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Investigating Turn-Taking Behaviors Produced During Face-to-Face Conversations involving Adults with Stuttering Disorder: A Qualitative Approach

Abstract

The debilitating impact of stuttering disorder effects the functional communicative capability of adults who stutter (AWS) during various daily life activities. In fact, AWS are strongly influenced by negative emotional reactions, physiological responses, gaze aversion, and alternation in the communication patterns of their listeners in response to their stuttered speech during conversations. In the same line of investigation, an area that has received much attention in understanding the impact of stuttering disorder on the listeners is the examination of naturally occurring "*impaired*" conversations. A successful face-to-face conversation allows an uninterrupted flow of information between two recurring conversational partners (CPs) by sending across linguistic cues at regular intervals. Therefore, the purpose of the current research paper is to analyze how two-verbal turn-taking behaviors exhibited by two male AWS CPs have an impact on the behavior of another male AWS Speaker during face-to-face conversations. Two separate conversational speech samples were drawn from the cohort of forty-four Hindi conversational speech samples collected during doctoral studies for investigation. These conversations were conducted between each AWS CP with AWS Speaker in Hindi. The AWS participants were recruited through TISA Self-Help Organization (Delhi-Chapter) after meeting the inclusion-exclusion criteria of the study. A qualitative approach is being followed to investigate the production of *Completion*, and *Interruption* behaviors by AWS participants during conversations. The significance of understanding the role of two AWS CPs during conversation with AWS Speaker stemmed from the realization that very little is known about the conversational dynamics involving AWS participants in stuttering literature. Hence, addressing these two-verbal turn-taking issues posed for AWS Speaker during conversations with two AWS CPs would help us in

identifying challenges encounter by AWS Speaker, in their functional capacity, in normal speaking scenarios with fluent communities.

***Keywords*:** Stuttering Disorder, Turn-Taking Behaviors, Completion, and Interruption.

Introduction

Verbal interaction in our society is considered as one of the most fundamental, distinct, and universal features of human existence on this earth (Bavelas, Hutchinson, Kenwood, & Matheson, 1997; Clarke, 1996). It is a way of exchanging information between a speaker, and a listener in systematic manner in order to achieve the objectives of the said interaction. This *exchange of information* is often expressed in terms of "*content, syntax, intonation, suprasegmental features, language and body motion*" (Duncan, 1972, p. 283). Unlike those researchers who have had attempted to examine the above-mentioned aspects in isolation under experimental conditions, and not from holistic point of view; psychological anthropologists, and linguistic anthropologists, on the other hand, affirmed this necessity of understanding these human actions in real-time in the realm of face-to-face interaction (Goodwin & Heritage, 1990, p. 283). Thus, the examination of various aspects of face-to-face interaction came to be known as *Conversation Analysis* (CA).

This line of inquiry was emerged and developed through the tedious and collaborative research works of Harvey Sacks, Emanuel Schegloff, and Gail Jefferson and their students in the 1960s-70s (Sidnell, 2016, p. 1). Before 1960s, much of the ideas about CA was centered around how people *should* speak. However, after 1960s, this perception about CA gradually changed and emerged as how people *actually* speak in the social settings when scholars such as Garfinkel, Sacks, Schegloff, and Jefferson begin to look at the interactions between individuals in an "*orderly, coherent, and meaningful manner*" (Have, 2007, p. 6). This was then a critical, and important departure from the underlying assumption about CA. For many

years, analyzing naturally occurring "*ordinary*" conversations continued to be the major thrust among sociologists, anthropologists, ethnologists, and CA researchers to understand *what* and *how* individuals converse with each other. However, in recent times, the examination of naturally occurring "*impaired*" conversations has received much attention in the field of stuttering disorder outside the clinical settings.

