognitive Theory of Mind: one's cognitive beliefs are focused here. It is about reading other's minds. Making judgments as to what the other person might be thinking is involved in cognitive ToM.




**Task description:**

In the training task, four ways of assessing cognitive TOM are adapted. 1. Switched witnessed is referred to the condition, when there is a change in some aspect of the ongoing activity in the presence of the observer, so that the person who is looking at it, will be aware of the change or switch in the activity. 2. Switched unwitnessed is referred to the condition, when there is a change in some aspect of the ongoing activity but not in the presence of the observer so it goes unnoticed. 3. Un-switched witnessed is referred to the condition where there is no change at any point in the ongoing activity, in the presence of the observer. 4. Un-switched un- witnessed is referred to the condition where there is no change at any point in the ongoing activity.

**Instruction:**

*I will be showing a set of three picture frames (frame-1, frame-2, and frame-3), depicting an action. After which, you will be asked questions based on the scenes/action shown in the picture for which you have to answer by saying 'Yes' or 'No'.*

**Scoring:** Score 1- correct answer, Score 0 – incorrect answer.

<b>TRAIL STIMULUS</b>	
<b>Instruction</b>	ನಾನು ನಿಮಗೆ ಮೂರು ಚಿತ್ರ ಚೌಕಟ್ಟುಗಳ (ಫ್ರೇಮ್ -1, ಫ್ರೇಮ್ -2 ಮತ್ತು ಫ್ರೇಮ್ -3) ಗುಂಪನ್ನು ತೋರಿಸುತ್ತೇನೆ. ಅದರ ನಂತರ, ಚಿತ್ರದಲ್ಲಿ ತೋರಿಸಿರುವ ದೃಶ್ಯಗಳು / ಕ್ರಿಯೆಯ ಆಧಾರದ ಮೇಲೆ ನಿಮಗೆ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲಾಗುತ್ತದೆ, ಅವುಗಳಿಗೆ ನೀವು 'ಹೌದು' ಅಥವಾ 'ಇಲ್ಲ' ಎಂದು ಹೇಳುವ ಮೂಲಕ ಉತ್ತರಿಸಬೇಕು.
<b>Stimuli</b>	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">SWITCH UNWITNESSED</div> <div style="display: flex; justify-content: space-around; text-align: center;"> <div style="margin: 10px;"> <p>FRAME 1</p>  </div> <div style="margin: 10px;"> <p>FRAME 2</p>  </div> <div style="margin: 10px;"> <p>FRAME 3</p>  </div> </div>
<b>Task</b>	ತೋರಿಸಿರುವ ಚಿತ್ರ ಚೌಕಟ್ಟನ್ನು ಗಮನಿಸಿ ಮತ್ತು ಕೆಳಗಿನ ಪ್ರಶ್ನೆಗೆ ಉತ್ತರಿಸಿ. Q1- ಫ್ರೇಮ್ 3 ರಲ್ಲಿ, ವ್ಯಕ್ತಿಯು ಯೋಚಿಸುತ್ತಿರುವುದು ಸರಿಯಿದೆಯೇ?
<b>Response</b>	ಹೌದು or ಇಲ್ಲ
<b>Qualitative rating</b>	ಹೌದು -1 ಇಲ್ಲ -0
<b>Score</b>	

## TRAINING STIMULUS

**Instruction** - ನಾನು ನಿಮಗೆ ಮೂರು ಚಿತ್ರ ಚೌಕಟ್ಟುಗಳ (ಫ್ರೇಮ್ -1, ಫ್ರೇಮ್ -2 ಮತ್ತು ಫ್ರೇಮ್ -3) ಗುಂಪನ್ನು ತೋರಿಸುತ್ತೇನೆ. ಅದರ ನಂತರ, ಚಿತ್ರದಲ್ಲಿ ತೋರಿಸಿರುವ ದೃಶ್ಯಗಳು / ಕ್ರಿಯೆಯ ಆಧಾರದ ಮೇಲೆ ನಿಮಗೆ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲಾಗುತ್ತದೆ, ಅವುಗಳಿಗೆ ನೀವು 'ಹೌದು' ಅಥವಾ 'ಇಲ್ಲ' ಎಂದು ಹೇಳುವ ಮೂಲಕ ಉತ್ತರಿಸಬೇಕು.

### 1.1. TRAINING STIMULUS

#### SWITCH UNWITNESSED

FRAME 1



FRAME 2



FRAME 3



**Question -** ಫ್ರೇಮ್ 3 ರಲ್ಲಿ, ವ್ಯಕ್ತಿಯು ಯೋಚಿಸುತ್ತಿರುವುದು ಸರಿಯಿದೆಯೇ?

**Score -**

## 1.2. TRAINING STIMULUS

### SWITCH WITNESSED

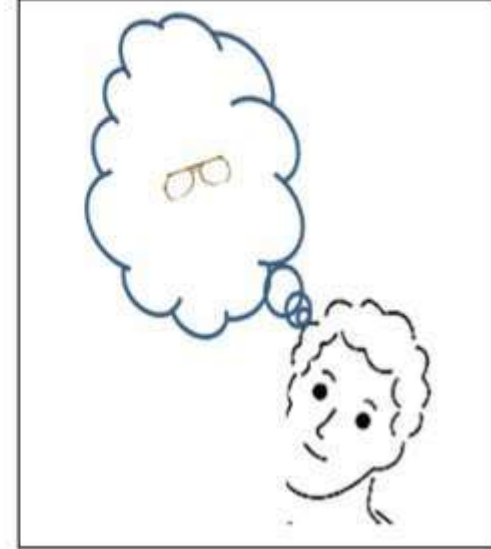
FRAME 1



FRAME 2



FRAME 3



**Question-** ಫೇಮ್ 3 ರಲ್ಲಿ, ವ್ಯಕ್ತಿಯು ಯೋಚಿಸುತ್ತಿರುವುದು ತಪ್ಪಾಗಿದೆಯೇ?

**Score-**

### 1.3 TRAINING STIMULUS

UNSWITCHED UNWITNESSED

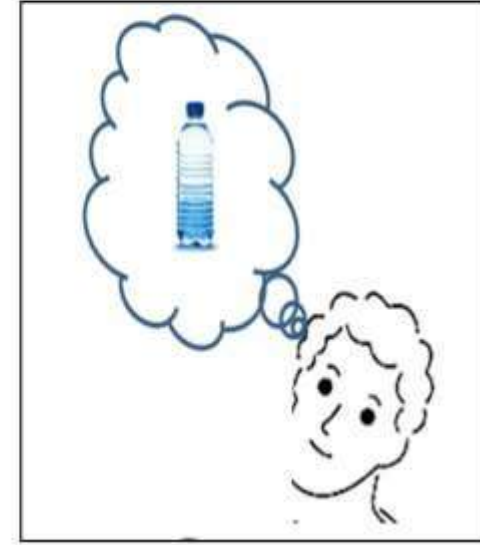
FRAME 1



FRAME 2



FRAME 3



**Question-** ಫೇಮ್ 3 ರಲ್ಲಿ, ವ್ಯಕ್ತಿಯು ಯೋಚಿಸುತ್ತಿರುವುದು ಸರಿಯಿದೆಯೇ?

**Score**

## 1.4 TRAINING STIMULUS

UNSWITCHED WITNESSED

FRAME 1



FRAME 2



FRAME 3



**Question-** ಫ್ರೇಮ್ 3 ರಲ್ಲಿ, ವ್ಯಕ್ತಿಯು ಯೋಚಿಸುತ್ತಿರುವುದು ತಪ್ಪಾಗಿದೆಯೇ?

**Score**



## 2.1 TRAINING STIMULUS

### SWITCH UNWITNESSED

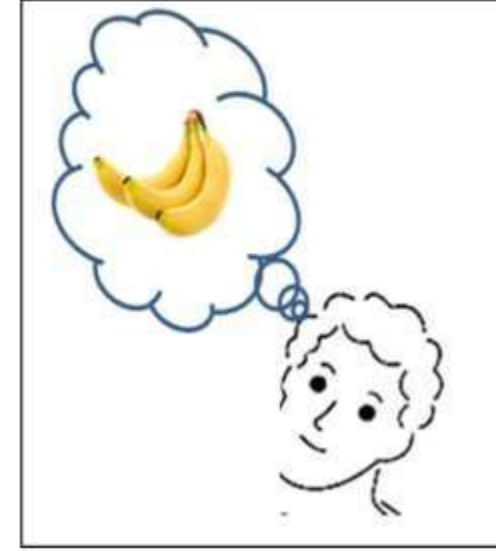
FRAME 1



FRAME 2



FRAME 3



**Question-** ಫೇಮ್ 3 ರಲ್ಲಿ, ವ್ಯಕ್ತಿಯು ಯೋಚಿಸುತ್ತಿರುವುದು ಸರಿಯಿದೆಯೇ?

**Score**

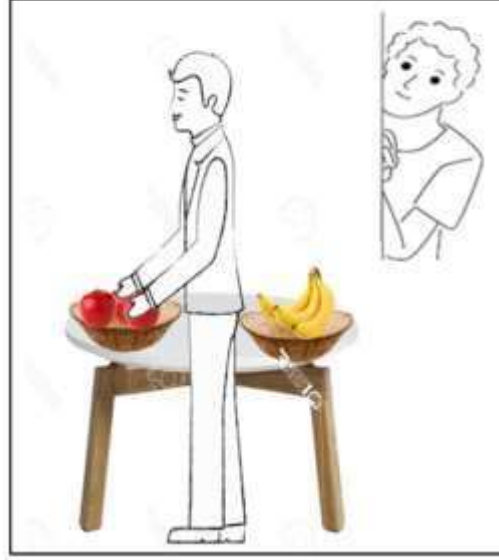
## 2.2 TRAINING STIMULUS

SWITCH WITNESSED

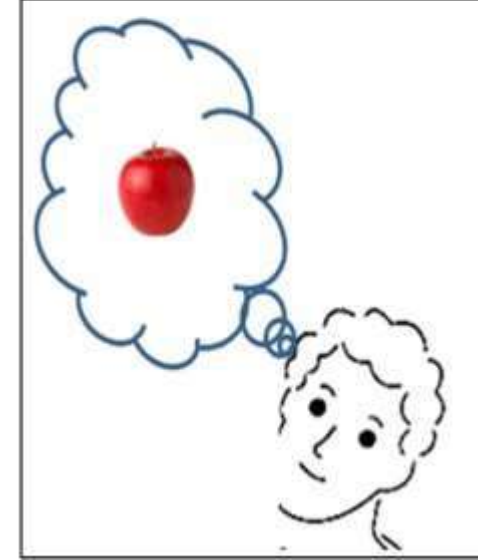
FRAME 1



FRAME 2



FRAME 3



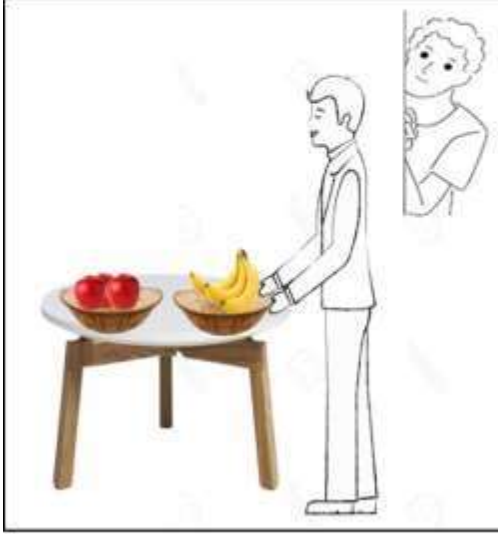
**Question-** ಫೇಮ್ 3 ರಲ್ಲಿ, ವ್ಯಕ್ತಿಯು ಯೋಚಿಸುತ್ತಿರುವುದು ತಪ್ಪಾಗಿದೆಯೇ?

**Score**

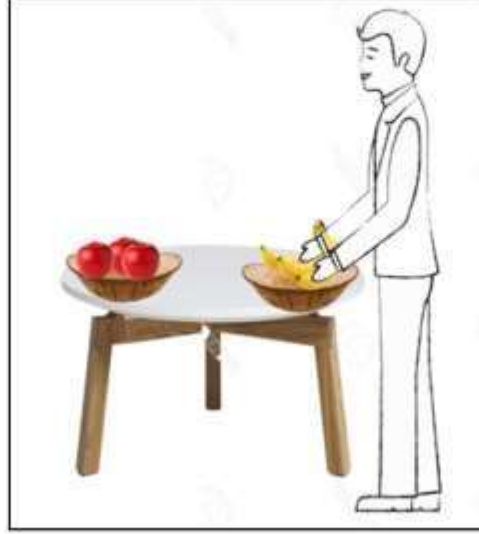
## 2.3 TRAINING STIMULUS

### UNSWITCHED UNWITNESSED

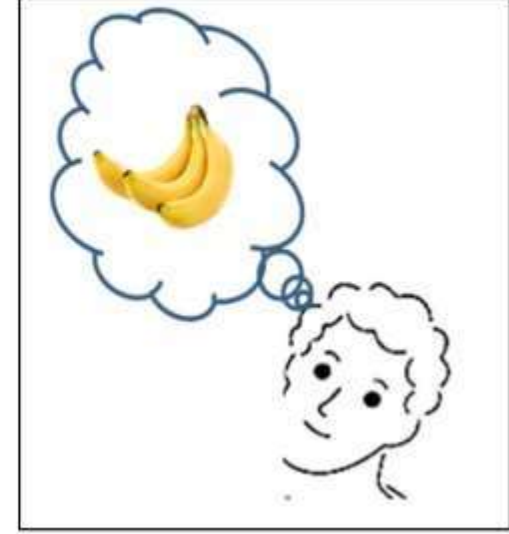
FRAME 1



FRAME 2



FRAME 3



**Question-** ಫ್ರೇಮ್ 3 ರಲ್ಲಿ, ವ್ಯಕ್ತಿಯು ಯೋಚಿಸುತ್ತಿರುವುದು ತಪ್ಪಾಗಿದೆಯೇ?

**Score**

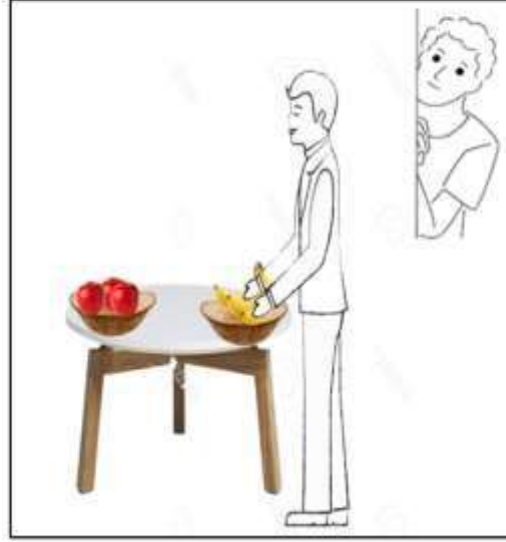
## 2.4 TRAINING STIMULUS

### UNSWITCHED WITNESSED

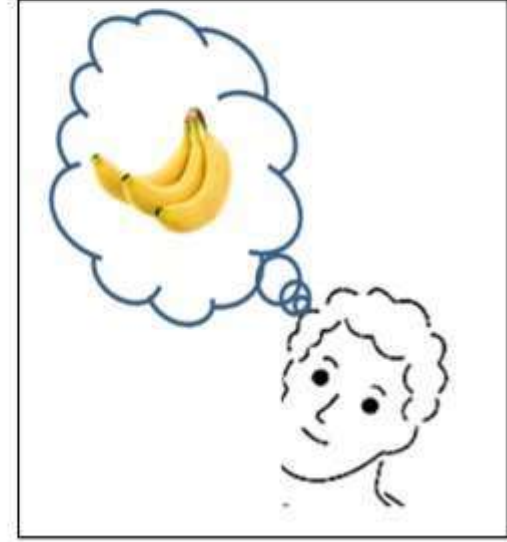
FRAME 1



FRAME 2



FRAME 3



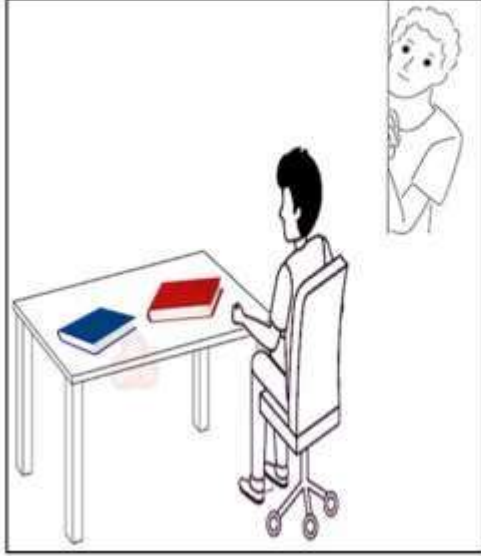
**Question-** ಫೇಮ್ 3 ರಲ್ಲಿ, ವ್ಯಕ್ತಿಯು ಯೋಚಿಸುತ್ತಿರುವುದು ಸರಿಯಿದೆಯೇ?

**Score**

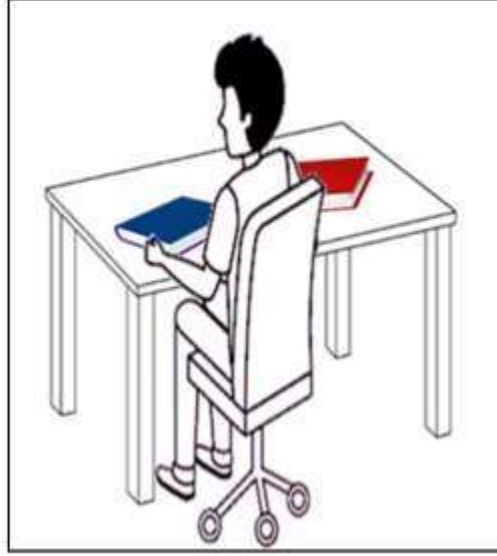
### 3.1 TRAINING STIMULUS

#### SWITCH UNWITNESSED

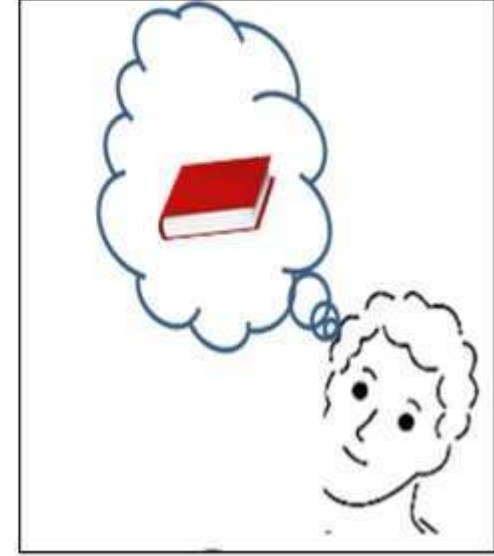
FRAME 1



FRAME 2



FRAME 2



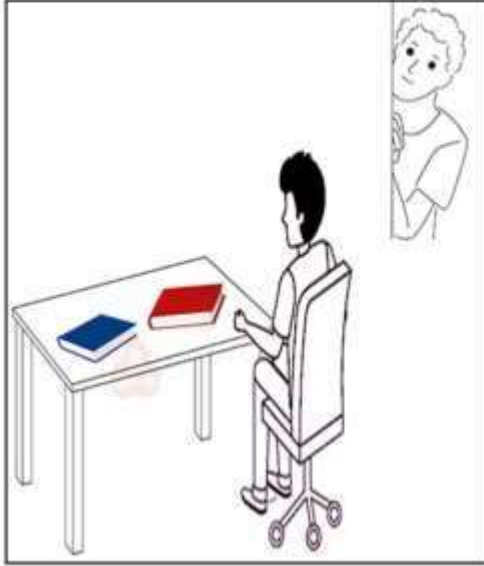
**Question-** ಫೇಮ್ 3 ರಲ್ಲಿ, ವ್ಯಕ್ತಿಯು ಯೋಚಿಸುತ್ತಿರುವುದು ತಪ್ಪಾಗಿದೆಯೇ?

**Score**

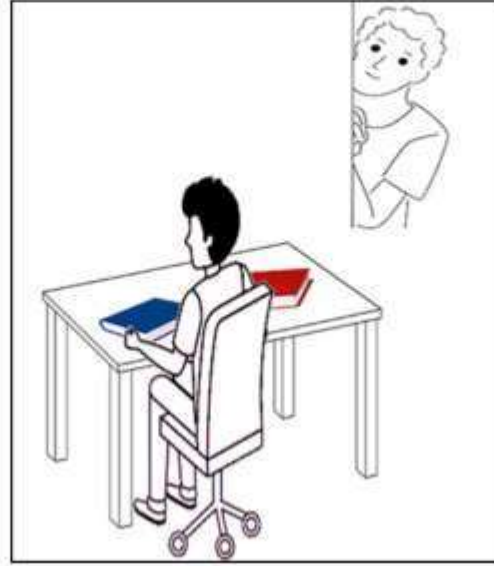
### 3.2 TRAINING STIMULUS

SWITCH WITNESSED

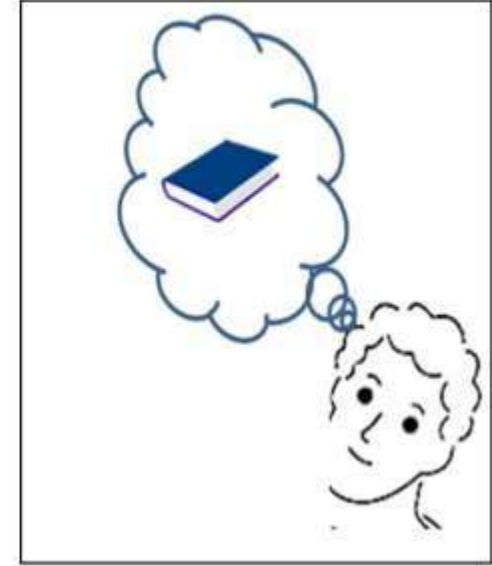
FRAME 1



FRAME 2



FRAME 3



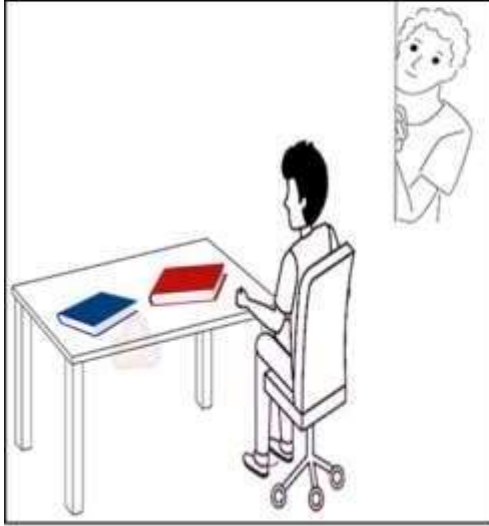
**Question-** ಫ್ರೇಮ್ 3 ರಲ್ಲಿ, ವ್ಯಕ್ತಿಯು ಯೋಚಿಸುತ್ತಿರುವುದು ಸರಿಯಿದೆಯೇ?

**Score**

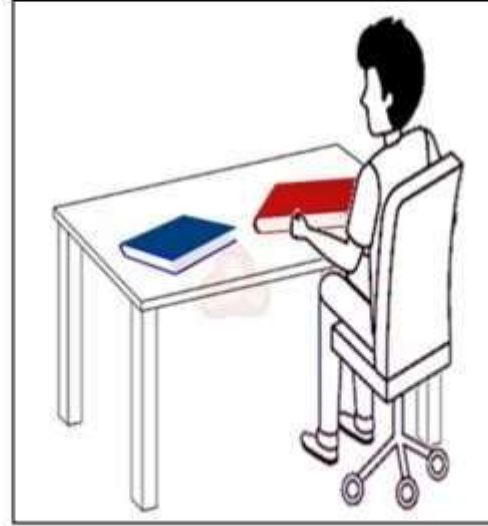
### 3.3 TRAINING STIMULUS

#### UNSWITCHED UNWITNESSED

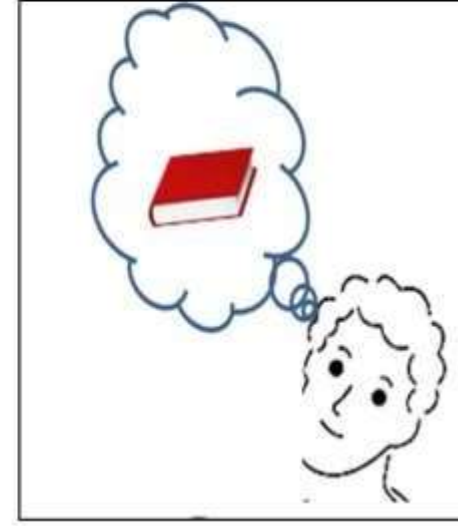
FRAME 1



FRAME 2



FRAME 3



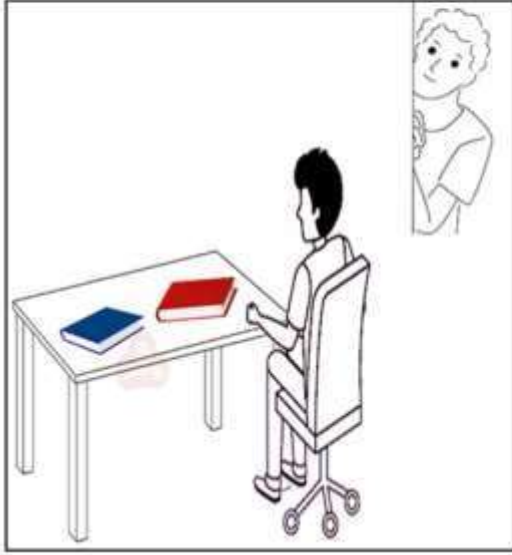
**Question-** ಫ್ರೇಮ್ 3 ರಲ್ಲಿ, ವ್ಯಕ್ತಿಯು ಯೋಚಿಸುತ್ತಿರುವುದು ಸರಿಯಿದೆಯೇ?

**Score**

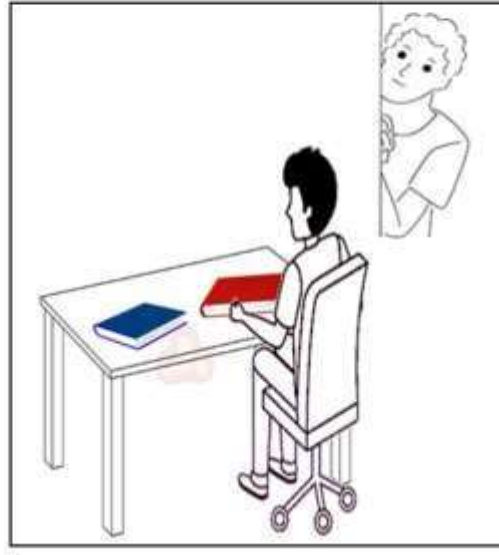
### 3.4 TRAINING STIMULUS

#### UNSWITCHED WITNESSED

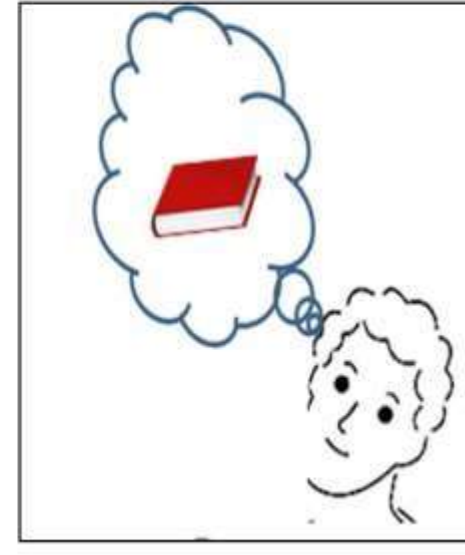
FRAME 1



FRAME 2



FRAME 3



**Question-** ಫೇಮ್ 3 ರಲ್ಲಿ, ವ್ಯಕ್ತಿಯು ಯೋಚಿಸುತ್ತಿರುವುದು ತಪ್ಪಾಗಿದೆಯೇ?

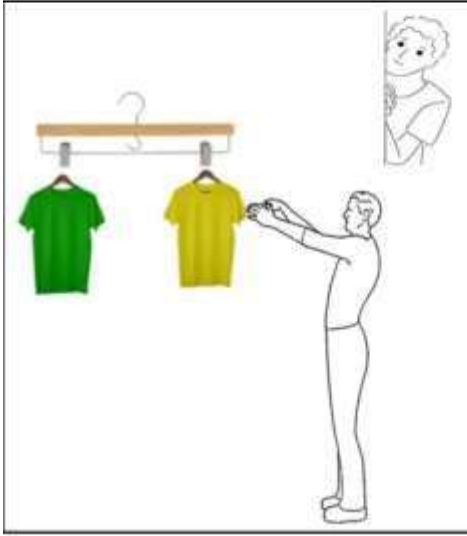
**Score**



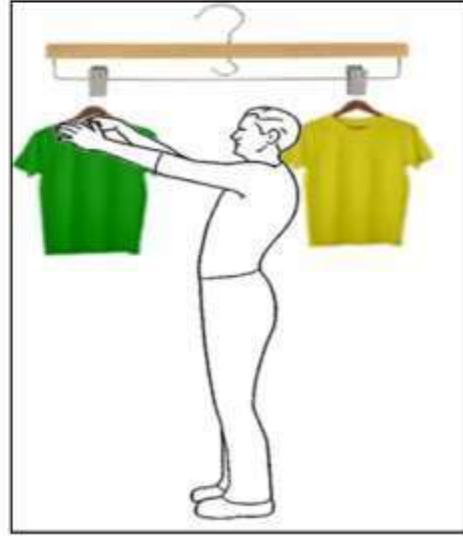
## 4.1 TRAINING STIMULUS

### SWITCH UNWITNESSED

FRAME 1



FRAME 2



FRAME 3



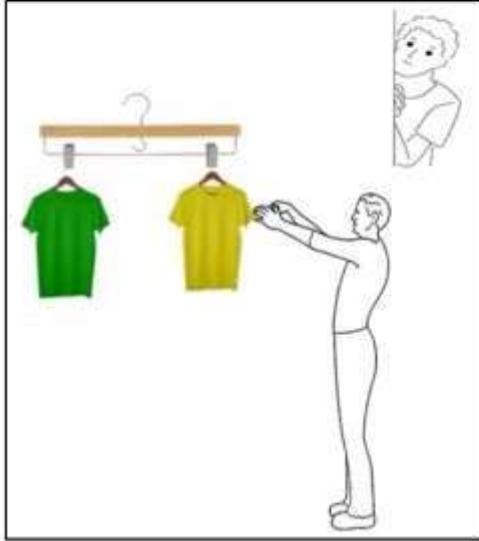
**Question-** ಫೇಮ್ 3 ರಲ್ಲಿ, ವ್ಯಕ್ತಿಯು ಯೋಚಿಸುತ್ತಿರುವುದು ಸರಿಯಿದೆಯೇ?

**Score**

## 4.2 TRAINING STIMULUS

SWITCH WITNESSED

FRAME 1



FRAME 2



FRAME 3



**Question-** ಫೇಮ್ 3 ರಲ್ಲಿ, ವ್ಯಕ್ತಿಯು ಯೋಚಿಸುತ್ತಿರುವುದು ತಪ್ಪಾಗಿದೆಯೇ?

**Score**

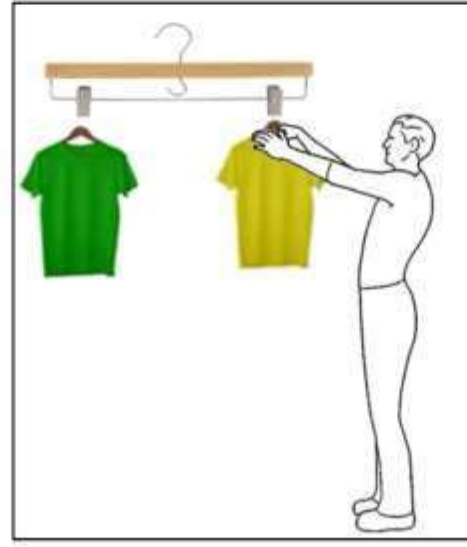
### 4.3 TRAINING STIMULUS

UNSWITCHED UNWITNESSED

FRAME 1



FRAME 2



FRAME 3



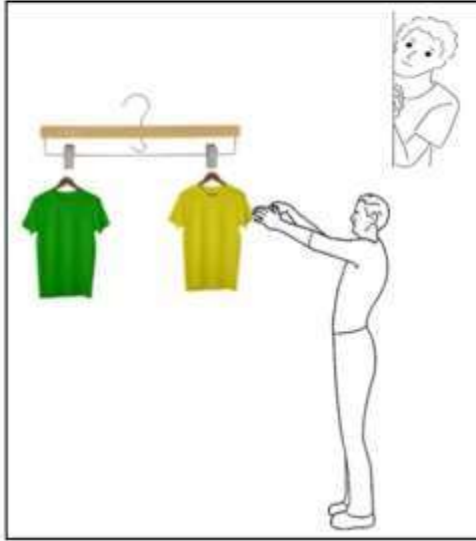
**Question-** ಫೇಮ್ 3 ರಲ್ಲಿ, ವ್ಯಕ್ತಿಯು ಯೋಚಿಸುತ್ತಿರುವುದು ಸರಿಯಿದೆಯೇ?

**Score**

#### 4.4 TRAINING STIMULUS

UNSWITCHED WITNESSED

FRAME 1



FRAME 2



FRAME 3



**Question-** ಫ್ರೇಮ್ 3 ರಲ್ಲಿ, ವ್ಯಕ್ತಿಯು ಯೋಚಿಸುತ್ತಿರುವುದು ತಪ್ಪಾಗಿದೆಯೇ?

**Score**

## 5.1 TRAINING STIMULUS

### SWITCH UNWITNESSED

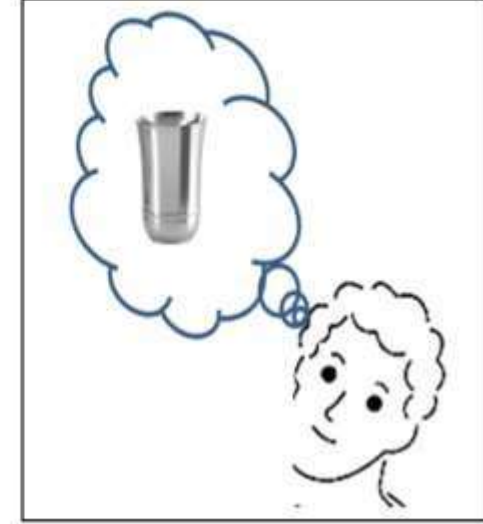
FRAME 1



FRAME 2



FRAME 3



**Question-** ಫ್ರೇಮ್ 3 ರಲ್ಲಿ, ವ್ಯಕ್ತಿಯು ಯೋಚಿಸುತ್ತಿರುವುದು ತಪ್ಪಾಗಿದೆಯೇ?

**Score**

## 5.2 TRAINING STIMULUS

SWITCH WITNESSED

FRAME 1



FRAME 2



FRAME 3



**Question-** ಫೇಮ್ 3 ರಲ್ಲಿ, ವ್ಯಕ್ತಿಯು ಯೋಚಿಸುತ್ತಿರುವುದು ಸರಿಯಿದೆಯೇ?

**Score**

### 5.3 TRAINING STIMULUS

#### UNSWITCHED UNWITNESSED

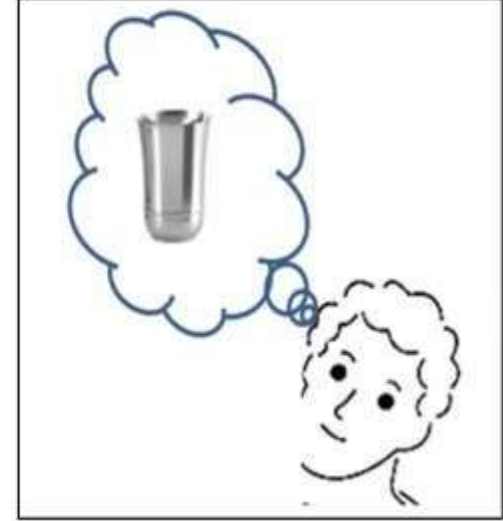
FRAME 1



FRAME 2



FRAME 3



**Question-** ಫೇಮ್ 3 ರಲ್ಲಿ, ವ್ಯಕ್ತಿಯು ಯೋಚಿಸುತ್ತಿರುವುದು ಸರಿಯಿದೆಯೇ?

**Score**

### 5.4 TRAINING STIMULUS

#### UNSWITCHED WITNESSED

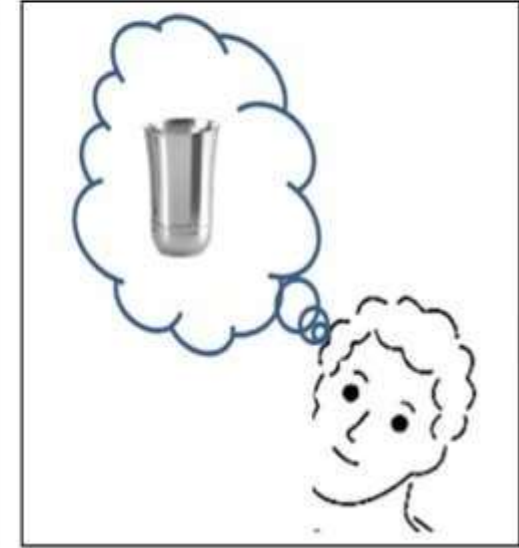
FRAME 1



FRAME 2



FRAME 3



**Question-** ಫೇಮ್ 3 ರಲ್ಲಿ, ವ್ಯಕ್ತಿಯು ಯೋಚಿಸುತ್ತಿರುವುದು ತಪ್ಪಾಗಿದೆಯೇ?

**Score**



## **APPENDIX-B2**

### **COGNITIVE TOM TRAINING MATERIAL (Open Ended)**

#### **GENERAL DESCRIPTION:**

Individuals with brain damage, often have difficulty judging the situation and to act according to the situation. So it is important to pick certain situation and to train them so as to help them to deal with such situation. So in this task two such scenarios are considered to train the individuals.

#### **TASK DESCRIPTION:**

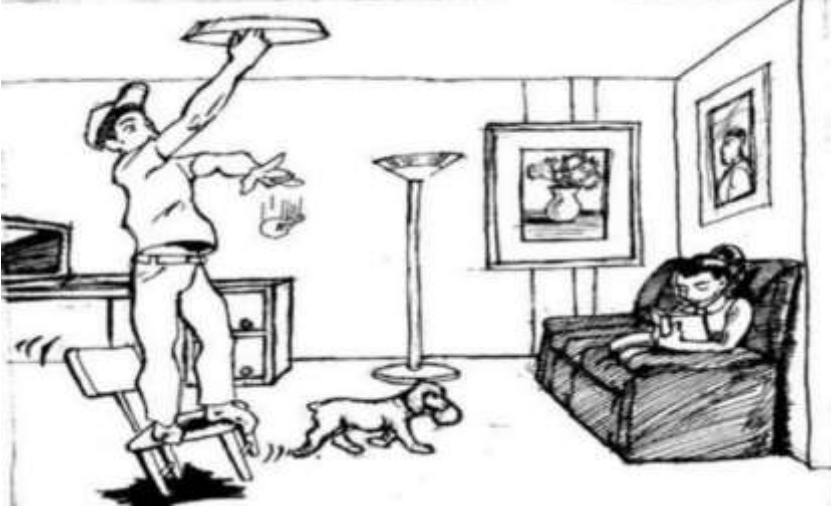
Three different social scenarios or contexts would be considered while training as this would be very dynamic and natural. Tasks demand individuals to think as if they are witnessing/ present in the situation and answer the question. Individuals will have to be the shoe of one of the characters of the given scenario.

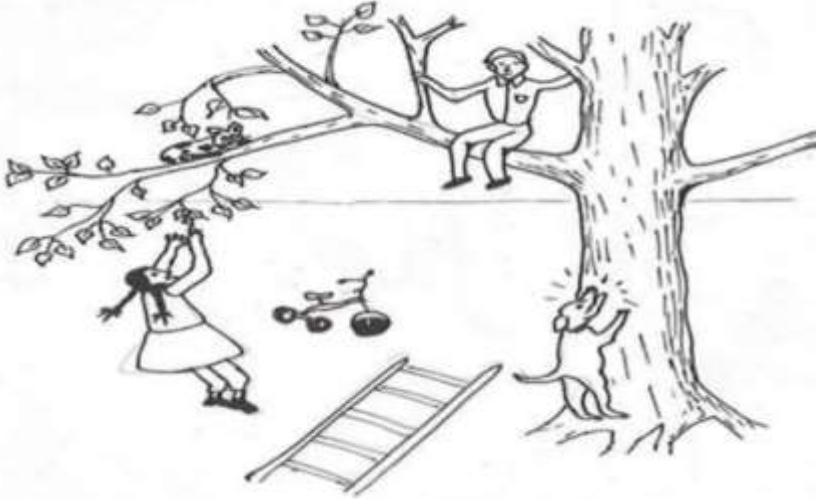
#### **INSTRTUCTION:**

I will show you a picture depicting a scenario. After looking at the picture carefully, I will ask you questions, for which you have to give elaborated answers.

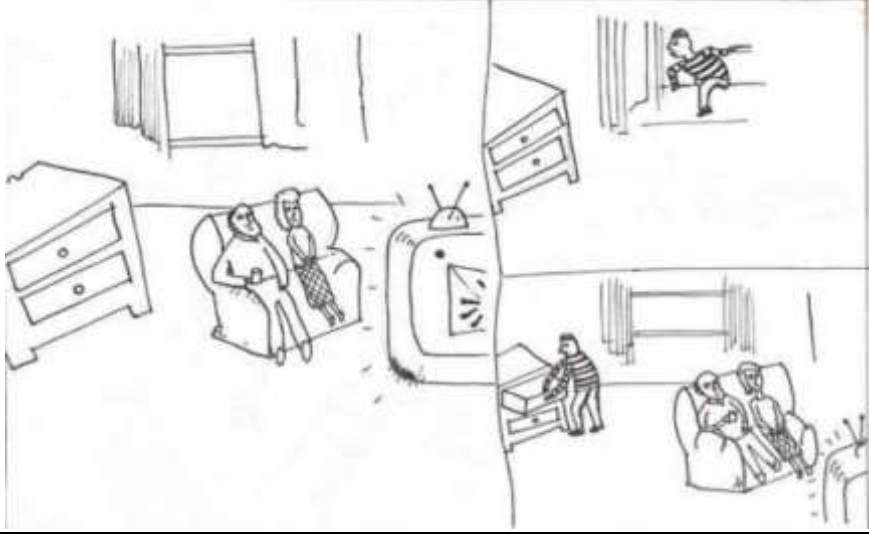
#### **SCORING:**

Score of '1' will be given for each description and the maximum score would be '3' , and for not answering, a score of '0' will be given

<b>TRIAL</b>	
<b>Instructions</b>	ಒಂದು ಸನ್ನಿವೇಶವನ್ನು ಬಿಂಬಿಸುವ ಚಿತ್ರವನ್ನು ನಾನು ನಿಮಗೆ ತೋರಿಸುತ್ತೇನೆ. ನೀವು ಚಿತ್ರವನ್ನು ಎಚ್ಚರಿಕೆಯಿಂದ ಗಮನಿಸಬೇಕು ಹಾಗೂ ನಾನು ಕೇಳುವ ಪ್ರಶ್ನೆಗೆ, ಸಂಬಂಧಿಸಿದ ವಿವರಣೆಯನ್ನು ನೀಡುವ ಮೂಲಕ ಉತ್ತರಿಸಬೇಕು.
<b>Stimuli</b>	
<b>Task</b>	ಈ ದೃಶ್ಯಕ್ಕೆ ನೀವೇ ಸಾಕ್ಷಿಯಾಗಿದ್ದೀರಿ ಎಂದು ಭಾವಿಸಿ ಮತ್ತು ನೀವು ಅದರ ಭಾಗವಾಗಿದ್ದರೆ ನೀವು ಏನು ಮಾಡುತ್ತಿದ್ದೀರಿ ಎಂದು ಹೇಳಿ.
<b>Preferred descriptions</b>	<ol style="list-style-type: none"> <li>1. ಕುರ್ಚಿಯನ್ನು ಹಿಡಿಯುತ್ತಿದ್ದೆ.</li> <li>2. ಸಹಾಯ ಮಾಡಲು ಯಾರನ್ನಾದರೂ ಕರೆಯುತ್ತಿದ್ದೆ.</li> <li>3. ಬಲ್‌ಡಾಗ್‌ನನ್ನು ಹಿಡಿಯುತ್ತಿದ್ದೆ..ಇತ್ಯಾದಿ.</li> </ol>
<b>Qualitative rating</b>	<b>Each description - 1</b>
<b>Score</b>	-

<b>1. TRAINING STIMULUS</b>	
<b>Instructions</b>	ಒಂದು ಸನ್ನಿವೇಶವನ್ನು ಬಿಂಬಿಸುವ ಚಿತ್ರವನ್ನು ನಾನು ನಿಮಗೆ ತೋರಿಸುತ್ತೇನೆ. ನೀವು ಚಿತ್ರವನ್ನು ಎಚ್ಚರಿಕೆಯಿಂದ ಗಮನಿಸಬೇಕು ಹಾಗೂ ನಾನು ಕೇಳುವ ಪ್ರಶ್ನೆಗೆ, ಸಂಬಂಧಿಸಿದ ವಿವರಣೆಯನ್ನು ನೀಡುವ ಮೂಲಕ ಉತ್ತರಿಸಬೇಕು.
<b>Stimuli</b>	
<b>Task</b>	ಈ ದೃಶ್ಯಕ್ಕೆ ನೀವೇ ಸಾಕ್ಷಿಯಾಗಿದ್ದೀರಿ ಎಂದು ಭಾವಿಸಿ ಮತ್ತು ನೀವು ಅದರ ಭಾಗವಾಗಿದ್ದರೆ ನೀವು ಏನು ಮಾಡುತ್ತಿದ್ದೀರಿ ಎಂದು ಹೇಳಿ.
<b>Preferred descriptions</b>	<ol style="list-style-type: none"> <li>1. ಬೆಕ್ಕಿಗೆ ಬೆದರಿಕೆ ಹಾಕುವ ನಾಯಿಯನ್ನು ದೂರ ಕಳುಹಿಸಬಹುದಿತ್ತು.</li> <li>2. ಸಹಾಯ ಕೇಳುತ್ತಾ ಅಗ್ನಿಶಾಮಕ ಕೇಂದ್ರಕ್ಕೆ ಕರೆ ಮಾಡುತ್ತಿದ್ದೆ.</li> <li>3. ಮರವನ್ನು ಹತ್ತಿದ ವ್ಯಕ್ತಿಯು ಸುರಕ್ಷಿತವಾಗಿ ಕೆಳಗೆ ಇಳಿಯಲು ಏಣಿಯ ವ್ಯವಸ್ಥೆ ನೀಡುತ್ತಿದ್ದೆ.</li> </ol>
<b>Qualitative rating</b>	<b>Each description - 1</b>
<b>Score</b>	

## 2. TRAINING STIMULUS

<b>Instructions</b>	ಒಂದು ಸನ್ನಿವೇಶವನ್ನು ಬಿಂಬಿಸುವ ಚಿತ್ರವನ್ನು ನಾನು ನಿಮಗೆ ತೋರಿಸುತ್ತೇನೆ. ನೀವು ಚಿತ್ರವನ್ನು ಎಚ್ಚರಿಕೆಯಿಂದ ಗಮನಿಸಬೇಕು ಹಾಗೂ ನಾನು ಕೇಳುವ ಪ್ರಶ್ನೆಗೆ, ಸಂಬಂಧಿಸಿದ ವಿವರಣೆಯನ್ನು ನೀಡುವ ಮೂಲಕ ಉತ್ತರಿಸಬೇಕು.
<b>Stimuli</b>	
<b>Task</b>	ಈ ದೃಶ್ಯಕ್ಕೆ ನೀವೇ ಸಾಕ್ಷಿಯಾಗಿದ್ದೀರಿ ಎಂದು ಭಾವಿಸಿ ಮತ್ತು ನೀವು ಅದರ ಭಾಗವಾಗಿದ್ದರೆ ನೀವು ಏನು ಮಾಡುತ್ತಿದ್ದೀರಿ ಎಂದು ಹೇಳಿ.
<b>Preferred descriptions</b>	<ol style="list-style-type: none"> <li>1. ಪೊಲೀಸ್ ಗೆ ಕರೆ ಮಾಡುತ್ತಿದ್ದೆ.</li> <li>2. ಸಹಾಯಕ್ಕಾಗಿ ಕಿರುಚುತ್ತಿದ್ದೆ.</li> <li>3. ಅವನನ್ನು ಕೋಣೆಯ ಒಳಗೆ ಕೂಡಿ ಹಾಕಿ ಹೊರಗೆ ಬರಲು ಪ್ರಯತ್ನಿಸುತ್ತಿದ್ದೆ.</li> </ol>
<b>Qualitative rating</b>	<b>Each description - 1</b>



# **APPENDIX C**

## **Stimulus manual**

### **MANUAL FOR THEORY OF MIND ACTIVITIES FOR PERSONS WITH BRAIN DAMAGE IN KANNADA**

**AFFECTIVE THEORY OF MIND  
(ToM) ACTIVITIES**

**PRE TRIAL**

Facial emotion	Lexical terms
	Very sad
	Very yucky





Very scared



Very angry



Very happy



Moderately sad



Moderately yucky



Moderately scared









Moderately happy



Neutral

# **TRIAL STIMULUS**

## TRIAL

<b>Stimuli</b>	<p>ಕಾವ್ಯ ತನ್ನ ಜನ್ಮದಿನದಂದು ತನ್ನ ಸ್ನೇಹಿತನಿಂದ ಉಡುಗೊರೆಯನ್ನು ಪಡೆದಳು, ಆದರೆ ಅವಳು ಉಡುಗೊರೆಯನ್ನು ಇಷ್ಟಪಡಲಿಲ್ಲ. ಅವಳು ಅದನ್ನು ಅವಳ ಮುಖದ ಮೇಲೆ ತೋರಿಸಲು ಇಷ್ಟಪಡುವುದಿಲ್ಲ. ಏಕೆಂದರೆ ಅವಳು ಹೇಗೆ ಭಾವಿಸುತ್ತಾಳೆಂದು ಅವಳ ಸ್ನೇಹಿತ ತಿಳಿದುಕೊಳ್ಳಬೇಕೆಂದು ಅವಳು ಬಯಸುವುದಿಲ್ಲ.</p>	
<b>Task to identify the emotion</b>	1. ಅವಳ ಮುಖದ ಭಾವನೆ ಹೇಗಿರಬಹುದು?	2. ಅವಳೊಳಗಿನ ಭಾವನೆ ಹೇಗಿರಬಹುದು?
<b>Facial emotions</b>	 	 
<b>Expected response</b>		

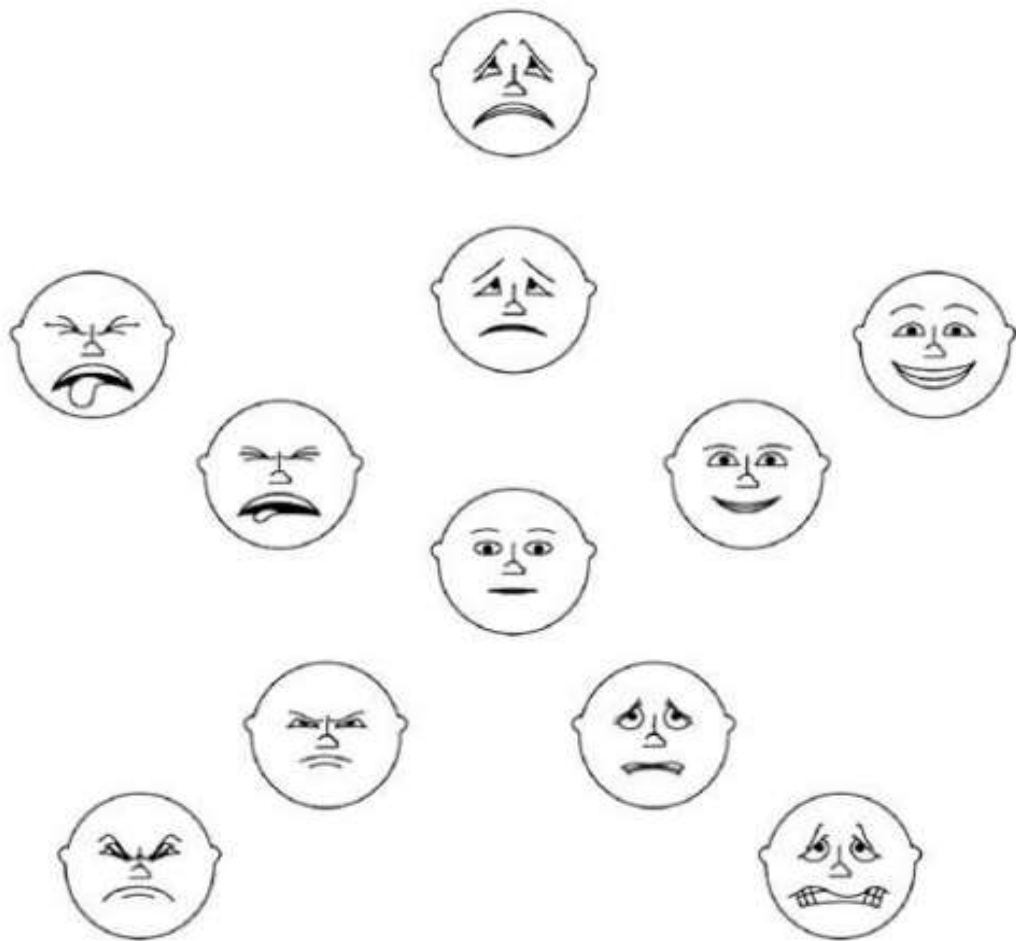
# **TRAINING STIMULI**

## Stimulus 1.1

ರಾಮ್ ತನ್ನ ಸಹೋದರಿಯ ಮೇಲೆ ಮೋಜಿನ  
ಆಟವಾಡುತ್ತಿದ್ದಾನೆ. ಆದ್ದರಿಂದ ಅವನು ತನ್ನ  
ಸಹೋದರಿಯ ನೆಚ್ಚಿನ ಪುಸ್ತಕವನ್ನು  
ತೆಗೆದುಕೊಂಡು ಅದನ್ನು ಮರೆಮಾಡುತ್ತಾನೆ.  
ರಾಮ್ ತನ್ನ ಮನಸ್ಸಿನ ಭಾವನೆಯನ್ನು  
ಮುಖದಲ್ಲಿದ್ದ ವ್ಯಕ್ತಪಡಿಸಲು ಬಯಸುವುದಿಲ್ಲ  
ಏಕೆಂದರೆ, ಇದು ರಾಮ್ ಮಾಡಿದನೆಂದು ತಿಳಿದರೆ  
ಅವನ ಸಹೋದರಿ ಕೋಪಗೊಳ್ಳುತ್ತಾಳೆ.