Stuttering is an intermittent, involuntary, and developmental fluency disorder which begins at around 2 to 4 years of age in children (Yairi & Ambrose, 2005 as cited in Langevin, Packman, & Onslow, 2010, p. 407), with many of them (~ 80%) recovers from it without any clinician's intervention (Craig, Hancock, Tran, Craig, & Peters, 2002; Dworzynski, Remington, Rijsdijk, Howell, & Plomin, 2007). On the other hand, the remaining population (~ 20%) continues to stutter for the rest of their lives (Bloodstein, 1995 as cited in Craig & Tran, 2005, p. 41). It is primarily characterized by overt speech disruptions such as part-word repetition (e.g. ba-ba-ba-bat); single-syllable whole word repetition (e.g. and-and-and-and); audible prolongation (e.g. ppppppppet); and silent block (e.g. ba-g) (Yairi & Seery, 2015, p. 11). Many times, these speech disruptions are also visibly marked with tense and struggle-filled ancillary behaviors such as production of distracting sounds; gaze aversion; head movements; arm jerking; finger-tapping; lip pressing; nostril-flaring; tongue protruding; eye-blinking; extraneous movement of the limbs; and facial grimacing, etc. (Bloodstein & Ratner, 2008; Van Riper, 1973). With increase in severity, the extent of receiving negative feedbacks for children who stutter (CWS) from their listeners in response to their stuttered speech has been well-documented throughout the stuttering literature (Hugh-Jones & Smith, 1999; Davis, Howell, & Cooke, 2002). This continuous exposure of negative environment for CWS throughout their lives not only led to the development of avoidance strategies in them that extends to specific sounds, persons, or speaking situations (Bloodstein, 1995; Kalinowski, 2006), but they also develop a repertoire of negative attitudes towards their own speaking

style such as shame, embarrassment, self-consciousness, guilt, anger, humiliation, and entrapment (Ginsberg, 2000; Van Riper, 1982; Sheehan, 1970; Yairi & Seery, 2015). Collecting together the overt manifestation of speech disruptions, ancillary behaviors, and negative emotions associated with speaking styles of AWS, the impact of stuttering disorder can be realized from the fact that it not only affects the functional communicative capability of AWS in daily activities but it also seems to have an impact on their conversational partners (CPs) during speaking situations by prompting CPs to exhibit specific turn-taking behaviors in response to the stuttered speech of AWS.

While most research studies, to date, in the stuttering literature has focused on examining the role of verbal behavior of parents in the development of stuttering disorder in young children. Very few research studies have actually focused on examining the role of verbal behavior of CPs while interacting with AWS in a dyad as a parallel line of investigation. To the first line of investigation, the effect of verbal behavior of parents such as speaking rates, interruptions, and response time latencies, etc. on the fluency levels of their children during conversation had been strongly influenced by Wendell Johnson's (1942) "*Diagnosogenic theory*" of stuttering which argued that negative reactions of parents towards the speech of their children filled with normal hesitations and repetitions causes the child to stutter (CWS) (Nippold & Rudzinski, 1995, p. 978). However, both clinical and non-clinal research studies have failed to provide any substantial evidence in support of the theory proposed. For example, Egolf, Shames, Johnson, & Kasprisin-Burrelli (1972) marked that production of verbal recriminations by parents such as "*interrupting the child, asking multiple questions, using sarcasm, and making comments*" might result in the development of disfluencies in CWS. Therefore, parents of CWS were advised to module their verbal behaviors in order to facilitate fluency in their children with stuttering disorder (As cited in Nippold & Rudzinski, 1995, p. 979). Similar to this line of investigation, parents were asked to use more positive

reinforcements such as praise, humor, or encouraging questions (Kasprisin-Burrelli, Egolf, & Shames, 1972), and employ methods such as syllable elongation, and pausing between words to achieve slower speech rate while talking with their stuttering child (Stephsenson-Opsal & Ratner, 1998).

Some new research studies have shifted the focus of investigation towards CPs verbal behavior in response to stuttered speech of AWS. For example, Lee, Van Dulm, Robb, & Ormond (2015) measured and compared the linguistic output such as language productivity, complexity, politeness, and appraisal produced by AWS during conversation with adults who did not stutter (AWNS). The findings of the study suggested that due to negative attitudes of AWS towards their own speech, along with the fear of occurrence of stuttering events during conversation with AWNS, they used several avoidance strategies such as refraining themselves to speak and thus, allowing their partners to speak more, etc. This resulted into reduced verbal output with shorter, and less complex utterances. Similar to the previous research idea, a follow-up clinical study was conducted by Lee, Robb, Van Dulm, & Ormond (2016). The group revealed that after therapy, a significant increase in the production of complex utterances was seen in AWS. While previous two research studies had focused on investigating linguistic output produced by AWS while conversing with AWNS, Freud et al. (2016) investigated the production of specific turn-taking behaviors i.e. Word/Sentence Completion, Interruption, and Reinforcers by CPs while conversing with AWS. The research group revealed that in response to stuttered speech of AWS, CPs produced a significant proportion of Reinforcers and Interrupting behaviors.