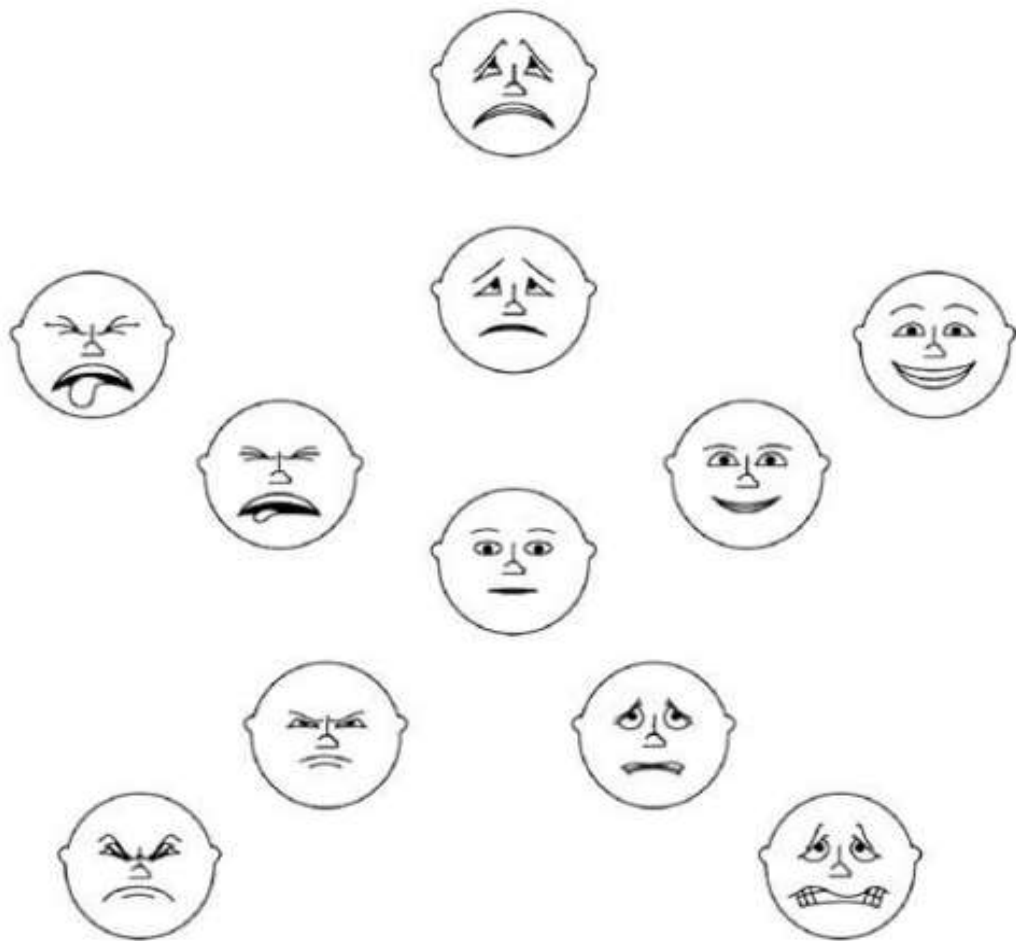
# Facial emotions



## Stimulus 1.2

ರಾಮ್ ತನ್ನ ಸ್ನೇಹಿತನೊಂದಿಗೆ ಊಟ  
ತಿನ್ನುತ್ತಿದ್ದಾನೆ, ರಾಮ್ ಸ್ನೇಹಿತ ರಾಮ್‌ಗಾಗಿ  
ಊಟ ತಂದಿದ್ದಾನೆ. ರಾಮ್ ಅದನ್ನು ತಿಂದಾಗ  
ಅನ್ನ ಸರಿಯಾಗಿ ಬಂದಿರುವುದಿಲ್ಲವೆಂದು  
ಗೊತ್ತಾಗುತ್ತದೆ. ಆದರೂ , ತನ್ನ ಸ್ನೇಹಿತ , ಇನ್ನು  
ಮುಂದೆ ತನ್ನನ್ನು ಊಟಕ್ಕೆ ಆಹ್ವಾನಿಸದೆ  
ಇರಬಹುದು ಎಂಬ ಕಾರಣದಿಂದ ರಾಮ್ ತನ್ನ  
ಮನಸ್ಸಿನ ಭಾವನೆಯನ್ನು ಮುಖದಲ್ಲೇ  
ವ್ಯಕ್ತಪಡಿಸಲು ಬಯಸುವುದಿಲ್ಲ.

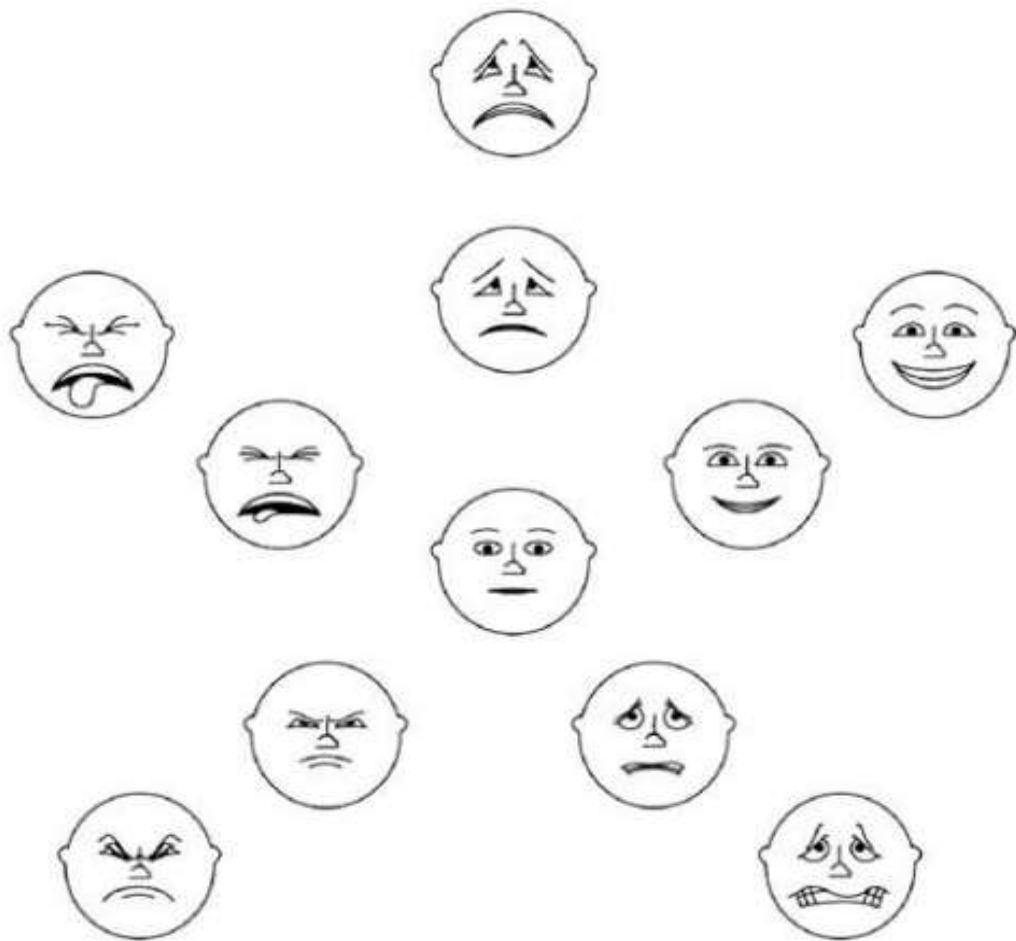
# Facial emotions



## Stimulus 1.3

ರಾಮ್, ಪರೀಕ್ಷೆಯಲ್ಲಿ ಕಡಿಮೆ ಅಂಕ ಗಳಿಸಿದ್ದರಿಂದ  
ಹೆದರಿದ್ದಾನೆ. ಆದರೆ, ರಾಮ್ ತನ್ನ ಮನಸ್ಸಿನ  
ಭಾವನೆಯನ್ನು ಮುಖದಲ್ಲಿ ವ್ಯಕ್ತಪಡಿಸಲು  
ಬಯಸುವುದಿಲ್ಲ, ಏಕೆಂದರೆ ಅದರ ಬಗ್ಗೆ ತಿಳಿದರೆ  
ಅವನ ತಂದೆ ಅವನನ್ನು ಶಿಕ್ಷಿಸುತ್ತಾರೆ.

# Facial emotions

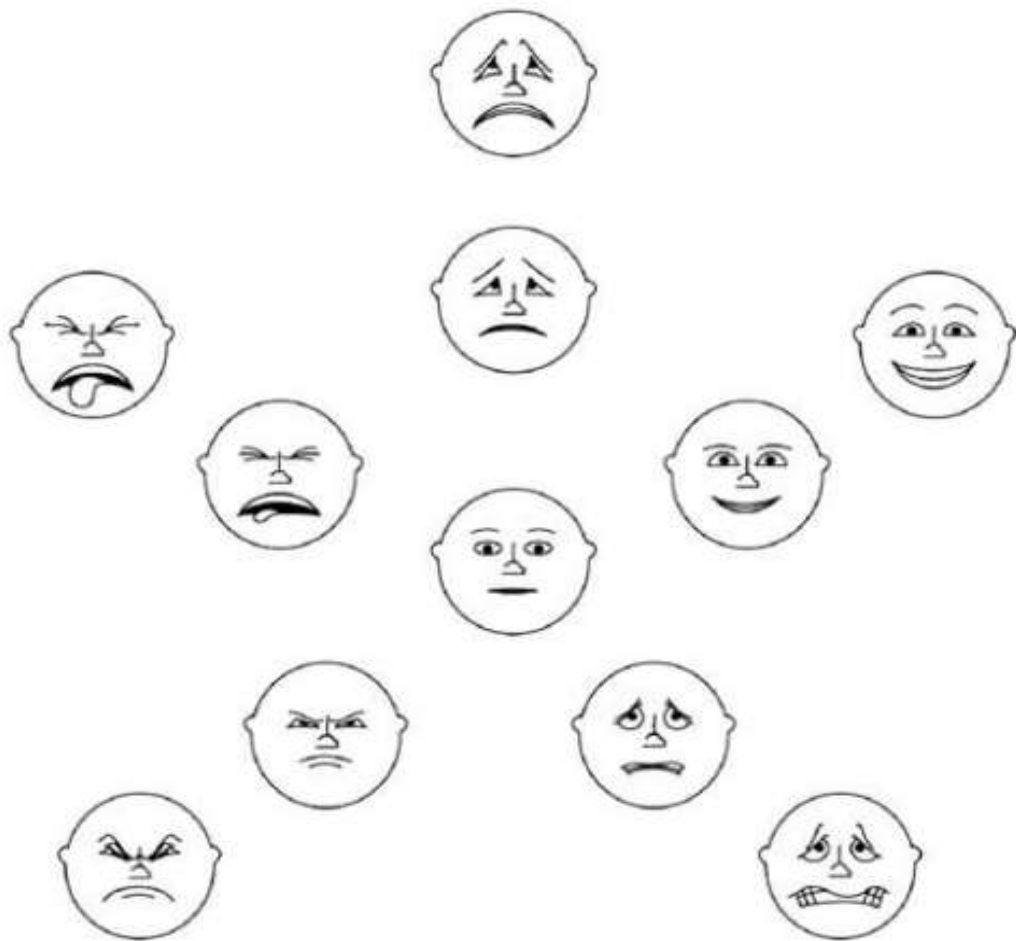


## Stimulus 1.4



ರಾಮ್‌ನ ಸ್ನೇಹಿತ ಆಕಸ್ಮಿಕವಾಗಿ ರಾಮ್‌ನ  
ಪುಸ್ತಕದ ಪುಟವನ್ನು ಹರಿದು ಹಾಕಿದ್ದರಿಂದ  
ರಾಮ್ ಕೋಪಗೊಂಡಿದ್ದಾನೆ. ಆದರೆ ಅವನ  
ಸ್ನೇಹಿತ ಉದ್ದೇಶಪೂರ್ವಕವಾಗಿ ಪುಟವನ್ನು  
ಹರಿದು ಹಾಕಲಿಲ್ಲವಾದ್ದರಿಂದ ರಾಮ್, ತನ್ನ  
ಮನಸ್ಸಿನ ಭಾವನೆಯನ್ನು ಮುಖದಲ್ಲಿದ್ದ  
ವ್ಯಕ್ತಪಡಿಸಲು ಬಯಸುವುದಿಲ್ಲ. ಏಕೆಂದರೆ .  
ರಾಮ್ ಗೆ ಏನೆನ್ನಿಸುತ್ತಿದೆ ಎಂದು ತಿಳಿದರೆ, ರಾಮ್  
ನ ಸ್ನೇಹಿತ ಅಸಮಾಧಾನಗೊಳ್ಳುತ್ತಾನೆ.

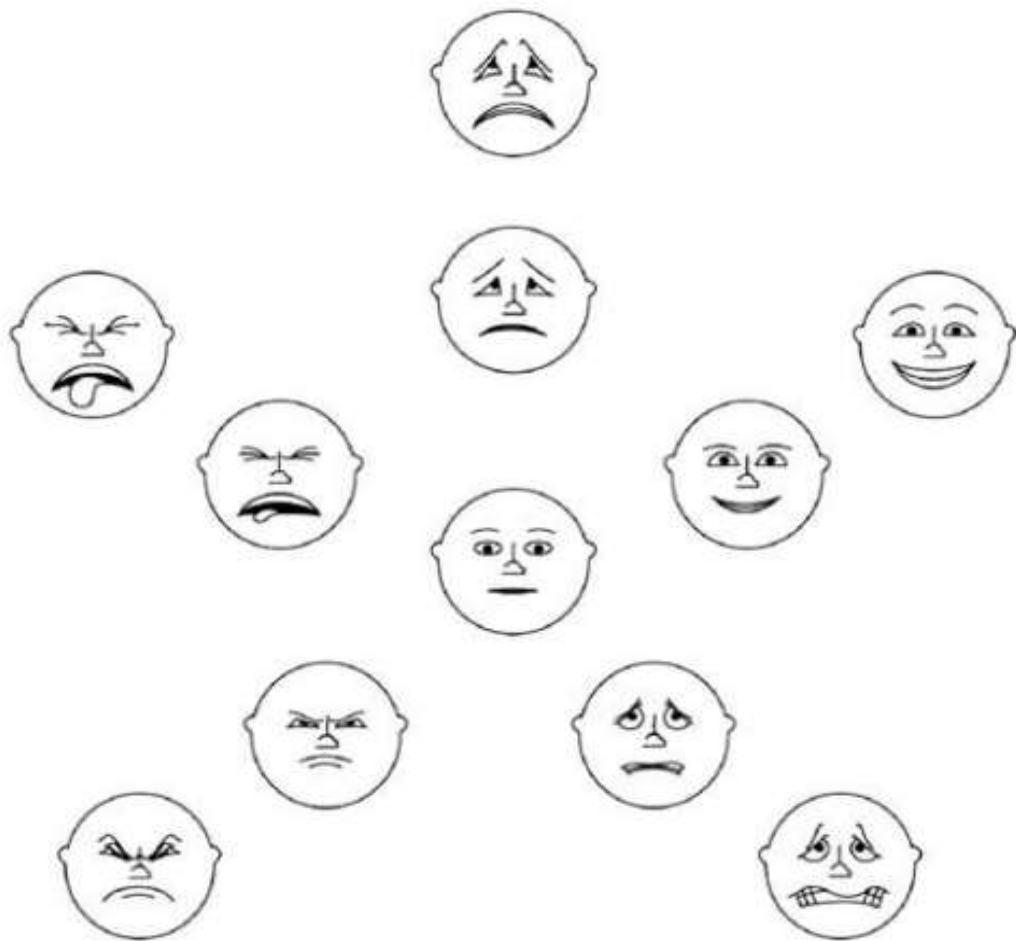
# Facial emotions



## Stimulus 1.5

ರಾಮ್ ತನ್ನ ಕುರ್ಚಿಯ ಮೇಲೆ  
ಕುಳಿತುಕೊಳ್ಳುವಾಗ ನೆಲದ ಮೇಲೆ ಬಿದ್ದು  
ತನ್ನನ್ನು ತಾನೇ ನೋಯಿಸಿಕೊಳ್ಳುತ್ತಾನೆ. ಅವನ  
ಸಹಪಾಠಿಗಳು ನಗುತ್ತಾರೆ ಎಂಬ ಕಾರಣದಿಂದ,  
ತನಗೆ ನೋವಾದರೂ, ತನ್ನ ಮನಸ್ಸಿನ  
ಭಾವನೆಯನ್ನು ಮುಖದಲ್ಲೇ ವ್ಯಕ್ತಪಡಿಸಲು  
ಬಯಸುವುದಿಲ್ಲ.

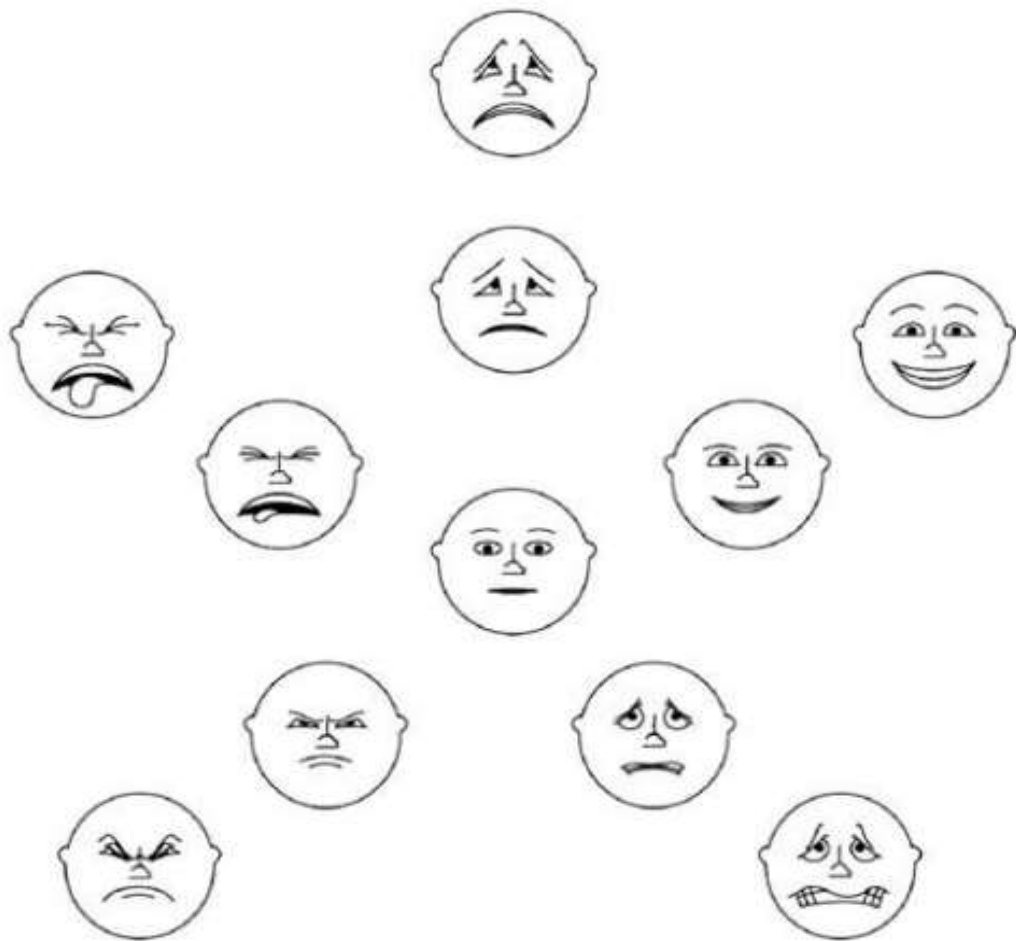
# Facial emotions



## Stimulus 2.1

ದೇವ್ ಇತರರ ವಸ್ತುಗಳನ್ನು ಎಸೆಯುವುದನ್ನು  
ಆನಂದಿಸುತ್ತಾನೆ. ಆದ್ದರಿಂದ ಅವನು ಆಡುವಾಗ  
ತನ್ನ ತಾಯಿಯ ಫೋನ್ ಎಸೆಯುತ್ತಾನೆ. ದೇವ್  
ತನ್ನ ಮನಸ್ಸಿನ ಭಾವನೆಯನ್ನು ಮುಖದಲ್ಲೆ  
ವ್ಯಕ್ತಪಡಿಸಲು ಬಯಸುವುದಿಲ್ಲ. ಏಕೆಂದರೆ  
ದೇವ್ ಅದನ್ನು ಎಸೆದಿದ್ದಾನೆಂದು ತಿಳಿದಿದರೆ  
ದೇವ್ ನ ತಾಯಿ ಅವನಿಗೆ ಗದರಿಸುತ್ತಾಳೆ.

# Facial emotions

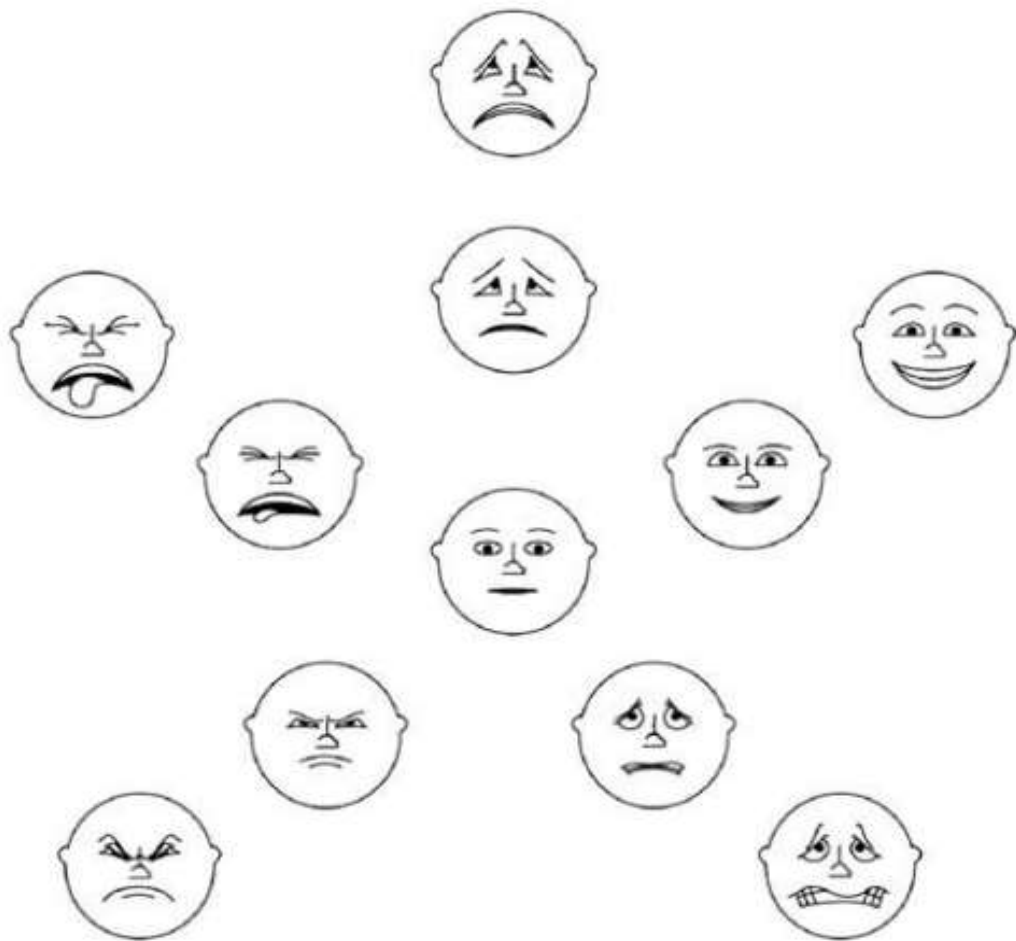




## Stimulus 2.2

ದೇವ್ ತನ್ನ ಚಿಕ್ಕಪ್ಪನ ಮನೆಗೆ ಭೇಟಿ ನೀಡುತ್ತಾನೆ,  
ಅವರ ಮನೆಯಲ್ಲಿ ಬಹಳ ಧೂಳು ಇರುವುದನ್ನು  
ದೇವ್ ಗಮನಿಸುತ್ತಾನೆ. ದೇವ್, ತನ್ನ ಚಿಕ್ಕಪ್ಪನಿಗೆ  
ಬೇಜಾರಾಗಬಹುದು ಎಂಬ ಕಾರಣಕ್ಕೆ ತನ್ನ  
ಮನಸ್ಸಿನ ಭಾವನೆಯನ್ನು ಮುಖದಲ್ಲೇ  
ವ್ಯಕ್ತಪಡಿಸಲು ಬಯಸುವುದಿಲ್ಲ.

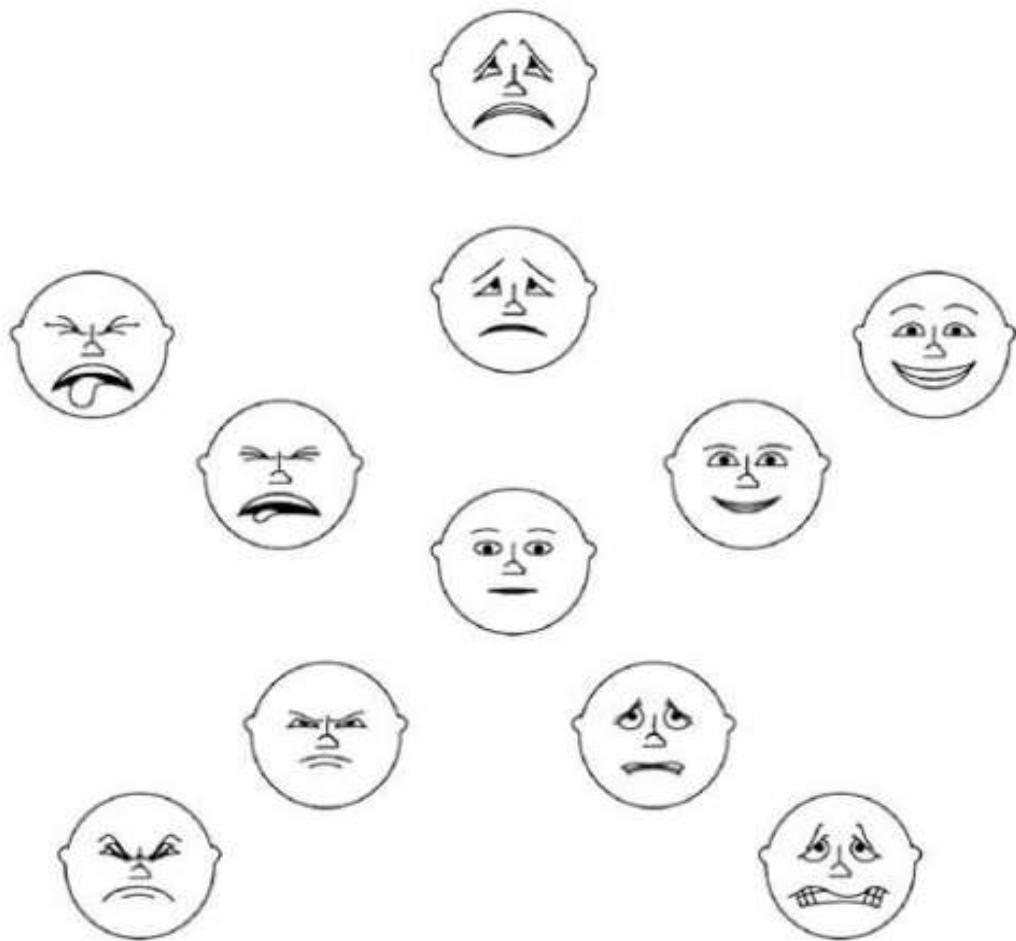
# Facial emotions



## Stimulus 2.3

ದೇವ್ ,ಚಾಕೋಲೇಟ್ ಅನ್ನು ಫ್ರಿಡ್ಜ್ ನಿಂದ ಕದ್ದ  
ನಂತರ ಅದು ತನ್ನ ತಂಗಿಯದೆಂದು ತಿಳಿದು,  
ಹೆದರಿಕೊಂಡಿದ್ದಾನೆ. ಅವನ ತಂಗಿ, ಹಾಗೂ ಅಮ್ಮ  
ಚಾಕೋಲೇಟ್‌ನ್ನು ಹುಡುಕುತ್ತಿದ್ದಾರೆ. ದೇವ್  
ತನ್ನ ಮನಸ್ಸಿನ ಭಾವನೆಯನ್ನು ಮುಖದಲ್ಲ  
ವ್ಯಕ್ತಪಡಿಸಲು ಬಯಸುವುದಿಲ್ಲ .ಏಕೆಂದರೆ,  
ದೇವ್ ಈ ಕೆಲಸವನ್ನು ಮಾಡಿದ್ದಾನೆ ಎಂದು  
ತಿಳಿದರೆ, ಅವನ ತಾಯಿ ಕೋಪಗೊಂಡು ಅವನನ್ನು  
ಶಿಕ್ಷಿಸುತ್ತಾಳೆ.

# Facial emotions

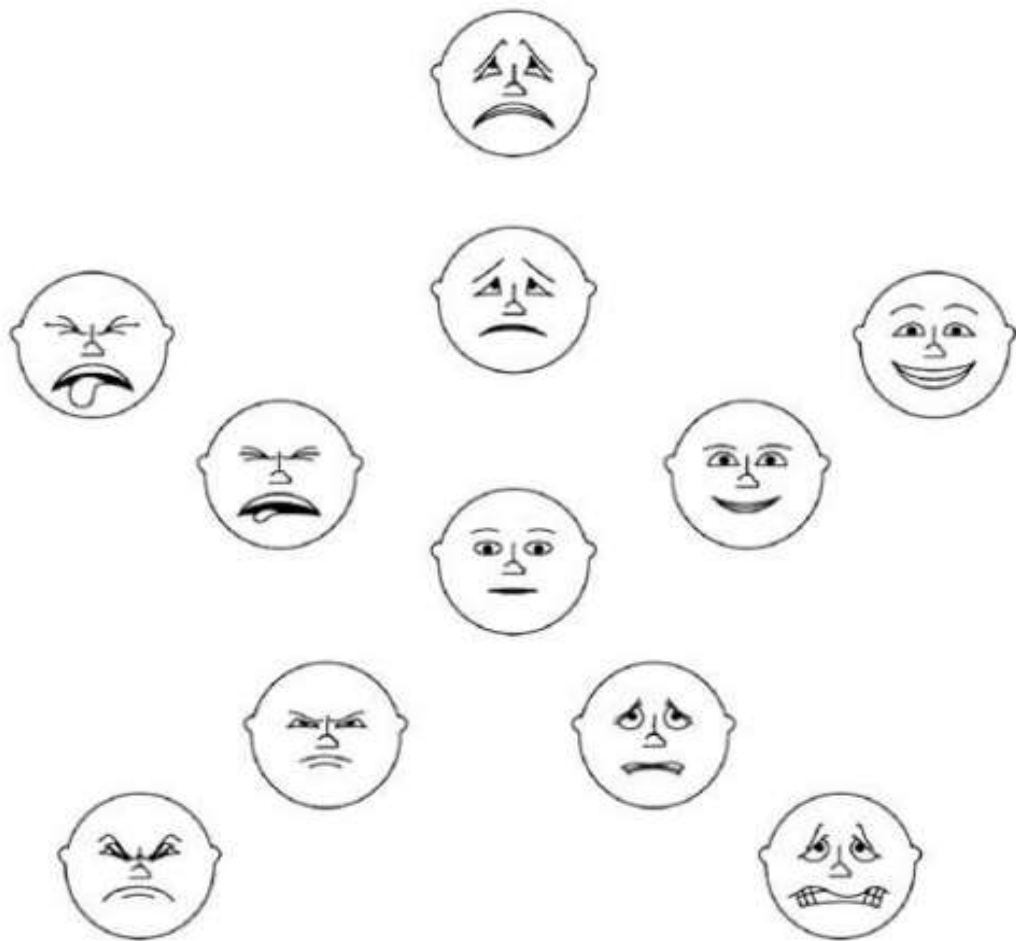


## Stimulus 2.4

ದೇವ್ ಅನಾರೋಗ್ಯದಿಂದ ಬಳಲುತ್ತಿದ್ದರಿಂದ  
ಅವನ ತಾಯಿ , ಅವನಿಗೆ ಐಸ್ ಕ್ರೀಮ್ ಖರೀದಿಸಲು  
ನಿರಾಕರಿಸಿದರು. ಇದರಿಂಗಾಗಿ ದೇವ್  
ಸಿಟ್ಟಾಗಿದ್ದಾನೆ. ದೇವ್ ತನ್ನ ಮನಸ್ಸಿನ  
ಭಾವನೆಯನ್ನು ಮುಖದಲ್ಲೂ ವ್ಯಕ್ತಪಡಿಸಲು  
ಬಯಸುವುದಿಲ್ಲ ಏಕೆಂದರೆ, ಇದರಿಂದದಾಗಿ ಅವನ  
ತಾಯಿಗೆ ಅಸಮಾಧಾನವಾಗುತ್ತದೆ.



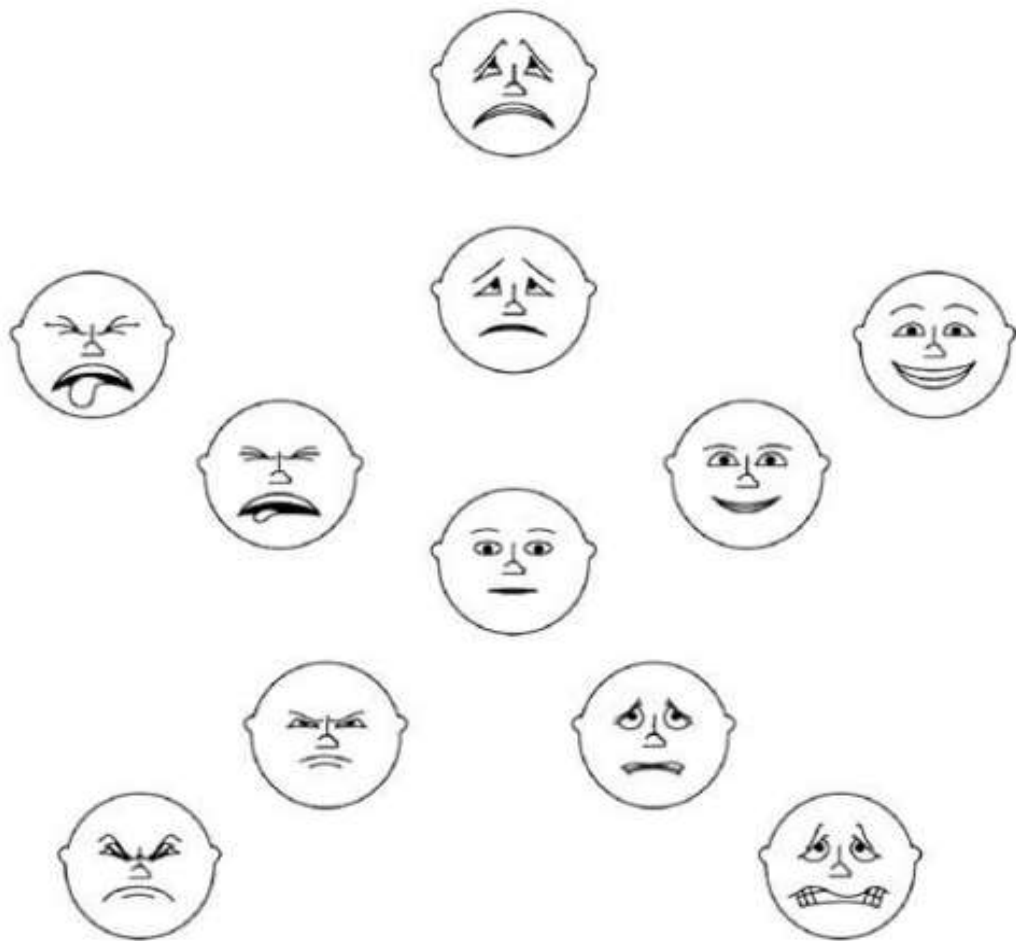
# Facial emotions



## Stimulus 2.5

ಓಟದ ಸ್ಪರ್ಧೆಯಲ್ಲಿ ಸೋತ ಕಾರಣ ದೇವ್  
ದುಃಖಿತನಾಗಿದ್ದಾನೆ. ದೇವ್ ತನ್ನ ಮನಸ್ಸಿನ  
ಭಾವನೆಯನ್ನು ಮುಖದಲ್ಲಿ ವ್ಯಕ್ತಪಡಿಸಲು  
ಬಯಸುವುದಿಲ್ಲ ಏಕೆಂದರೆ, ದೇವ್ ಗೆ ಏನು  
ಅನಿಸುತ್ತಿದೆ ಎಂದು ತಿಳಿದರೆ ಅವನ ಸಹಪಾಠಿಗಳು  
ಅವನನ್ನು ಗೇಲಿ ಮಾಡುತ್ತಾರೆ.

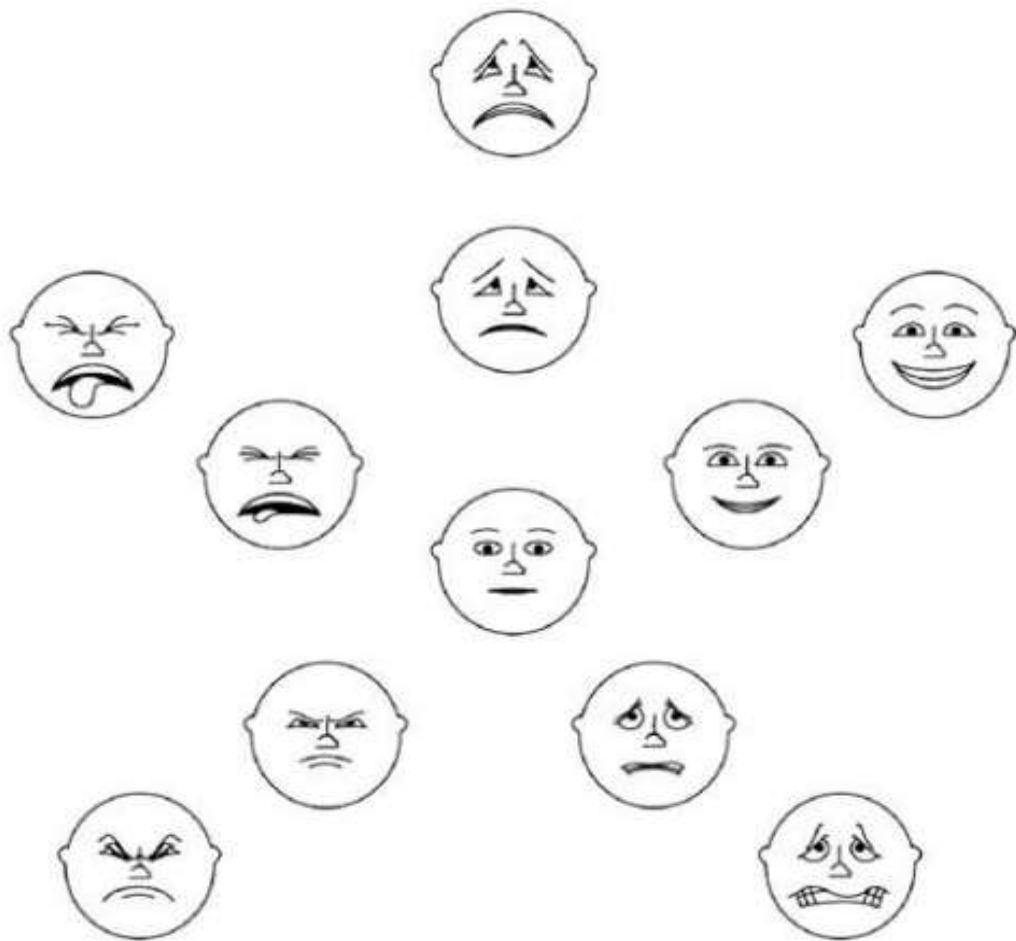
# Facial emotions



## Stimulus 3.1

ಸುಂದರ್ ತನ್ನ ಸ್ನೇಹಿತನ ಮೇಲೆ ತಮಾಷೆ  
ಮಾಡಲು ಇಷ್ಟಪಡುತ್ತಾನೆ. ಆದ್ದರಿಂದ ಅವನ  
ಕಾರಿನ ಕೀಲಿಯನ್ನು ಮುಚ್ಚಿಡುತ್ತಾನೆ. ಸುಂದರ್  
ತನ್ನ ಮನಸ್ಸಿನ ಭಾವನೆಯನ್ನು ಮುಖದಲ್ಲ  
ವ್ಯಕ್ತಪಡಿಸಲು ಬಯಸುವುದಿಲ್ಲ. ಏಕೆಂದರೆ  
ಇದನ್ನು ಸುಂದರ್ ಮಾಡಿದ್ದಾನೆಂದು ತಿಳಿದರೆ  
ಅವನ ಸ್ನೇಹಿತ ಕೋಪಗೊಳ್ಳುತ್ತಾನೆ.

# Facial emotions

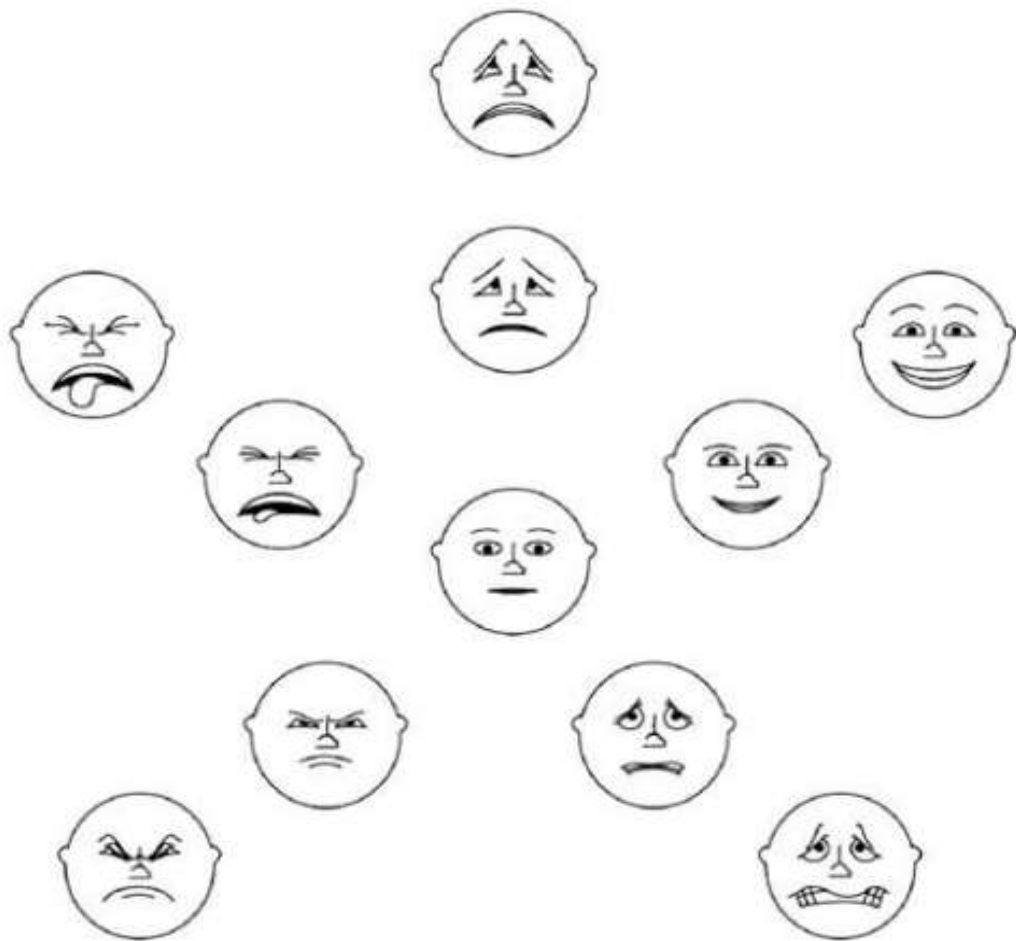


## Stimulus 3.2



ತೊಳೆಯದ ಅಂಗಿಯನ್ನು ಧರಿಸಿ ಬಂದ ಕಾರಣ  
ಸುಂದರ್‌ನ ಸ್ನೇಹಿತ ಗಬ್ಬು ನಾರುತ್ತಿದ್ದಾನೆ.  
ಅವನಿಗೆ ಅದು ಅಸಹ್ಯಕರವೆಂದೆನಿಸುತ್ತದೆ. ಆದರೆ  
ಸುಂದರ್ ತನ್ನ ಮನಸ್ಸಿನ ಭಾವನೆಯನ್ನು  
ಮುಖದಲ್ಲೂ ವ್ಯಕ್ತಪಡಿಸಲು ಬಯಸುವುದಿಲ್ಲ  
.ಏಕೆಂದರೆ ಅವನ ಸ್ನೇಹಿತನಿಗೆ, ಸುಂದರ್ ಗೆ ಹೇಗೆ  
ಅನಿಸುತ್ತಿದೆ ಎಂದು ತಿಳಿದರೆ ಬೇಸರವಾಗುತ್ತದೆ.

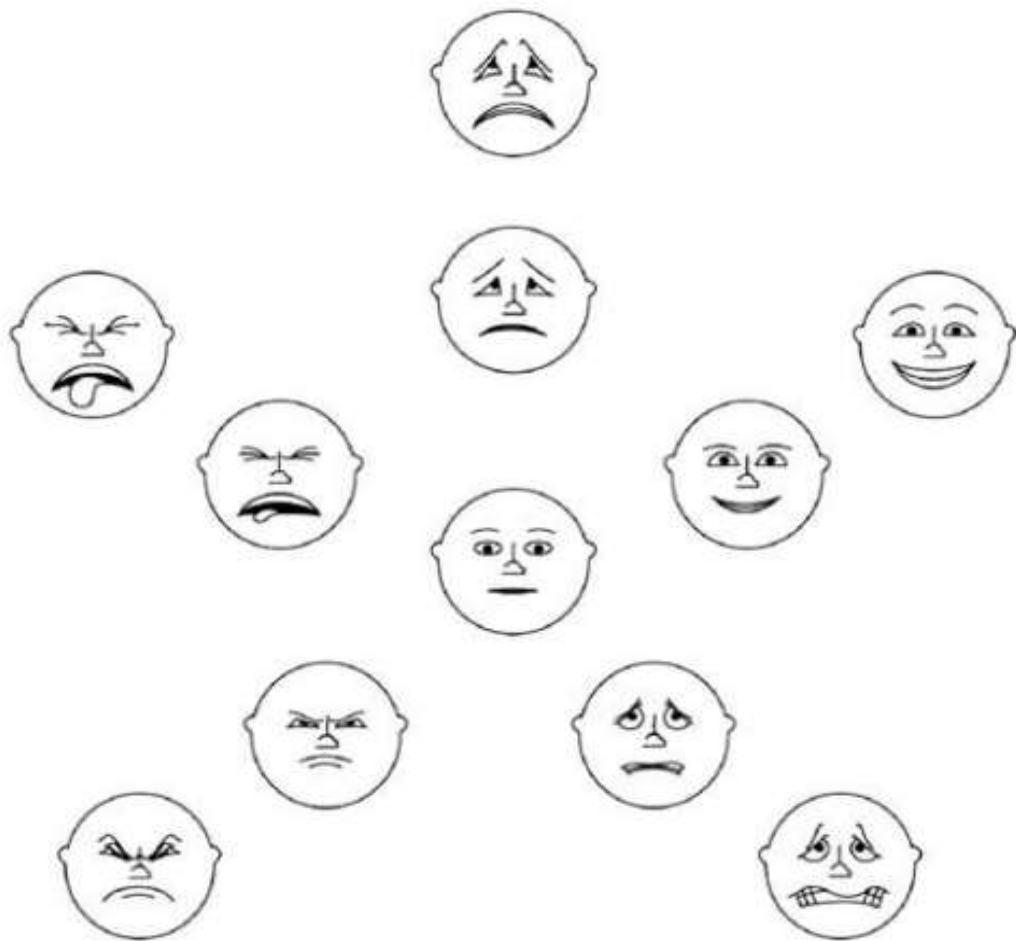
# Facial emotions



## Stimulus 3.3

ಡ್ರೈವಿಂಗ್ ಲೈಸೆನ್ಸ್ ಇಲ್ಲದೆ ಬೈಕು ಸವಾರಿ  
ಮಾಡುತ್ತಿರುವುದರಿಂದ ಸುಂದರ್ ಹೆದರುತ್ತಾನೆ.  
ಇದನ್ನು ಅವನ ಮುಖದಲ್ಲೂ ವ್ಯಕ್ತಪಡಿಸಲು  
ಬಯಸುವುದಿಲ್ಲ ಏಕೆಂದರೆ ತಪಾಸಣೆ  
ನಡೆಸುತ್ತಿರುವ ಟ್ರಾಫಿಕ್ ಪೊಲೀಸರು  
ಅನುಮಾನಿಸಿದರೆ ಆತನನ್ನು ವಿಚಾರಣೆಗೆ  
ಒಳಪಡಿಸಬಹುದು.

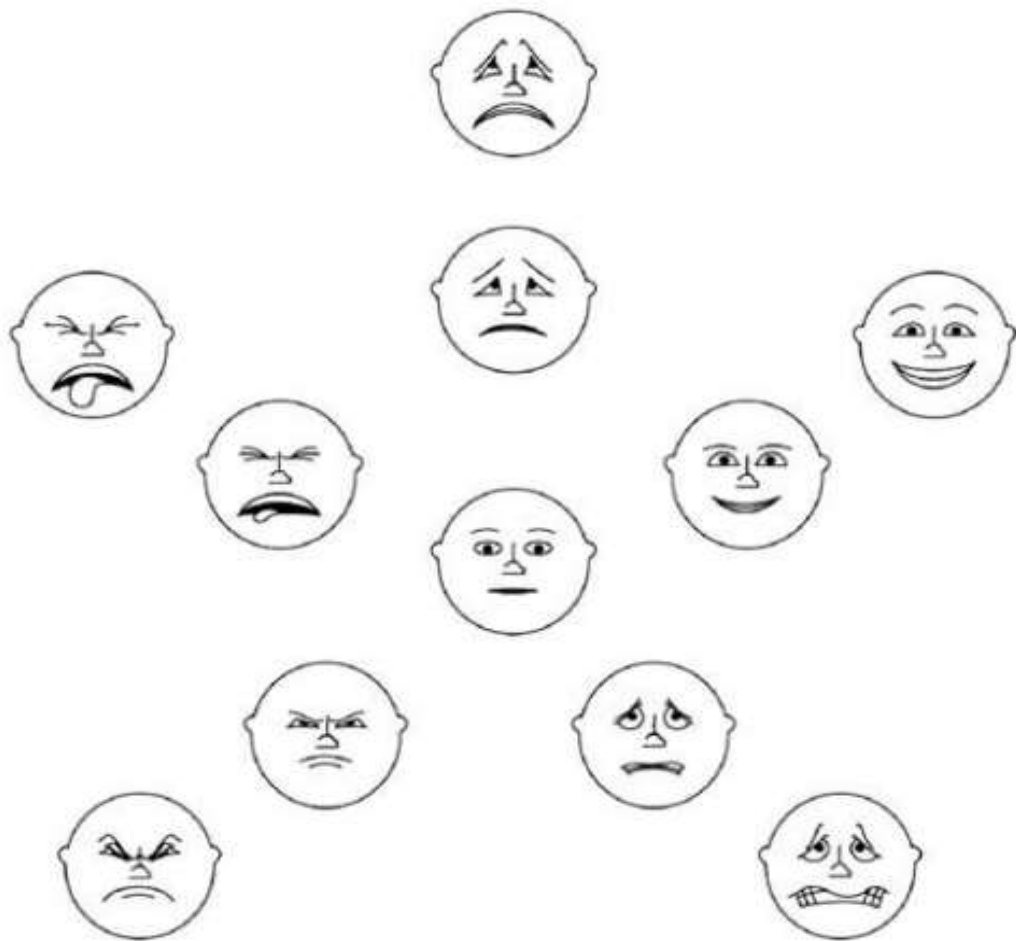
# Facial emotions



## Stimulus 3.4

ಸುಂದರ್ ತನ್ನ ಸ್ನೇಹಿತನ ಹೋಟೆಲ್ ಗೆ ಭೇಟಿ  
ನೀಡಿ , ಒಂದು ಕಪ್ ಕಾಫಿ ಆರ್ಡರ್ ಮಾಡುತ್ತಾನೆ,  
ಅದು ಒಳ್ಳೆಯ ರುಚಿಯನ್ನು ಹೊಂದಿರದ ಕಾರಣ  
ಅವನು ಕೋಪಗೊಳ್ಳುತ್ತಾನೆ. ಆದರೆ ಇದನ್ನು  
ಅವನ ಮುಖದಲ್ಲೂ ವ್ಯಕ್ತಪಡಿಸಲು  
ಬಯಸುವುದಿಲ್ಲವೆಂದರೆ ಸುಂದರ್ ಗೆ ಹೇಗೆ  
ಅನಿಸುತ್ತಿದೆ ಎಂದು ತಿಳಿದರೆ ಅವನ ಸ್ನೇಹಿತನು  
ಅಸಮಾಧಾನಗೊಳ್ಳುತ್ತಾನೆ.