Turn-Taking mechanism is considered as one of the salient features of CA investigation (Wiemann & Knapp, 1975, p. 75). It is the fundamental feature of a conversation which allows the conversational partners to take "*turns*" at regular intervals in a coordinated fashion by sending out turn-taking signals to each other (Duncan, 1972; Wiemann & Knapp, 1975).

Duncan (1972) acknowledged four major types of turn-taking signals which are expressed in the form of behaviors during a conversation. These were turn-yielding, turn-demanding, attempt-suppressing, and back-channel communication. Out of these, this research paper is focused on examining instances where two of the behaviors, *namely*, (i) *Sentence Completion*, and (ii) *Interruption* behaviors are generated in response to turn-demanding signals produced by CP during a conversation. In other words, *Completion* and *Interruption* behaviors are produced during a conversation when CP intends to take the floor of conversation and the Speaker is reluctant to give up the floor. The relevance of investigating "*impaired*" conversations between AWS participants outside the clinical setting stemmed from the realization that not much is known about instances or circumstances during conversations that evoke specific turn-taking behaviors from AWS CPs in response to stuttered speech of another AWS Speaker. The findings from this investigation is expected to help the speech language clinicians to work on such challenging areas while devising therapeutic techniques for AWS to ensure long-term effectiveness of the therapy programs.

Source of Data

Recruitment Process: A small event was organized for AWS with an intent to disseminate information about the doctoral study on stuttering disorder at the Jawaharlal Nehru Campus, New Delhi, India. The information about the event was disseminated through the Indian Stammering Association (TISA) WhatsApp group. Twenty-seven candidates of the TISA (Delhi-Chapter) voluntarily participated in this event. Out of twenty-seven, twenty-one of them expressed their interest in taking part in the doctoral study by filling up of the *Profile Forms*, while the rest of them decided not to be part of it. However, despite reaching out to female AWS, none of them either expressed their interest in taking part in the event, nor expressed their interest in in the current doctoral study, thereof.

Profile Form: This form was primarily designed to identify potential participants, based on the inclusion and exclusion criteria required for the study. It was a pencil-paper form. The form was distributed among interested AWS candidates at the time of recruitment process. A total of forty-three questions related to their personal, educational, employment and socio-economic details were asked from AWS candidates at the recruitment event. They were asked to provide their responses either in English, or Hindi in the space provided in the form.

Participants: Two randomly selected conversational speech data were drawn and investigated from three Hindi-speaking male AWS participants who were recruited through TISA (Delhi), India. The mean age of AWS participants included in the current investigation were 31.33 years (SD = 13.05), ranging from 21 years to 46 years. All AWS participants met the eligibility criteria of the study, i.e. (i) were above 18 years of age, (ii) were not involved in any speech therapy programs, (iii) accepted themselves as AWS, and (iv) reported themselves as native Hindi speakers. Participants were not paid for their participation in the doctoral study. Informed consents from each AWS participant were obtained during data collection process for the doctoral study. The background information about AWS participants are shown in Table 1.

Reading and Speaking Materials: The reading and speaking materials were used to collect speech samples from AWS participants in order to evaluate stuttering-like disfluencies (SLDs) present in the samples. The reading materials consisted of three Hindi oral passages. These passages were randomly selected from the question papers of Union Public Service Commission Main Subject Exam (Hindi) of the years 2015 (UPSC Hindi Mains Examination Paper, 2015, p. 2-3), 2011 (UPSC Hindi Mains Examination, 2011, p. 2-3), and 2012 (UPSC Hindi Mains Examination, 2012, p. 4-6). The passages were also provided appropriate titles in Hindi. The researcher and another native Hindi speaker counted and compared the number

syllables in each of the three passages until full-agreement was reached. The three passages had a total of 898, 593, and 822 syllables in it.