# Facial emotions

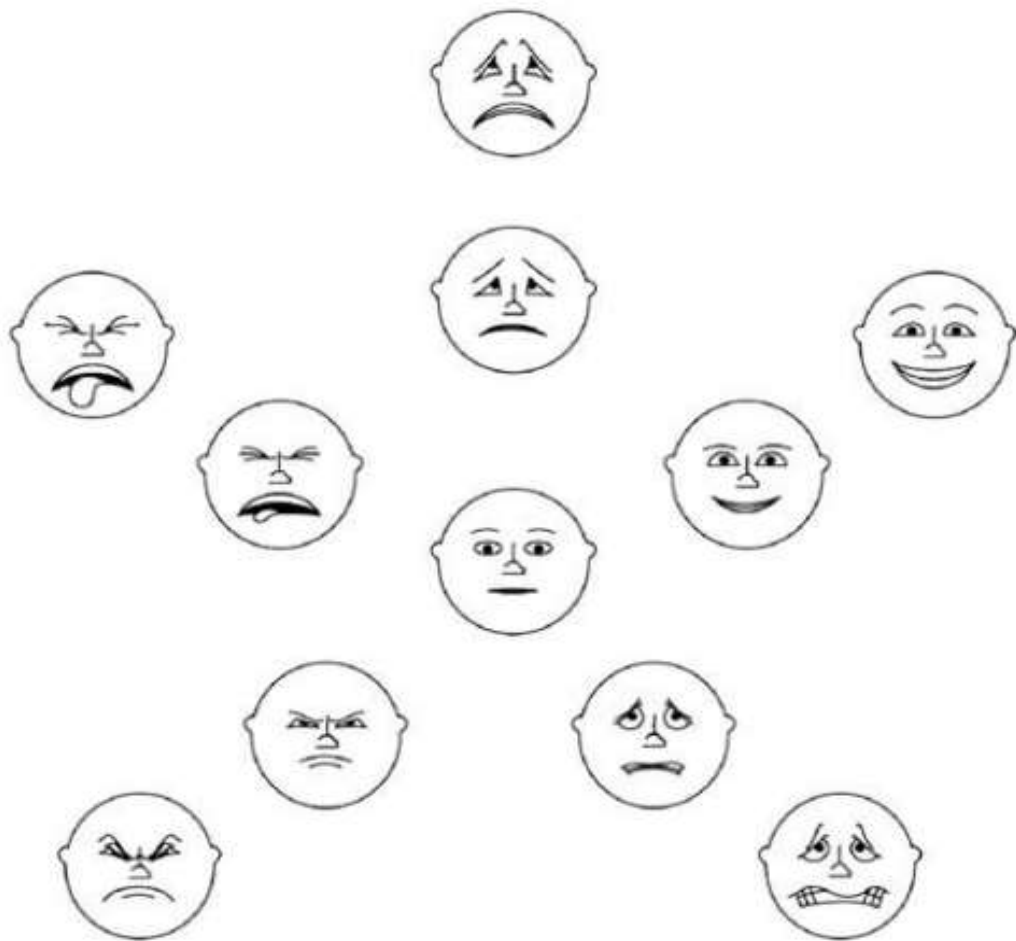




## Stimulus 3.5

ತನ್ನ ಕಚೇರಿಯಲ್ಲಿ ಬಡ್ಡಿ ನೀಡದ ಕಾರಣ  
ಸುಂದರ್‌ಗೆ ಅತ್ಯಪ್ಪಿ ಇದೆ. ಇದನ್ನು ಅವನ  
ಮುಖದಲ್ಲೂ ವ್ಯಕ್ತಪಡಿಸಲು ಬಯಸುವುದಿಲ್ಲ,  
ಏಕೆಂದರೆ ಸಭೆಯಲ್ಲಿರುವ ಅವನ  
ಸಹೋದ್ಯೋಗಿಗಳು ಅವನಿಗೆ ಹೇಗೆ ಅನಿಸುತ್ತದೆ  
ಎಂದು ತಿಳಿದರೆ, ಅವನನ್ನು ಗೇಲಿ ಮಾಡಬಹುದು.

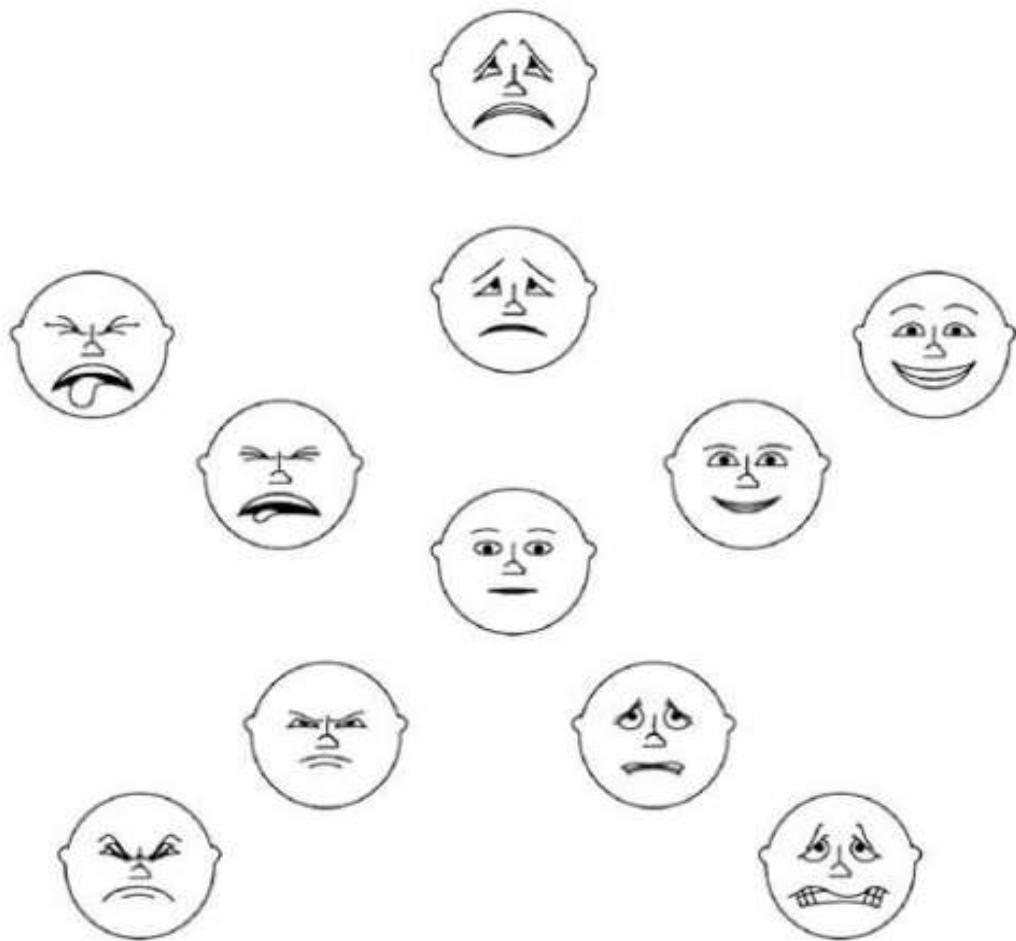
# Facial emotions



## Stimulus 4.1

ಗೀತಾ ತನ್ನ ಮ್ಯಾನೇಜರ್‌ಗೆ ತಾನು  
ಅನಾರೋಗ್ಯದಿಂದ ಬಳಲುತ್ತಿದ್ದೇನೆ, ಎಂದು  
ಸುಳ್ಳು ಹೇಳಿ ,ಒಂದು ಸಮಾರಂಭಕ್ಕೆ ಹೋಗಲು  
ರಜೆ ಪಡೆಯುತ್ತಾಳೆ . ಗೀತಾಗೆ ಅನುಮತಿ  
ಸಿಕ್ಕಿದ್ದಕ್ಕೆ ಆಕೆ ಸಂಭ್ರಮದಲ್ಲಿದ್ದಾಳೆ, ಆದರೆ  
ಅವಳ ಮುಖದ ಮೇಲೆ ಇದನ್ನು ವ್ಯಕ್ತಪಡಿಸಲು  
ಅವಳು ಬಯಸುವುದಿಲ್ಲ ಏಕೆಂದರೆ ಅವಳು ಸುಳ್ಳು  
ಹೇಳಿದಳು ಎಂದು ತಿಳಿದರೆ ಅವಳ ಮ್ಯಾನೇಜರ್  
ಸಿಟ್ಟಾಗುತ್ತಾರೆ.

# Facial emotions

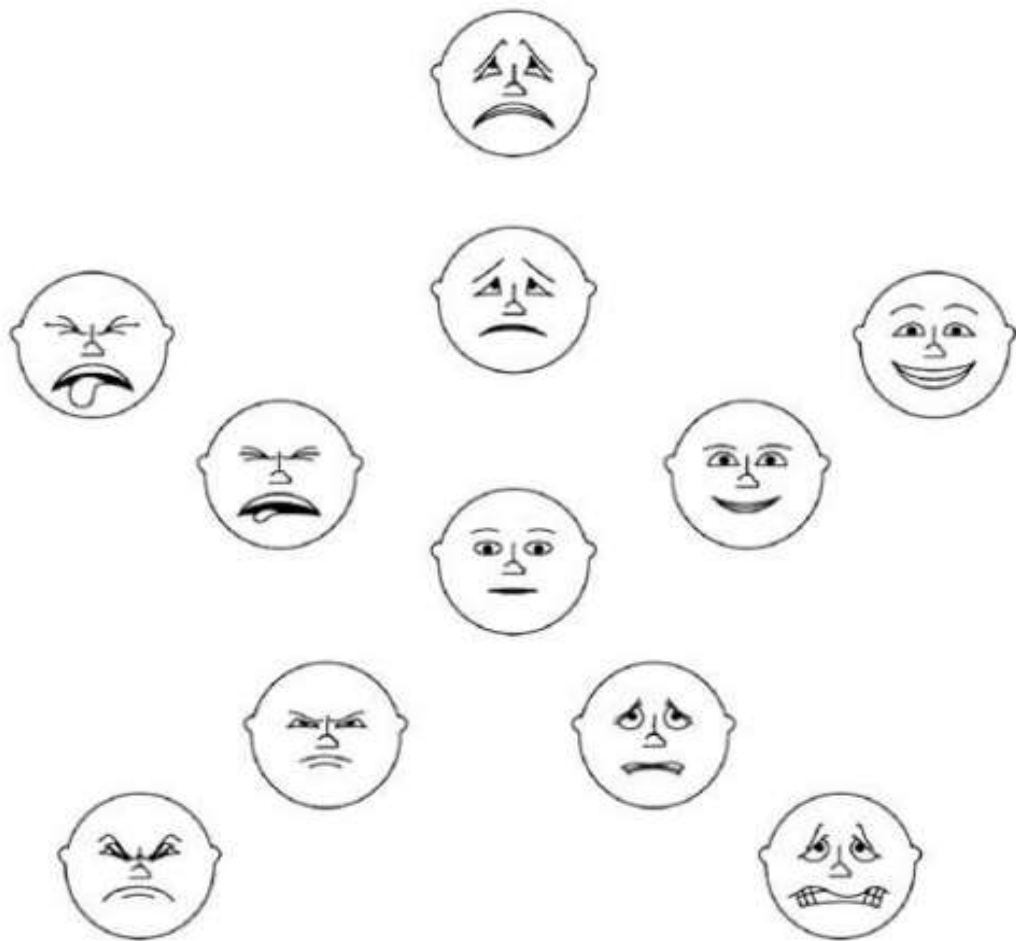


## Stimulus 4.2

ಗೀತಾಳ ಸ್ನೇಹಿತನಿಗೆ ಉಗುರು ಕಚ್ಚುವ  
ಅಭ್ಯಾಸವಿದೆ. ಗೀತಾ ತನ್ನ ಸ್ನೇಹಿತ , ಒಂದು  
ಸಭೆಯ ಮಧ್ಯೆ ಉಗುರು ಕಚ್ಚುವುದನ್ನು  
ನೋಡುತ್ತಾಳೆ. ಗೀತಾಗೆ ಇದರಿಂದ  
ಹೇಸಿಗೆಯಾಗುತ್ತದೆ ಆದರೆ ಅವಳ ಮುಖದ ಮೇಲೆ  
ಇದನ್ನು ವ್ಯಕ್ತಪಡಿಸಲು ಅವಳು ಬಯಸುವುದಿಲ್ಲ  
ಏಕೆಂದರೆ ಗೀತಾಗೆ ಹೇಗೆ ಅನಿಸುತ್ತದೆ ಎಂದು ಅವಳ  
ಸ್ನೇಹಿತನಿಗೆ ತಿಳಿದರೆ, ಅವನಿಗೆ  
ಅಸಮಾಧಾನವಾಗುತ್ತದೆ.



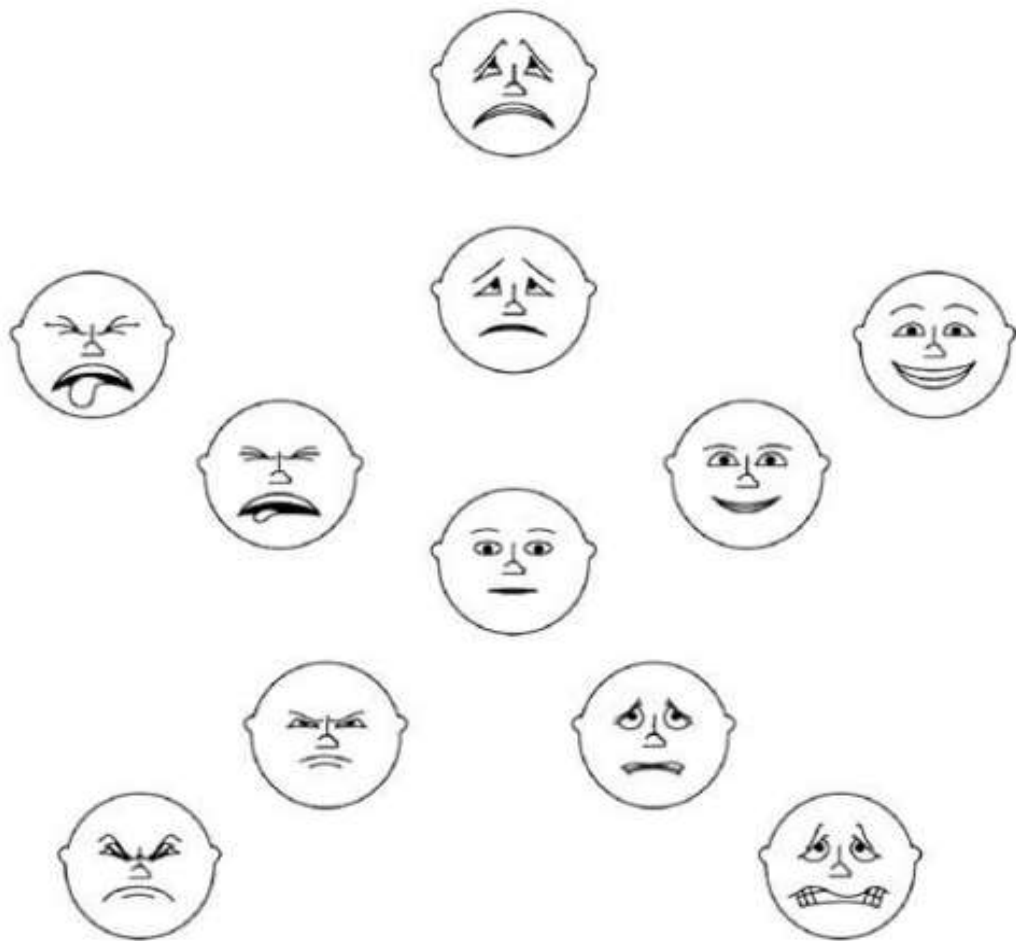
# Facial emotions



## Stimulus 4.3

ಗೀತಾ ತನ್ನ ಗಂಡನ ನೆಚ್ಚಿನ ಶರ್ಟನ್ನು ಇಸ್ಮಿ  
ಮಾಡುವಾಗ ಸುಡುತ್ತಾಳೆ ಇದರಿಂದಾಗಿ ಅವಳು  
ಹೆದರಿದ್ದಾಳೆ. ಆದರೆ ಅವಳ ಮುಖದ ಮೇಲೆ  
ಇದನ್ನು ವ್ಯಕ್ತಪಡಿಸಲು ಅವಳು ಬಯಸುವುದಿಲ್ಲ  
ಏಕೆಂದರೆ, ಆದದ್ದನ್ನು ತಿಳಿದರೆ ಅವನು  
ಕೋಪಗೊಳ್ಳುತ್ತಾನೆ.

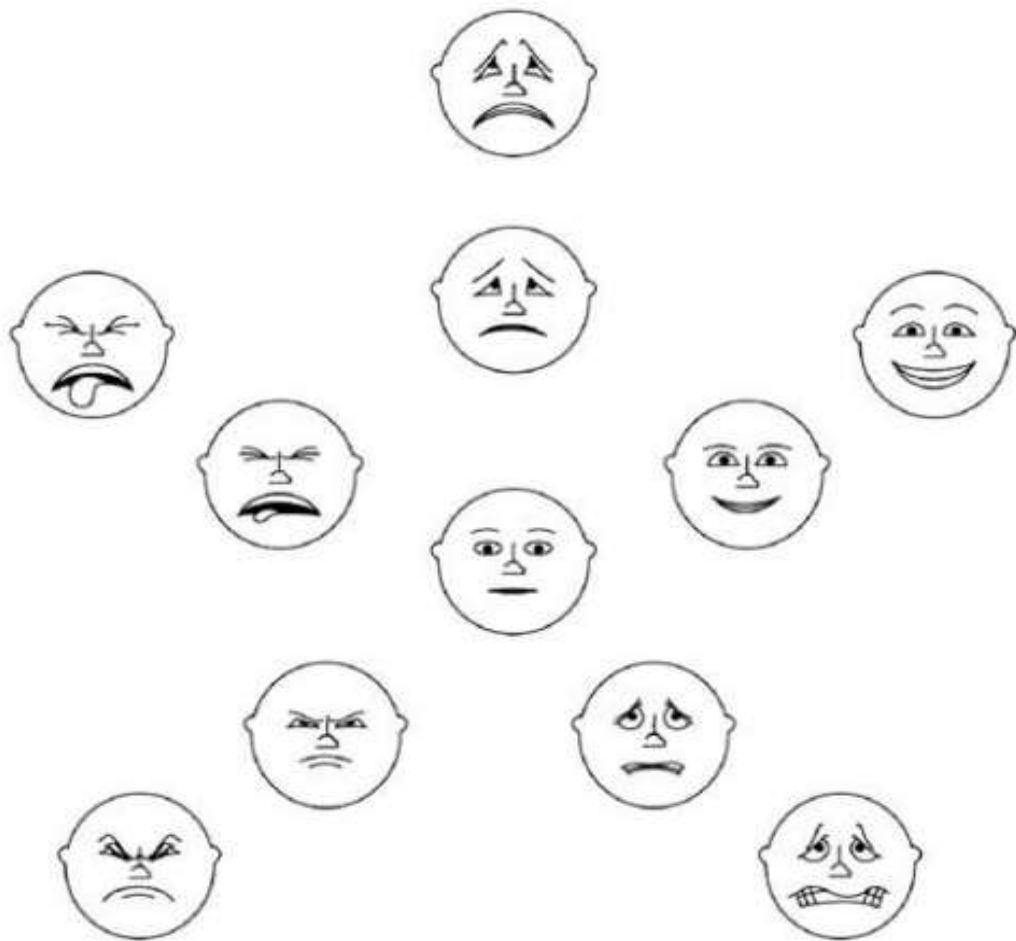
# Facial emotions



## Stimulus 4.4

ಗೀತಾಳ ಸಹೋದ್ಯೋಗಿ ಆಕೆಯ ಮೇಲೆ ನೀರು  
ಚೆಲ್ಲಿದಳು. ಹಾಗಾಗಿ ಗೀತಾ ಕೋಪಗೊಂಡಿದ್ದಾಳೆ  
ಆದರೆ ಗೀತಾ ಇದನ್ನು ತನ್ನ ಮುಖದ ಮೇಲೆ  
ವ್ಯಕ್ತಪಡಿಸಲು ಬಯಸುವುದಿಲ್ಲ ಏಕೆಂದರೆ  
ಅವಳ ಸಹೋದ್ಯೋಗಿ ಅದನ್ನು  
ಉದ್ದೇಶಪೂರ್ವಕವಾಗಿ ಮಾಡಿಲ್ಲ ಎಂದು ಗೀತಾಗೆ  
ತಿಳಿದಿದೆ, ಮತ್ತು ಗೀತಾಗೆ ಹೇಗೆ ಅನಿಸುತ್ತಿದೆ ಎಂದು  
ತಿಳಿದರೆ ಆಕೆಯ ಸಹೋದ್ಯೋಗಿಗೆ  
ಬೇಸರವಾಗುತ್ತದೆ.

# Facial emotions

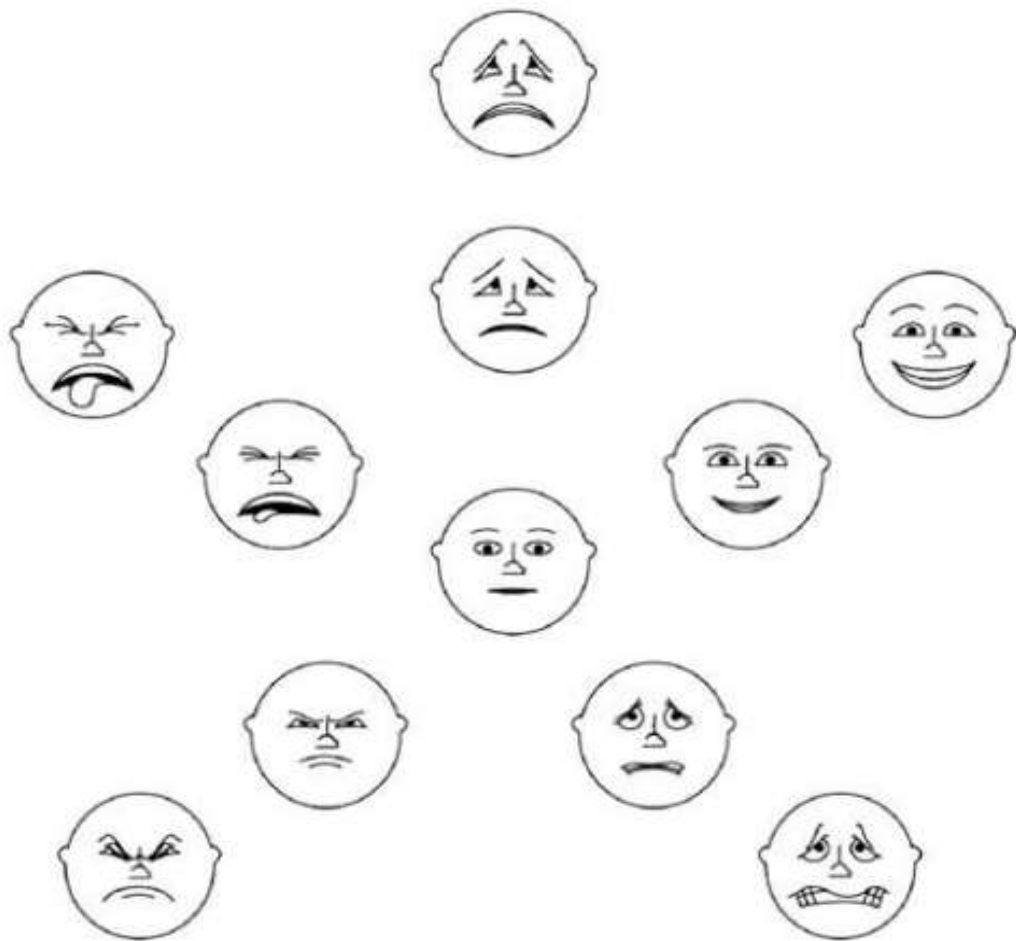


## Stimulus 4.5



ಗೀತಾಳ ಮಗಳು, ಗೀತಾಳ ನೆಚ್ಚಿನ ಬಲೆಯನ್ನು  
ತನ್ನ ಶಾಲೆಯ ಸಮಾರಂಭವೊಂದರಲ್ಲಿ  
ಭಾಗವಹಿಸಿದ್ದಾಗ ಕಳೆದುಹಾಕಿದ್ದಾಳೆ.  
ಇದರಿಂದಾಗಿ ಗೀತಾ ದುಃಖಿತಳಾಗಿದ್ದಾಳೆ. ಆದರೆ  
ಗೀತಾ ಇದನ್ನು ತನ್ನ ಮುಖದ ಮೇಲೆ  
ವ್ಯಕ್ತಪಡಿಸಲು ಬಯಸುವುದಿಲ್ಲ ಏಕೆಂದರೆ  
ಗೀತಾಗೆ ಹೇಗೆ ಅನಿಸುತ್ತಿದೆ ಎಂದು ತಿಳಿದರೆ ಅವಳ  
ಮಗಳಿಗೆ ಬೇಸರವಾಗುತ್ತದೆ.

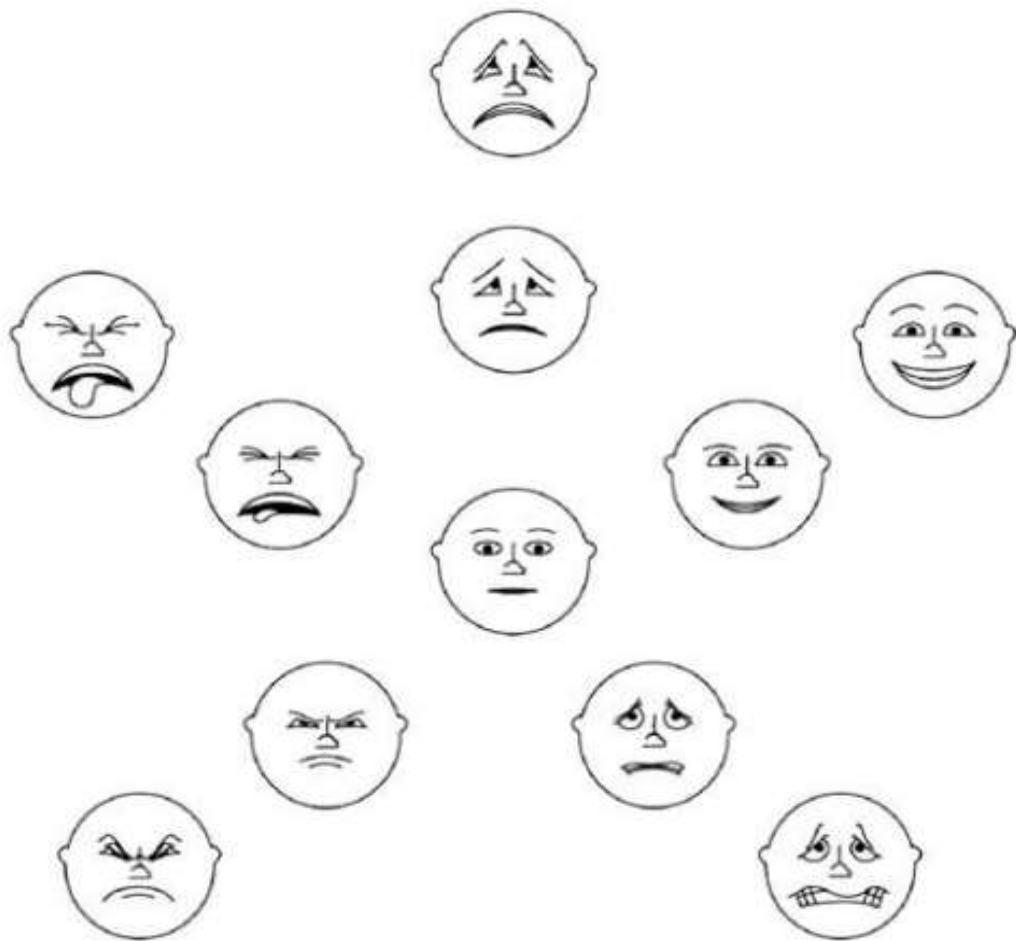
# Facial emotions



## Stimulus 5.1

ರಾಜು ತನ್ನ ಸಹೋದರನ ಲ್ಯಾಪ್‌ಟಾಪ್ ಅನ್ನು  
ಅವನಿಗೆ ತಿಳಿಯದಂತೆ ತೆಗೆದುಕೊಳ್ಳುತ್ತಾನೆ. ರಾಜು  
ತನ್ನ ಸಹೋದರ ಲ್ಯಾಪ್‌ಟಾಪ್  
ಹುಡುಕುವುದನ್ನು ನೋಡಿ ಅದನ್ನು  
ಆನಂದಿಸುತ್ತಿದ್ದಾನೆ. ಇದನ್ನು ಮುಖದ ಮೇಲೆ  
ವ್ಯಕ್ತಪಡಿಸಲು ರಾಜು ಬಯಸುವುದಿಲ್ಲ,  
ಏಕೆಂದರೆ ಅದು ತನ್ನ ಸಹೋದರನನ್ನು  
ಕೋಪಗೊಳಿಸುತ್ತದೆ.

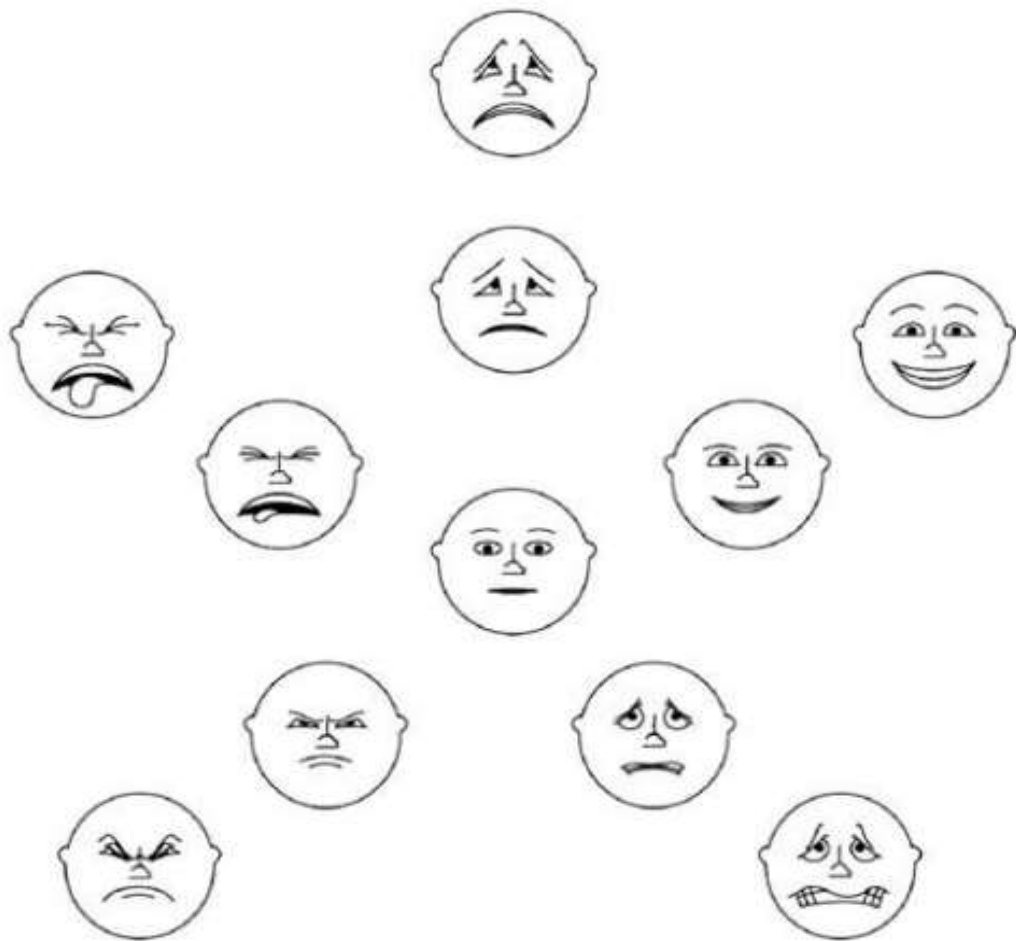
# Facial emotions



## Stimulus 5.2

ರಾಜು ಮತ್ತು ಅವನ ಮಾವ ವಾಕ್ ಮಾಡಲು  
ಹೋಗುತ್ತಾರೆ. ಅವರು, ರಾಜುವಿನೊಂದಿಗೆ  
ತಮಾಶೆ ಮಾಡುತ್ತ ಮಾತನಾಡುತ್ತಲೇ ರಸ್ತೆಯ  
ಮೇಲೆಯೇ ಉಗುಳುತ್ತಾರೆ. ಇದನ್ನು ಕಂಡು  
ರಾಜುಗೆ ಹೇಸಿಗೆಯಾಗುತ್ತದೆ. ಆದರೆ ಇದನ್ನು ತನ್ನ  
ಮುಖದ ಮೇಲೆ ವ್ಯಕ್ತಪಡಿಸಲು ರಾಜು  
ಬಯಸುವುದಿಲ್ಲ, ಏಕೆಂದರೆ ಅದು ತನ್ನ  
ಮಾವನನ್ನು ಅಸಮಾಧಾನಗೊಳಿಸಬಹುದು.

# Facial emotions

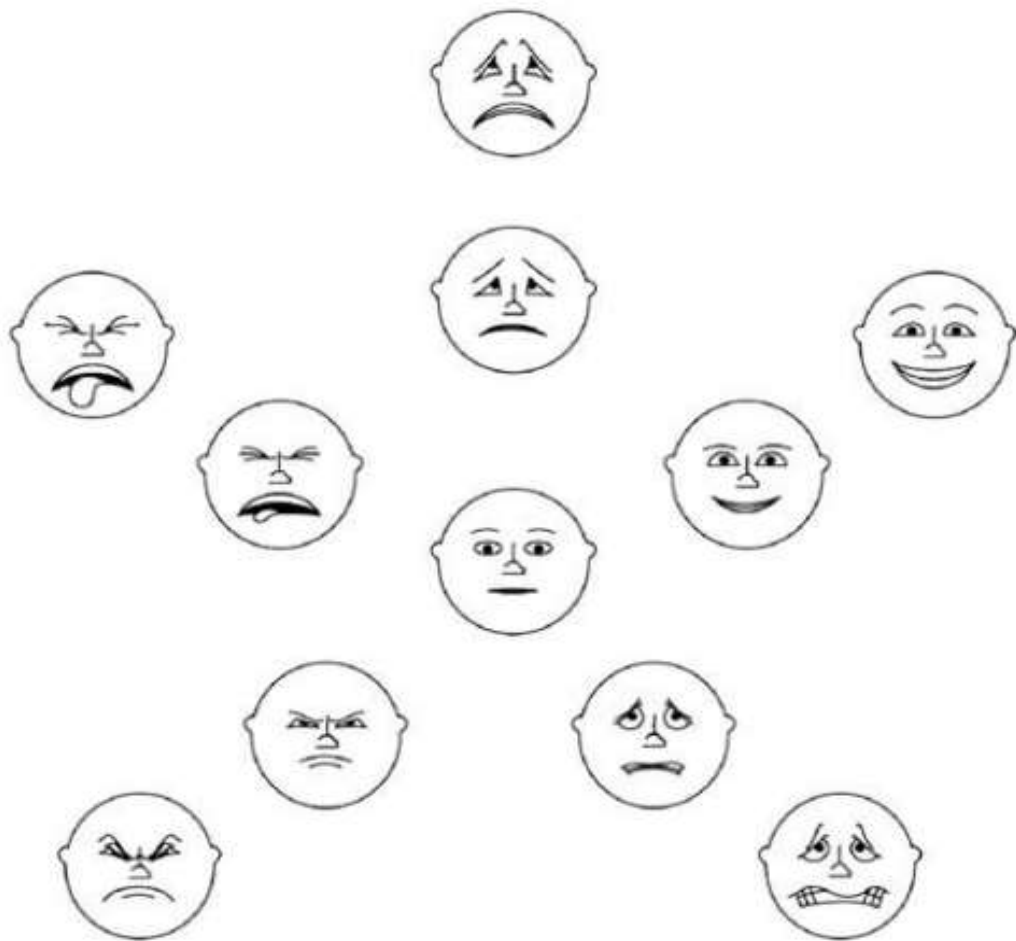




## Stimulus 5.3

ರಾಜು ತನ್ನ ಕಛೇರಿಯ ಕೆಲಸವನ್ನು ಇನ್ನೂ  
ಪೂರ್ಣಗೊಳಿಸದ ಕಾರಣ ಅವನಿಗೆ  
ಭಯವಾಗುತ್ತದೆ. ಆದರೆ ಸಭೆಯಲ್ಲಿ ಕೆಲಸದ ಬಗ್ಗೆ  
ಕೇಳಿದಾಗ ಎಲ್ಲರಂತೆ ಈತನೂ  
ಸಮಾಧಾನಕರವಾದ ರೀತಿಯಲ್ಲಿದ್ದು, ತನಗಿರುವ  
ಭಯವನ್ನು ಮುಖದ ಮೇಲೆ ವ್ಯಕ್ತಪಡಿಸಲು  
ರಾಜು ಬಯಸುವುದಿಲ್ಲ, ಏಕೆಂದರೆ ಅವನು ತನ್ನ  
ಕೆಲಸವನ್ನು ಪೂರ್ಣಗೊಳಿಸಿಲ್ಲವೆಂದು ತಿಳಿದರೆ  
ಮ್ಯಾನೇಜರ್ ಸಿಟ್ಟಾಗುತ್ತಾರೆ.

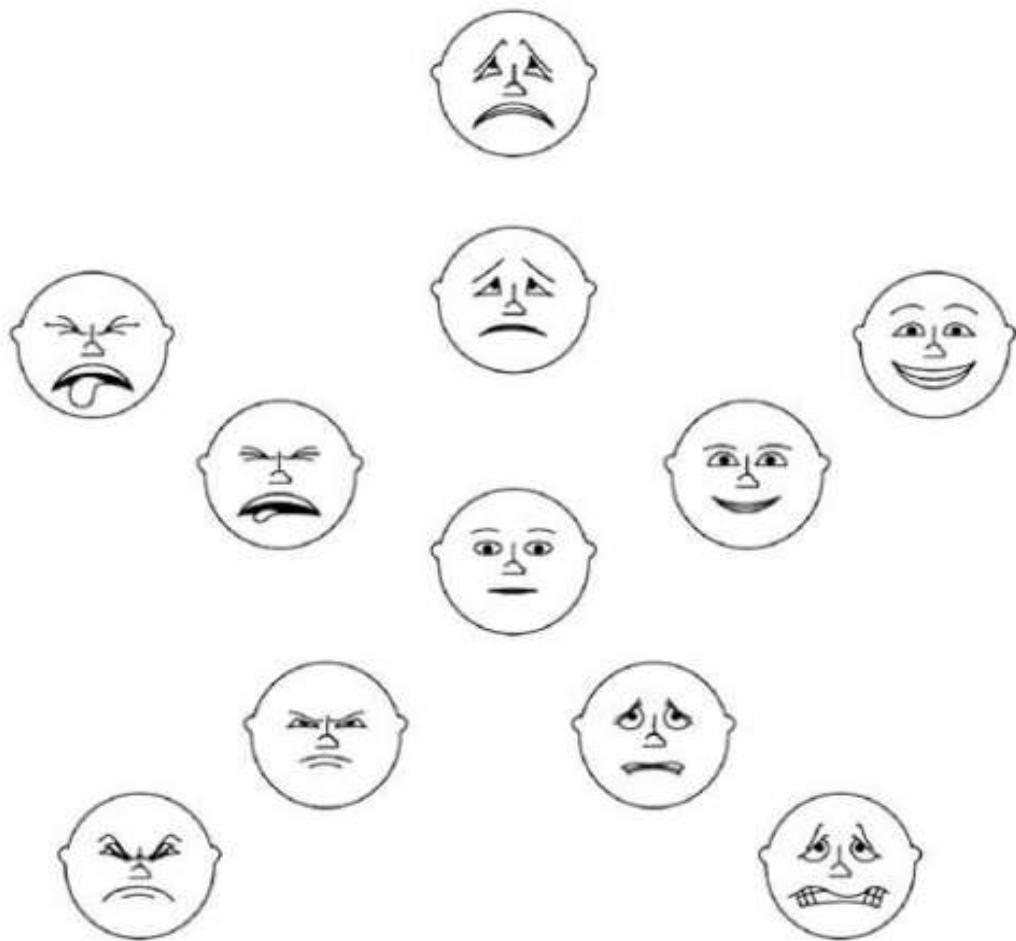
# Facial emotions



## Stimulus 5.4

ತನ್ನ ಮನೆಯ ಬಳಿ ಆಟವಾಡುವ ಮಕ್ಕಳು ತನ್ನ  
ಕಾರಿನ ಗಾಜನ್ನು ಒಡೆದಿದ್ದರಿಂದ ರಾಜು  
ಕೋಪಗೊಂಡಿದ್ದಾನೆ. ಆದರೆ ಇದನ್ನು ರಾಜು  
ತನ್ನ ಮುಖದ ಮೇಲೆ ವ್ಯಕ್ತಪಡಿಸಲು  
ಬಯಸುವುದಿಲ್ಲ ಏಕೆಂದರೆ ಗಾಜನ್ನು  
ಒಡೆದಿರುವವನು ಅವನ ಸ್ನೇಹಿತನ ಮಗ. ಹಾಗೂ  
ರಾಜುವಿನ ಸ್ನೇಹಿತನು ಇದನ್ನು ಗಂಭೀರವಾಗಿ  
ಪರಿಗಣಿಸದೆ ನಗುತ್ತಿದ್ದಾನೆ, ಆದ್ದರಿಂದ ರಾಜುಗೆ  
ಹೇಗೆ ಅನಿಸುತ್ತಿದೆ ಎಂದು ತಿಳಿದರೆ ಅವನ  
ಸ್ನೇಹಿತನು ಅಸಮಾಧಾನಗೊಳ್ಳುತ್ತಾನೆ.

# Facial emotions

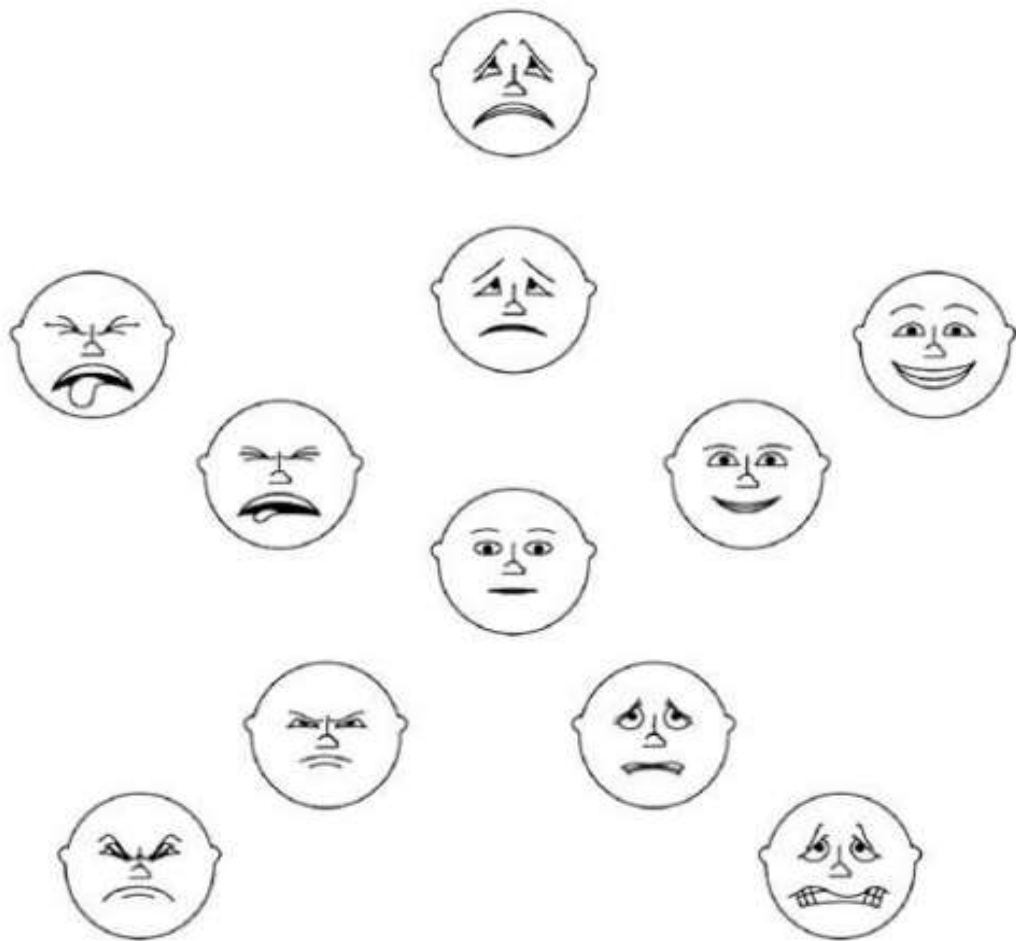


## Stimulus 5.5

ರಾಜು ತನ್ನ ಕೆಲಸವನ್ನು ಕಳೆದುಕೊಂಡ ಕಾರಣ  
ಅವನಿಗೆ ಅಸಮಾಧಾನವಾಗಿದೆ. ಆದರೆ ಇದನ್ನು  
ರಾಜು ತನ್ನ ಮುಖದ ಮೇಲೆ ವ್ಯಕ್ತಪಡಿಸಲು  
ಬಯಸುವುದಿಲ್ಲ. ಏಕೆಂದರೆ ಅವನ ಪ್ರೇಶಕರು  
ಅವನಿಗಾಗಿ ಸಂತೋಷದಿಂದ ಕಾಯುತ್ತಿದ್ದಾರೆ  
ಹಾಗಾಗಿ ರಾಜುಗೆ ಹೇಗೆ ಅನಿಸುತ್ತಿದೆ ಎಂದು ಅವನ  
ಪ್ರೇಷಕರಿಗೆ ತಿಳಿದರೆ ಅವರಿಗೆ ಬೇಸರವಾಗುತ್ತದೆ.



# Facial emotions



**COGNITIVE THEORY OF MIND  
(ToM) ACTIVITIES  
(close ended)**

# **TRIAL STIMULUS**

SWITCH UNWITNESSED

FRAME 1



FRAME 2



FRAME 3

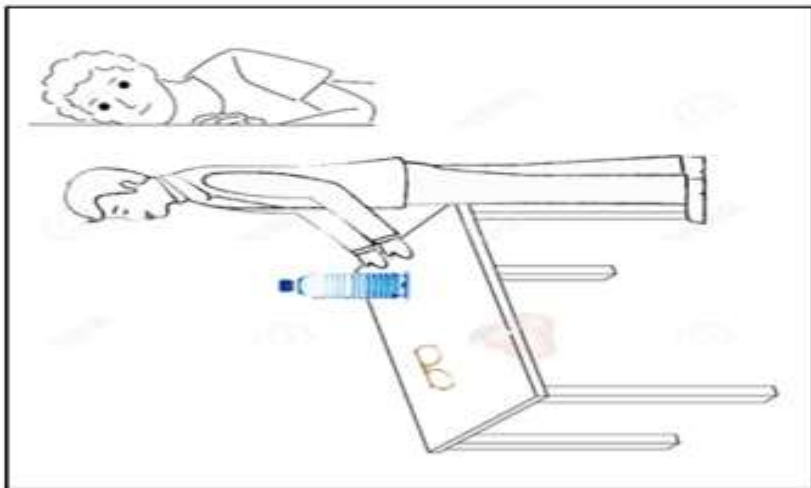


# **TRAINING STIMULI**

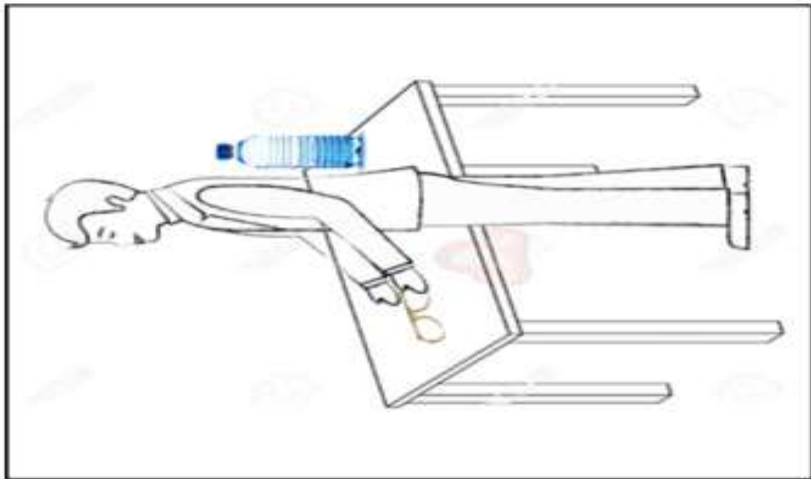
## Stimulus 1.1

SWITCH UNWITNESSED

FRAME 1



FRAME 2



FRAME 3

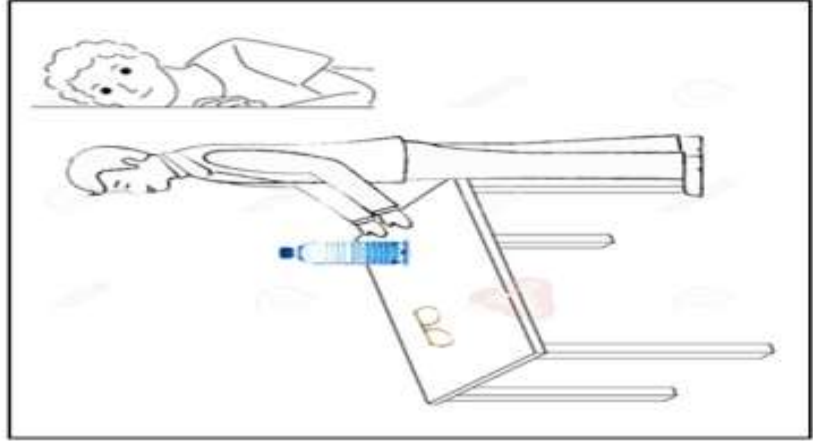


## Stimulus 1.2

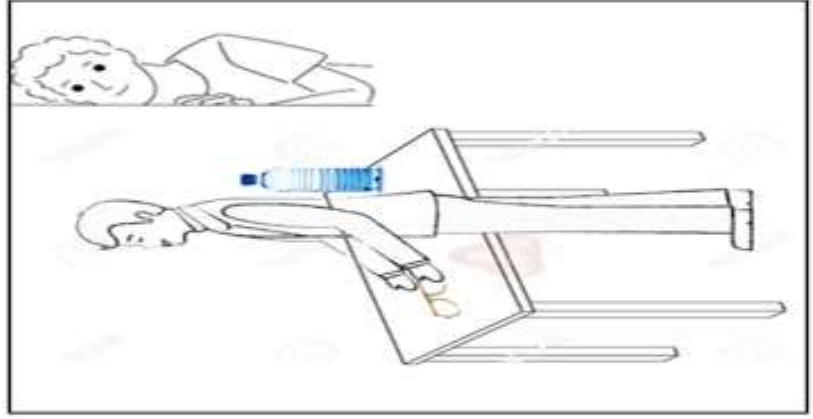


SWITCH WITNESSED

FRAME 1



FRAME 2



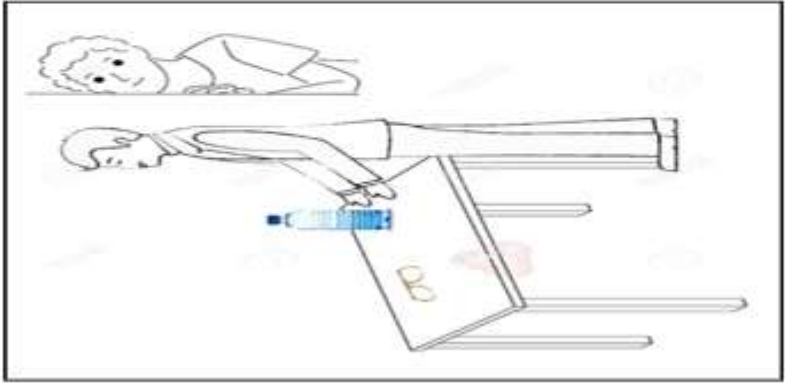
FRAME 3



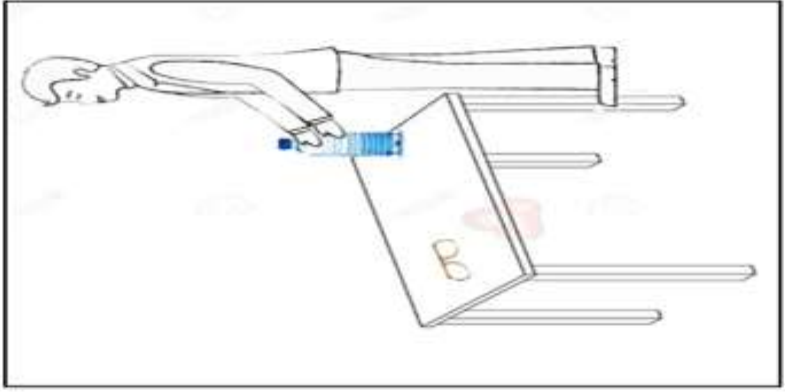
## Stimulus 1.3

UNSWITCHED UNWITNESSED

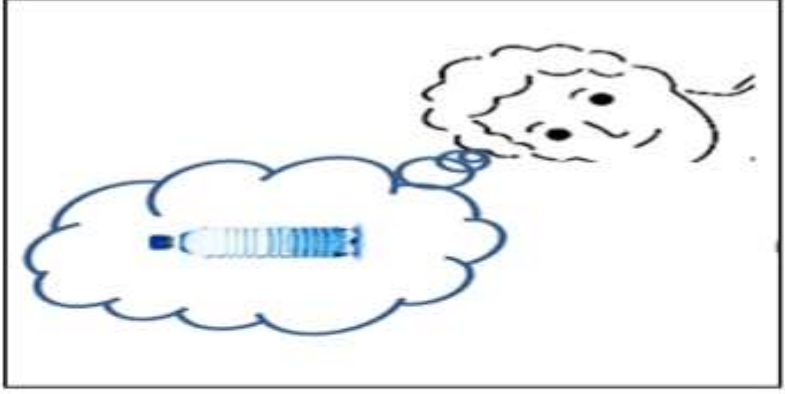
FRAME 1



FRAME 2



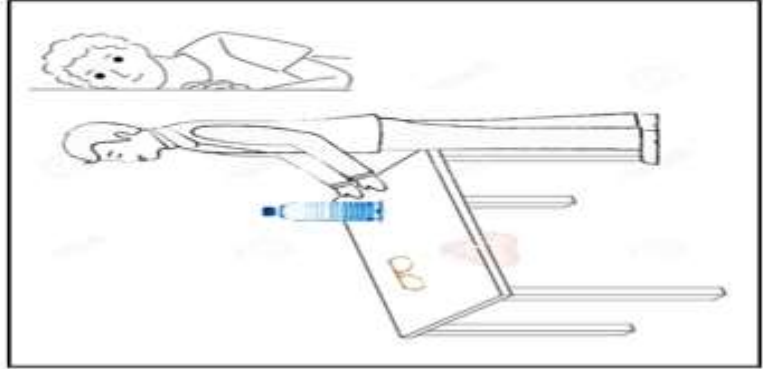
FRAME 3



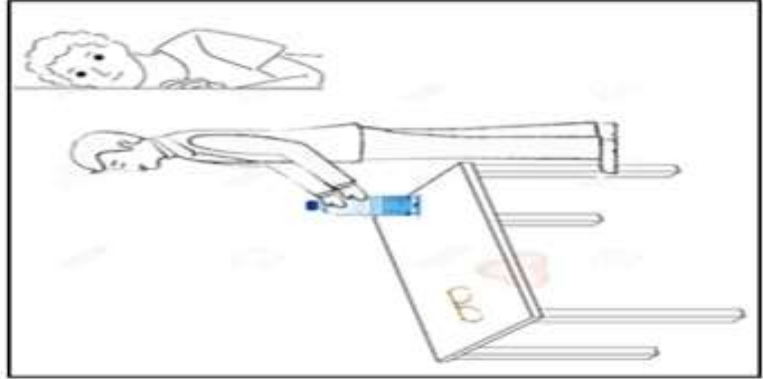
## Stimulus 1.4

UNSWITCHED WITNESSED

FRAME 1



FRAME 2



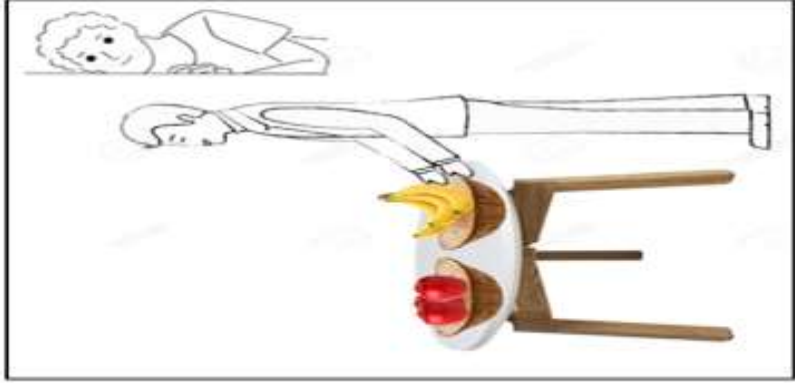
FRAME 3



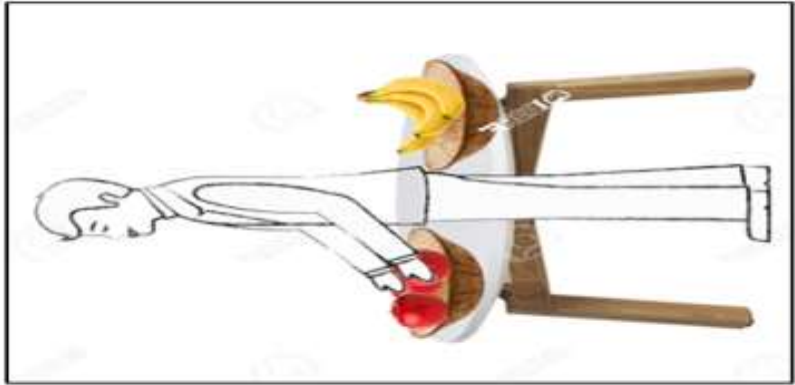
## Stimulus 2.1

SWITCH UNWITNESSED

FRAME 1



FRAME 2



FRAME 3

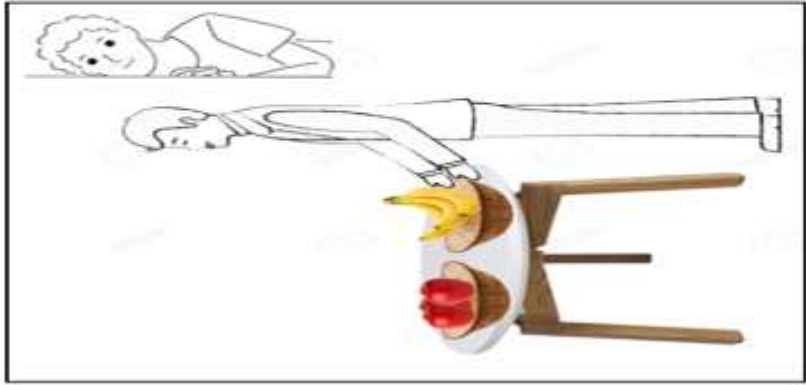


## Stimulus 2.2

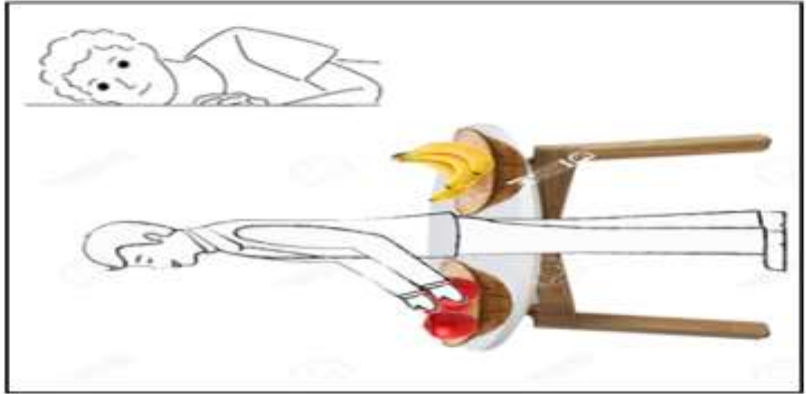


SWITCH WITNESSED

FRAME 1



FRAME 2



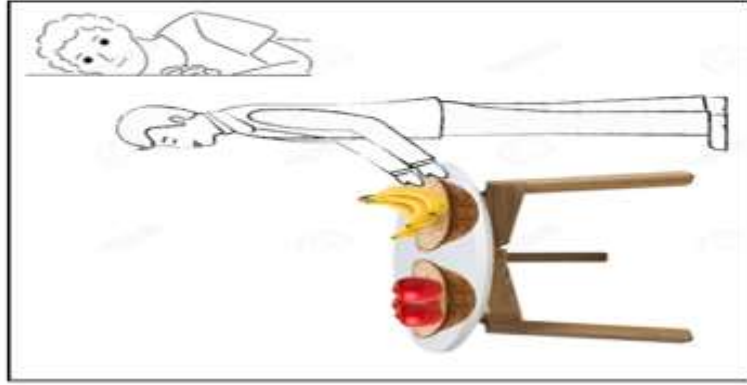
FRAME 3



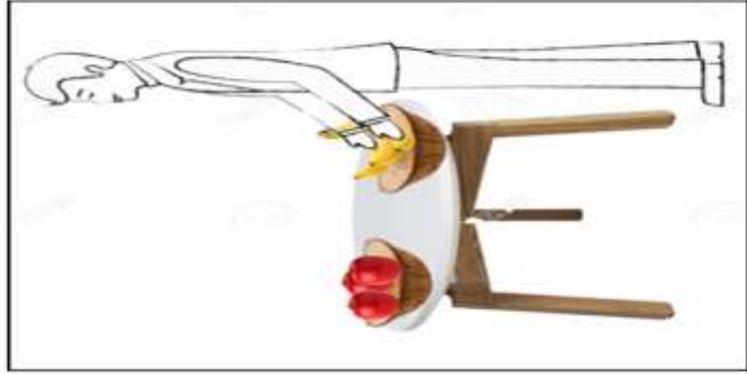
## Stimulus 2.3

UNSWITCHED UNWITNESSED

FRAME 1



FRAME 2



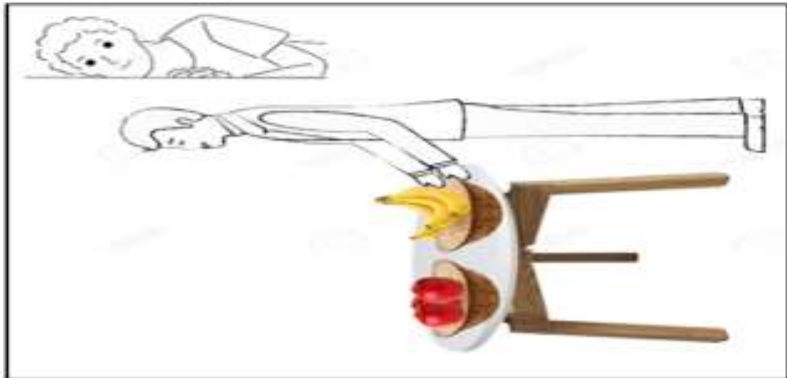
FRAME 3



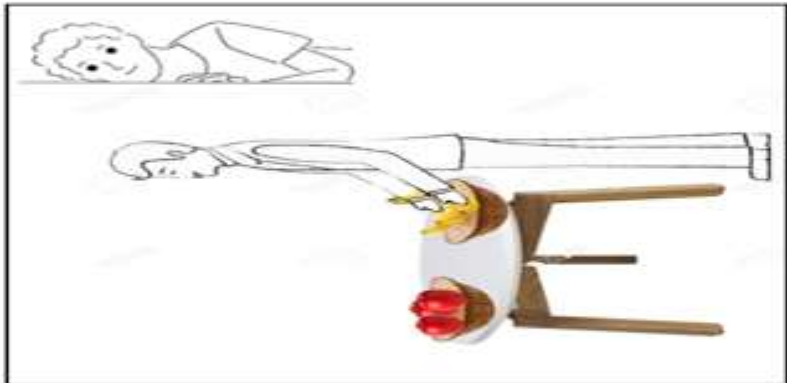
## Stimulus 2.4

UNSWITCHED WITNESSED

FRAME 1



FRAME 2



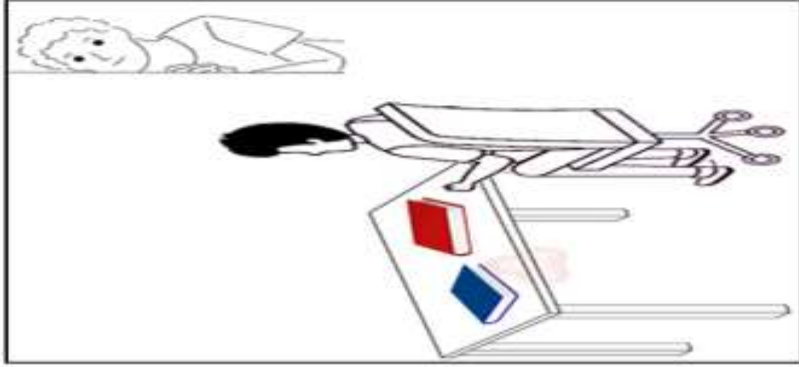
FRAME 3



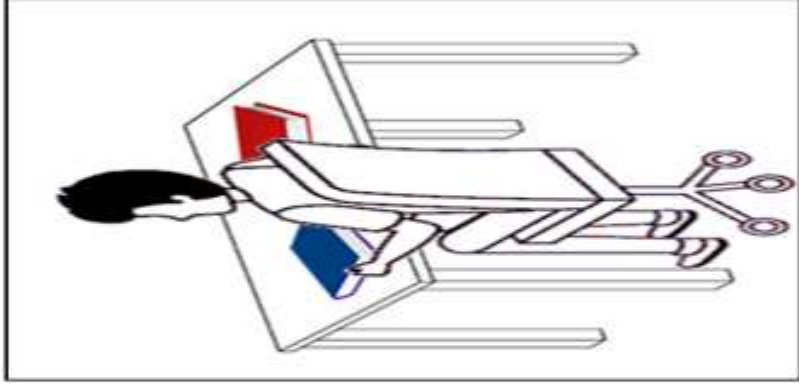
## Stimulus 3.1

SWITCH UNWITNESSED

FRAME 1



FRAME 2



FRAME 2

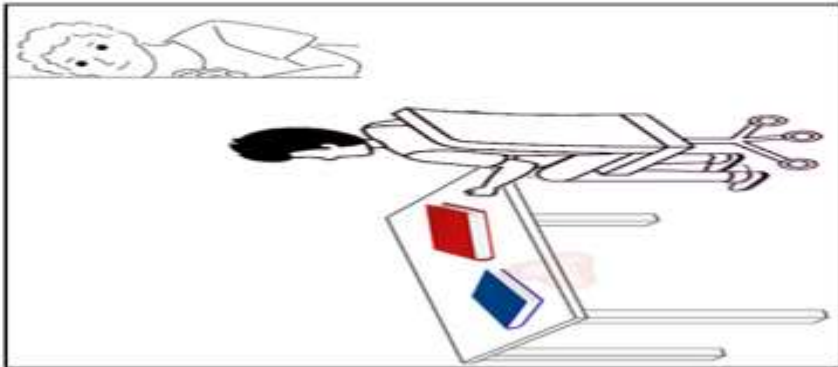


## Stimulus 3.2

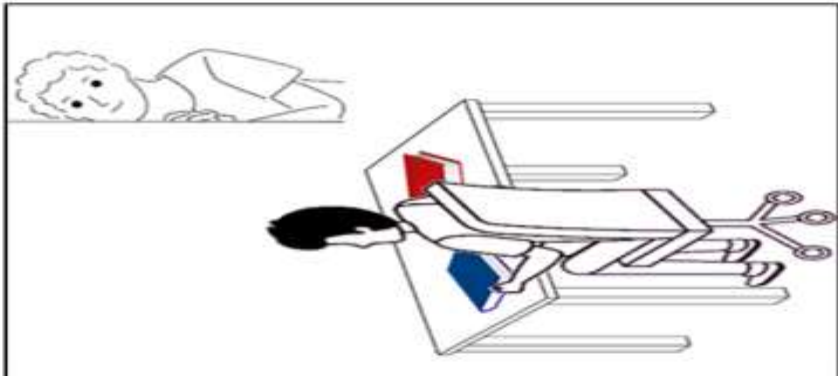


SWITCH WITNESSED

FRAME 1



FRAME 2



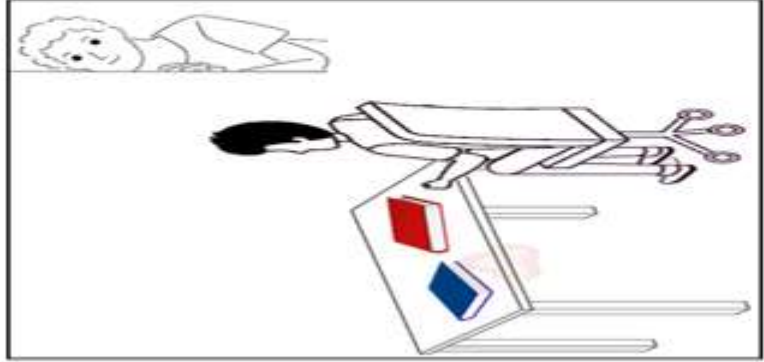
FRAME 3



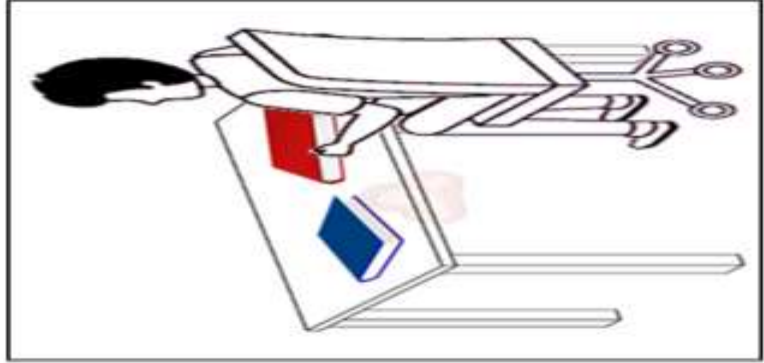
## Stimulus 3.3

UNSWITCHED UNWITNESSED

FRAME 1



FRAME 2



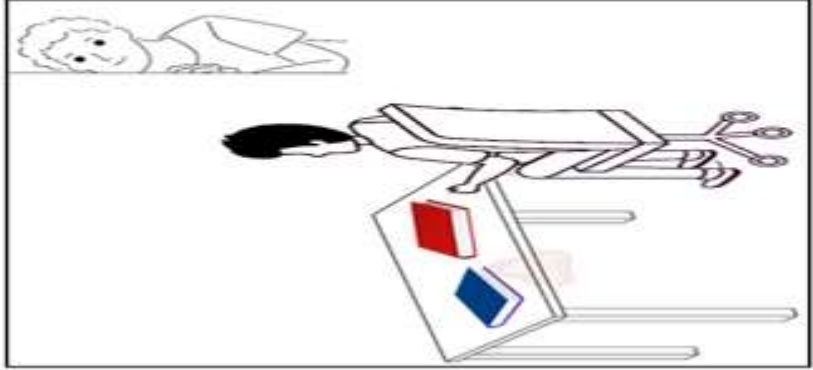
FRAME 3



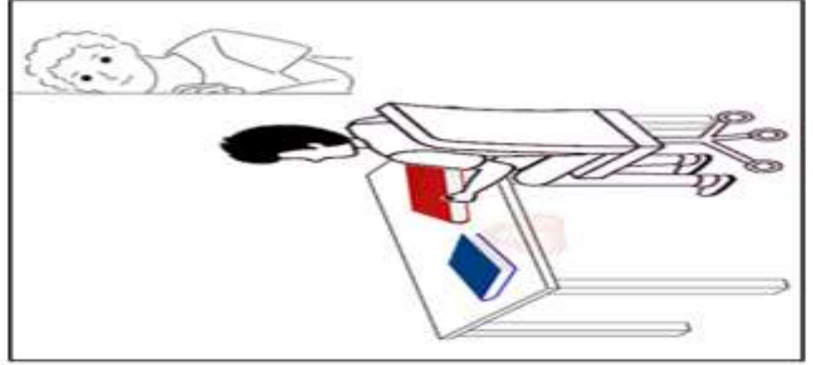
## Stimulus 3.4

UNSWITCHED WITNESSED

FRAME 1



FRAME 2



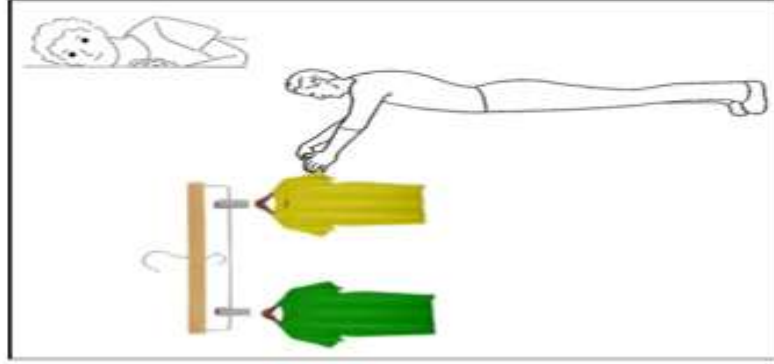
FRAME 3



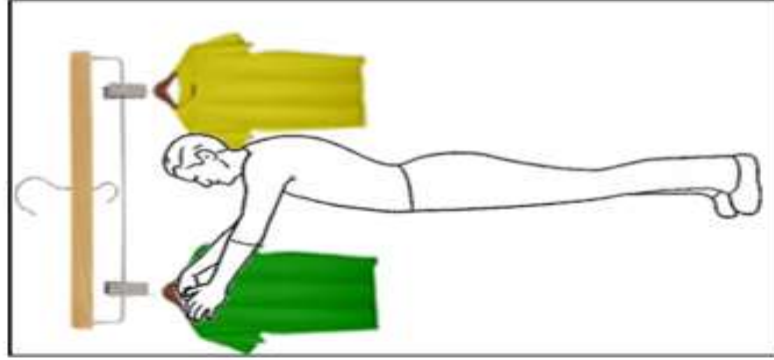
## Stimulus 4.1

SWITCH UNWITNESSED

FRAME 1



FRAME 2



FRAME 3

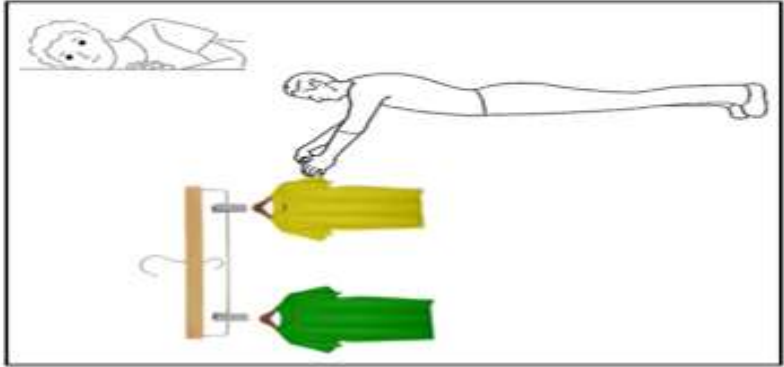


## Stimulus 4.2

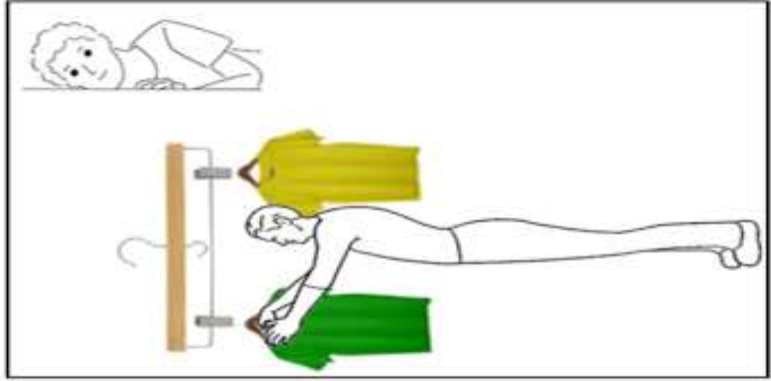


SWITCH WITNESSED

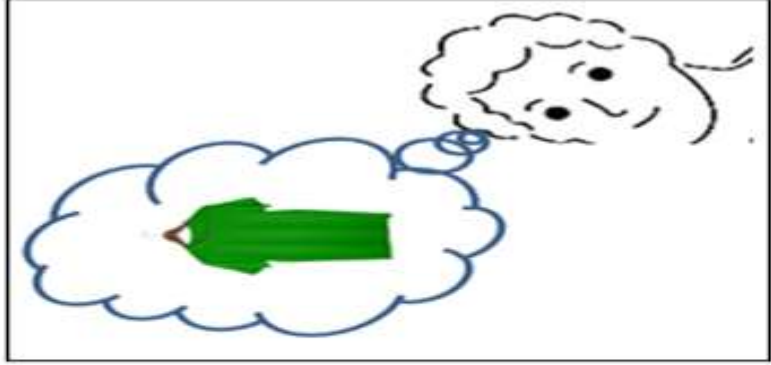
FRAME 1



FRAME 2



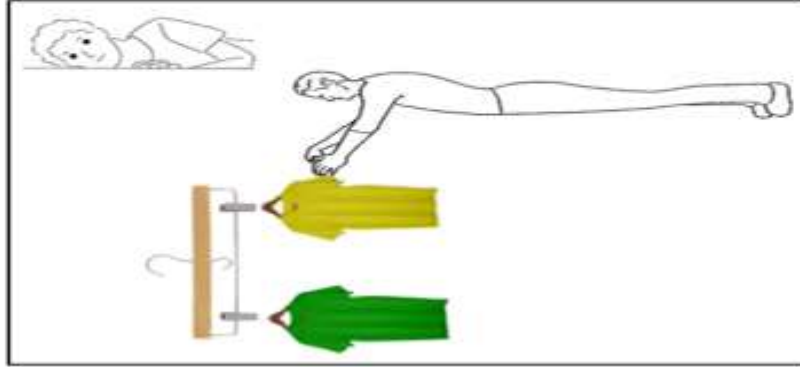
FRAME 3



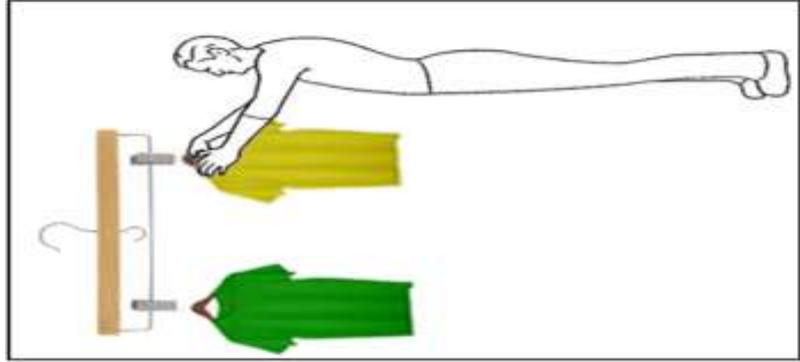
## Stimulus 4.3

UNSWITCHED UNWITNESSED

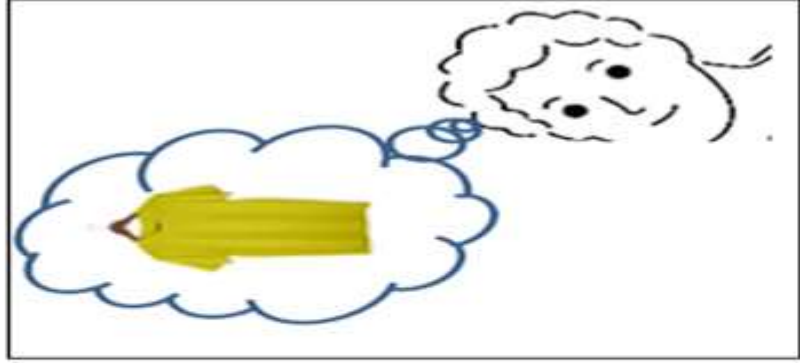
FRAME 1



FRAME 2



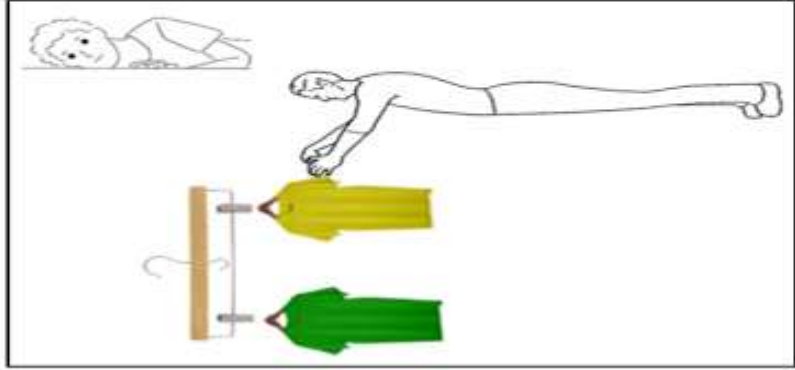
FRAME 3



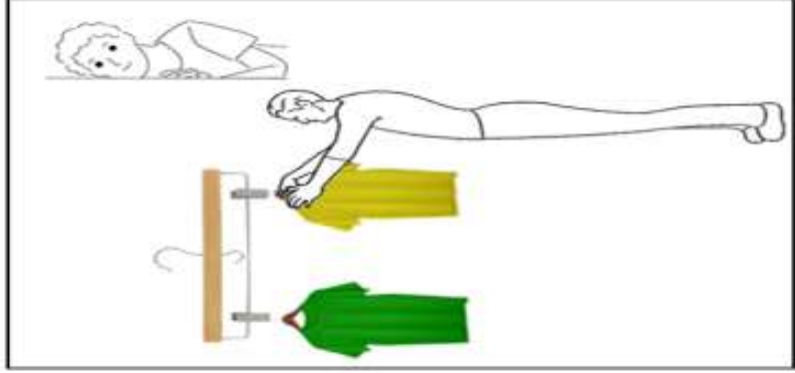
## Stimulus 4.4

UNSWITCHED WITNESSED

FRAME 1



FRAME 2



FRAME 3



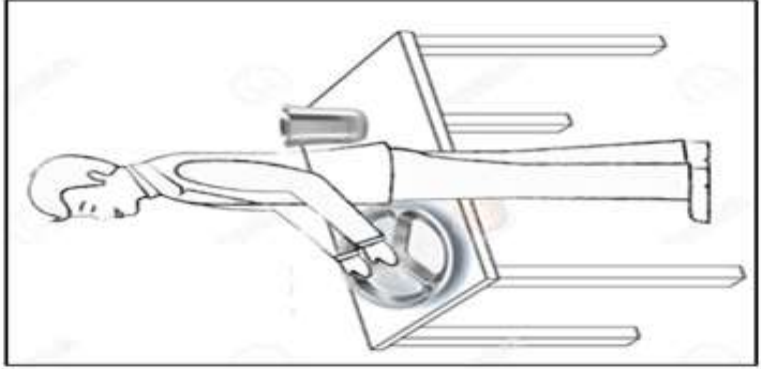
## Stimulus 5.1

SWITCH UNWITNESSED

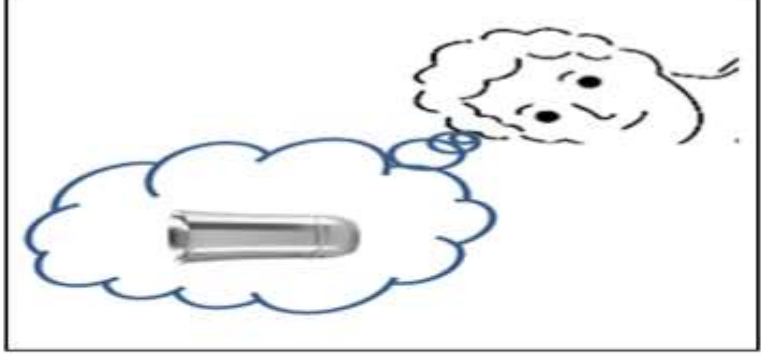
FRAME 1



FRAME 2



FRAME 3

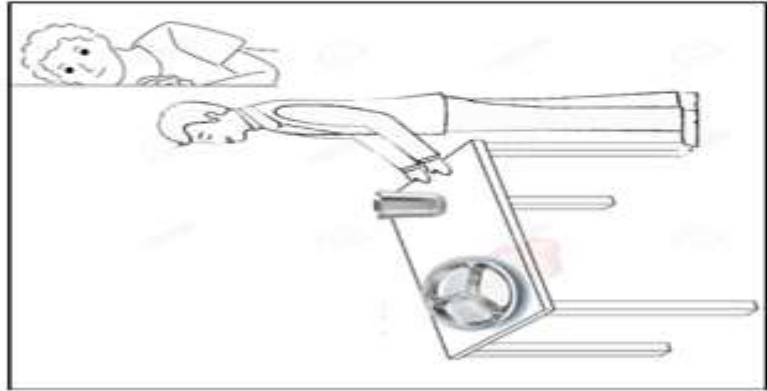


## Stimulus 5.2

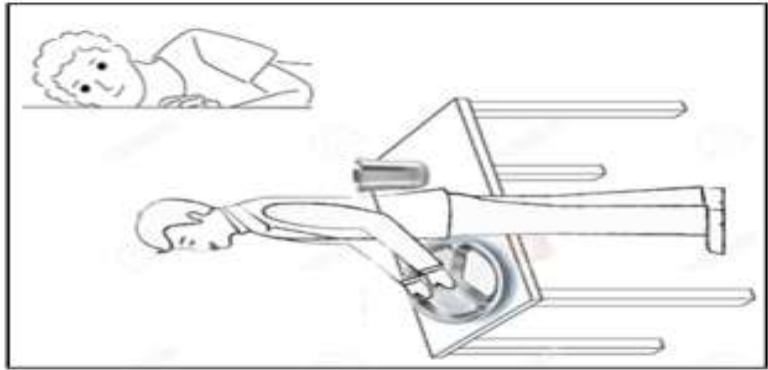


SWITCH WITNESSED

FRAME 1



FRAME 2



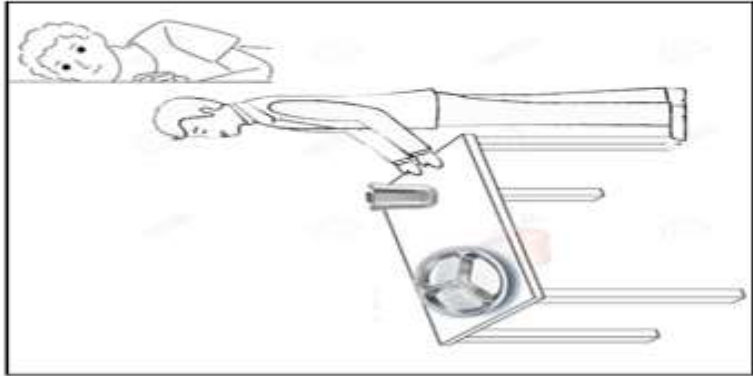
FRAME 3



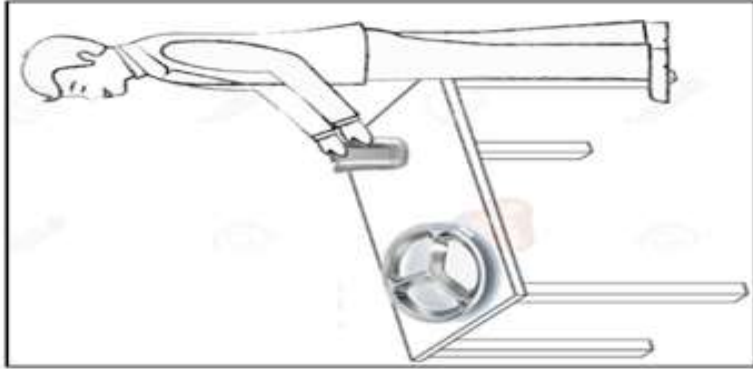
## Stimulus 5.3

UNSWITCHED UNWITNESSED

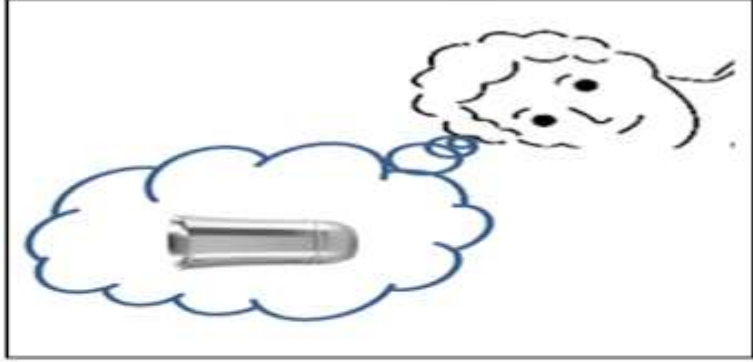
FRAME 1



FRAME 2



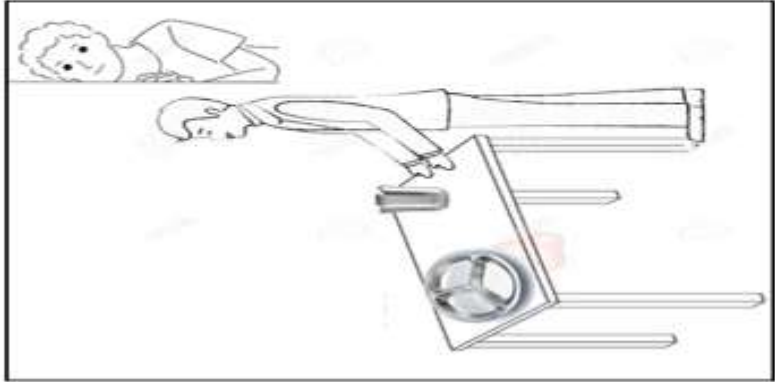
FRAME 3



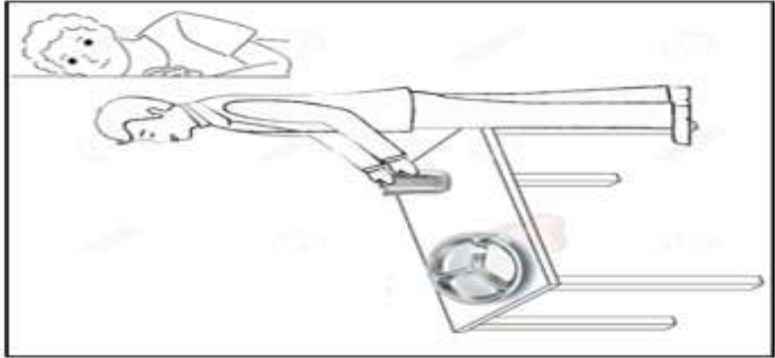
## Stimulus 5.4

UNSWITCHED WITNESSED

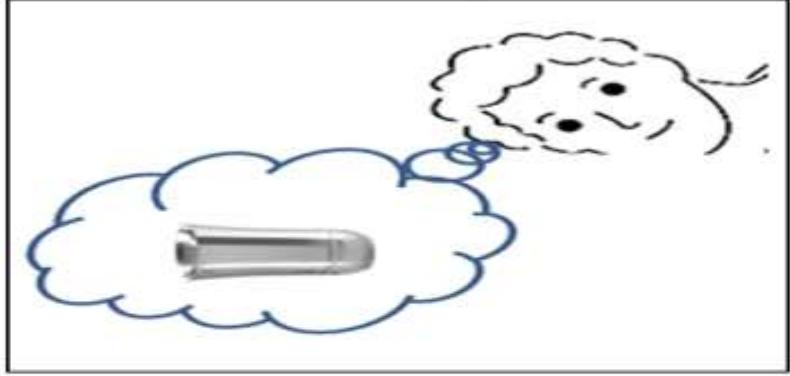
FRAME 1



FRAME 2



FRAME 3



**COGNITIVE THEORY OF MIND  
(ToM) ACTIVITIES  
(open ended)**

# **TRIAL STIMULUI**





# **TRAINING STIMULUS**

# Stimulus 1








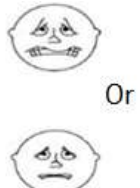









## Stimulus 2




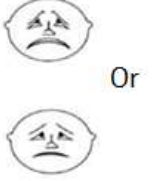

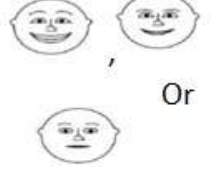

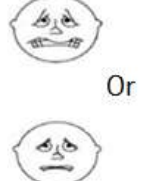
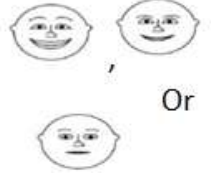
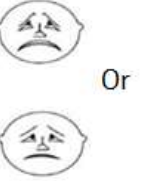

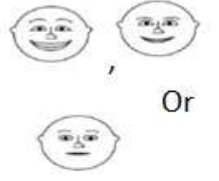

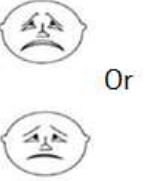
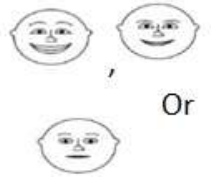









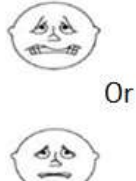





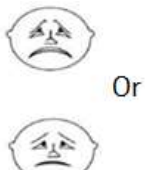

## **EXPECTED RESPONSES**





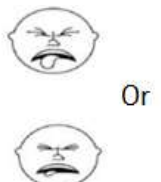
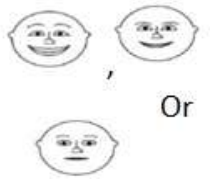

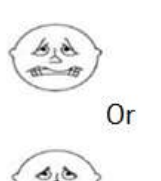

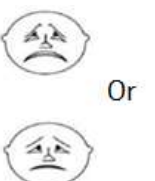


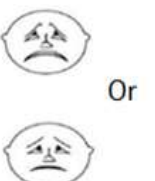


**AFFECTIVE THEORY OF MIND  
(ToM) ACTIVITIES**




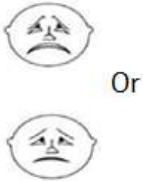





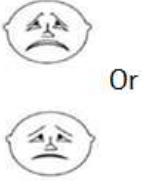





STIMUL US NO.	EXPECTED ANSWER		
	Concealment question	Feel inside question	Look on face question
1.1			
1.2			
1.3			
1.4			
1.5			



STIMUL US NO.	EXPECTED ANSWER		
	Concealment question	Feel inside question	Look on face question
2.1			
2.2			
2.3			
2.4			
2.5			

STIMUL US NO.	EXPECTED ANSWER		
	Concealment question	Feel inside question	Look on face question
3.1			
3.2			
3.3			
3.4			
3.5			

STIMUL US NO.	EXPECTED ANSWER		
	Concealment question	Feel inside question	Look on face question
4.1			
4.2			
4.3			
4.4			
4.5			

STIMUL US NO.	EXPECTED ANSWER		
	Concealment question	Feel inside question	Look on face question
5.1			
5.2			
5.3			
5.4			
5.5			

**COGNITIVE THEORY OF MIND  
(ToM) ACTIVITIES  
(close ended)**

<b>STIMULUS NO.</b>	<b>EXPECTED RESPONSE</b>
1.1	Yes
1.2	No
1.3	Yes
1.4	No
2.1	Yes
2.2	No
2.3	No
2.4	Yes
3.1	No
3.2	Yes
3.3	Yes
3.4	No
4.1	Yes
4.2	No
4.3	Yes
4.4	No
5.1	No
5.2	Yes
5.3	Yes
5.4	No

**COGNITIVE THEORY OF MIND  
(ToM) ACTIVITIES  
(open ended)**

STIMULUS NO.	EXPECTED RESPONSE
1	<p>1. ಬೆಕ್ಕಿಗೆ ಬೆದರಿಕೆ ಹಾಕುವ ನಾಯಿಯನ್ನು ದೂರ ಕಳುಹಿಸಬಹುದಿತ್ತು.</p> <p>2. ಸಹಾಯ ಕೇಳುತ್ತಾ ಅಗ್ನಿಶಾಮಕ ಕೇಂದ್ರಕ್ಕೆ ಕರೆ ಮಾಡುತ್ತಿದ್ದೆ.</p> <p>3. ಮರವನ್ನು ಹತ್ತಿದ ವ್ಯಕ್ತಿಯು ಸುರಕ್ಷಿತವಾಗಿ ಕೆಳಗೆ ಇಳಿಯಲು ಏಣಿಯ ವ್ಯವಸ್ಥೆ ನೀಡುತ್ತಿದ್ದ.</p>
2	<p>1. ಪೊಲೀಸ್ ಗೆ ಕರೆ ಮಾಡುತ್ತಿದ್ದೆ.</p> <p>2. ಸಹಾಯಕ್ಕಾಗಿ ಕಿರುಚುತ್ತಿದ್ದೆ.</p> <p>3. ಅವನನ್ನು ಕೋಣೆಯ ಒಳಗೆ ಕೂಡಿ ಹಾಕಿ ಹೊರಗೆ ಬರಲು ಪ್ರಯತ್ನಿಸುತ್ತಿದ್ದೆ.</p>



**APPENDIX-D1 Affective ToM Score sheet**

**MANUAL FOR THEORY OF MIND ACTIVITIES FOR PERSONS WITH BRAINDAMAGE**

**Name:** \_\_\_\_\_ **Age/Gender:** \_\_\_\_\_ **Case number:** \_\_\_\_\_ **Date:Provisional Diagnosis:** \_\_\_\_\_

1. AFFECTIVE THEORY OF MIND					
SESSION NO.	STIMULUS NO.	TASK/TYPE OF EMOTIONS	ANSWER TO THE QUESTIONS with SCORE		
			Concealment question (2-Point rating scale)	Feel inside question (2-Point rating scale)	Look on face question (2-Point rating scale)
Set - 1	1.1	HAPPY VIGNETTE			
	1.2	YUCKY VIGNETTE			
	1.3	SCARED VIGNETTE			
	1.4	ANGRY VIGNETTE			
	1.5	SAD VIGNETTE			
Set - 2	1.1	HAPPY VIGNETTE			
	1.2	YUCKY VIGNETTE			
	1.3	SCARED VIGNETTE			
	1.4	ANGRY VIGNETTE			
	1.5	SAD VIGNETTE			
Set - 3	1.1	HAPPY VIGNETTE			
	1.2	YUCKY VIGNETTE			
	1.3	SCARED VIGNETTE			
	1.4	ANGRY VIGNETTE			
	1.5	SAD VIGNETTE			
Set - 4	1.1	HAPPY VIGNETTE			
	1.2	YUCKY VIGNETTE			
	1.3	SCARED VIGNETTE			
	1.4	ANGRY VIGNETTE			
	1.5	SAD VIGNETTE			
Set - 5	1.1	HAPPY VIGNETTE			
	1.2	YUCKY VIGNETTE			
	1.3	SCARED VIGNETTE			
	1.4	ANGRY VIGNETTE			
	1.5	SAD VIGNETTE			
<b>AFFECTIVE THEORY OF MIND- TOTAL</b>			_____ /25	_____ /25	_____ /50
<b>REMARK:</b>					

**APPENDIX-D2 Cognitive ToM (Closed-Ended) Score sheet**

**Name:**

**Age/Gender:**

**Case number:**

**Date:**

**Provisional Diagnosis:**

<b>2. COGNITIVE THEORY OF MIND (CLOSE ENDED)</b>				
<b>SESSION No.</b>	<b>STIMULUS NO.</b>	<b>TASK</b>	<b>RESPONSES TO SCORE</b>	
			<b>Correct response (1)</b>	<b>Wrong response (0)</b>
Set- 1	1.1	SWITCH UNWITNESSED		
	1.2	SWITCH WITNESSED		
	1.3	UNSWITCH UNWITNESSED		
	1.4	UNSWITCH WITNESSED		
Set - 2	2.1	SWITCH UNWITNESSED		
	2.2	SWITCH WITNESSED		
	2.3	UNSWITCH UNWITNESSED		
	2.4	UNSWITCH WITNESSED		
Set - 3	3.1	SWITCH UNWITNESSED		
	3.2	SWITCH WITNESSED		
	3.3	UNSWITCH UNWITNESSED		
	3.4	UNSWITCH WITNESSED		
Set - 4	4.1	SWITCH UNWITNESSED		
	4.2	SWITCH WITNESSED		
	4.3	UNSWITCH UNWITNESSED		
	4.4	UNSWITCH WITNESSED		
Set - 5	5.1	SWITCH UNWITNESSED		
	5.2	SWITCH WITNESSED		
	5.3	UNSWITCH UNWITNESSED		
	5.4	UNSWITCH WITNESSED		
<b>COGNITIVE THEORY OF MIND (CLOSE-ENDED) TOTAL</b>			<u>          </u> /20	
<b>REMARK:</b>				

**APPENDIX-D3 Cognitive ToM (Open-Ended) Score sheet**

**Name:**                      **Age/Gender:**                      **Case number:**                      **Date:**

**Provisional Diagnosis:**

<b>STIMULUS NO.</b>	<b>TASK/TYPE OF PICTURE DESCRIPTIONS</b>	<b>RESPONSES /SCORE</b>
		<b>Each Description (Score- 1)</b> <b>No Description (Score-0)</b>
1	PREFERED DESCRIPTIONS	
2	PREFERED DESCRIPTIONS	
<b>COGNITIVE THEORY OF MIND (OPEN-ENDED)- TOTAL</b>		

## Appendix – E

### Validation form used for the constructed manual

Adapted from the Manual for Non-Fluent Aphasia Therapy in Kannada  
(Goswami et al., 2012)

Sl. No	Parameters	Very Poor	Poor	Fair	Good	Excellent
1.	Simplicity					
2.	Familiarity					
3.	Size of the picture					
4.	Color and appearance					
5.	Arrangement					
6.	Presentation					
7.	Volume					
8.	Relevance					
9.	Complexity					
10.	Iconicity					
11.	Accessibility					
12.	Flexibility					
13.	Trainability					
14.	Stimulability					
15.	Feasibility					
16.	Generalization					
17.	Scope of Practice					
18.	Scoring Pattern					
19.	Publications, outcomes and developers (Professional Background):					
20.	Coverage of parameters (Reception & Expression):					

#### Definition of parameters

1. Simplicity: Are the test stimuli comprehensible?
2. Size of the picture: Whether the picture stimuli are of appropriate size?
3. Color and appearance: Are the picture stimuli appropriate in terms of colour and dimension?
4. Arrangement: Whether the picture stimuli is within the visual field of an individual?

5. Presentation: Are the number of stimuli in each section placed appropriately?
6. Volume: Is the overall manual appropriate in size?
7. Relevance: Whether the test material is culturally and ethically acceptable?
8. Complexity: Is the material arranged in the increasing order of difficulty?
9. Iconicity: Does the picture stimuli appear to be recognizable and representational?
10. Accessibility: Is the test material user-friendly?
11. Flexibility: Can the stimuli be easily modified?
12. Trainability: Can the stimuli be used for intervention purposes in different milieu?
13. Stimulability: Does the stimulus material elicit responses from the individuals?
14. Feasibility: Whether the test material is viable?
15. Generalization: Can the test material be generalized to any other adult language disorders and various settings?
16. Scope of Practice: Is the test material within the profession's scope of practice or within the personal scope of practice?
17. Scoring Pattern: Whether the scoring pattern followed in the resource material applicable?
18. Publications, outcomes and developers (Professional Background): Is there any other resource material similar to this test material which you are aware of?
19. Coverage of parameters (Reception & Expression): Does the resource material contain the essential language components to be treated?