Similarly, the speaking task consisted of two line-drawing black-and-white pictures, i.e. *Divided Attention Picture* (Marshall & Wright, 2007) and *The Cookie Theft* (Goodglass et al., 2000) that were used to describe the pictures in Hindi. Along the same lines of calculating the number of syllables in the oral passages, the researcher and another native Hindi speaker counted and compared the number of syllables produced by AWS participants while describing the pictures in Hindi. The number of syllables produced by each AWS participant during the speaking task is given in Table 3.

Stuttering Severity Instrument-4 (SSI-4): It is a standardized, reliable, valid, and sensitive diagnostic instrument which was used to diagnose and evaluate the severity level of stuttering disorder and speech naturalness among AWS participants (Riley, 2009). The researcher, along with a certified Speech-Language Clinician, diagnosed AWS participants using the Stuttering Severity Instrument-4 (SSI-4). This was done by *first* randomly selecting two speech samples, out of five, by the researcher and the clinician. And then, compared and counted the number of SLDs in two speech samples of each AWS participant. The Stuttering Severity levels of AWS participants were shown in Table 2.

Selection of Conversational Topics: The researcher browsed various online websites of ESL education (Source: https://www.eslconversationquestions.com/englishconversation-questions/topics/; Retrieved on: 4th August, 2018) to get an idea about types of conversational topics to be used for data collection. In addition, the researcher also visited several TISA self-help group meetings over the weekends to get an idea regarding topics of interest for conversations. Eight argumentative conversational topics were, therefore, framed for doctoral study in Hindi language. In the current research paper, only two of them are being analyzed here for turn-taking behaviors (refer, **Appendix A**).

Research Design: Figure 1 demonstrates a part of the research design applied with respect to two conversational speech data extracted from three of the AWS participants from the cohort of 44 conversations collected for doctoral research study.

Process: The data collection procedure followed in the doctoral study was divided into three stages, *namely*, (i) recruitment of potential participants based on their inclusion-exclusion criteria of the study; (ii) collecting speech samples and gathering other relevant information about them through questionnaires; and (iii) conducting face-to-face conversations between participants[1].

During the first session of the research study, those AWS candidates who expressed their interest in the event were given the *Profile Forms* to fill out. It took around 15-20 minutes for each interested AWS candidate to complete the *Profile Forms*. Each *Profile Form* was then scrutinized for any missing responses by the researcher. Based on the inclusion/exclusion criteria of the study for identifying potential AWS participants, the researcher identified three Hindi-speaking male AWS participants. The administration of the entire recruitment procedure for AWS candidates took place in one of the classrooms of the JNU Campus and lasted for a day.

The second and third sessions of the research study were conducted at JNU campus which was conducted on different timings over the weekends and eventually lasted for about two months. During the second session of the study, the researcher collected speech samples from AWS participants in order to evaluate their stuttering-like disfluencies and other normal speech disfluencies using the SSI-4. The samples were collected by employing reading and speaking tasks during the second session. At the beginning of the second session, an AWS participant was first asked to sit in a quiet room free from any disturbance. The participant

[1] Since, this research paper investigates only a part of the data collected during doctoral study. Therefore, the research process explained here is according to the objective proposed under the current investigation.

was then instructed to read the consent form carefully and sign it. The participant was encouraged to ask or clarify any doubts from the researcher regarding the study. Once the researcher received the informed consent form from the AWS, the participant was instructed to sit in a comfortable chair facing towards the camera lens. A Canon PowerShot SX40 HS camera was used for audio-video recording of the speech sample collection process. It was placed on a tripod at about 3 feet from the ground. Throughout the recording, a distance of about 2 feet was maintained between the camera lens and participant's eye. The researcher then asked the participant to read out loudly three separate Hindi oral passages one-by-one according to their normal reading speed. The selected passages for reading task were printed in Mangal font with a size of 14 on a plain paper. Following this, as part of speaking exercise, the researcher then asked the participant to describe two line-drawing black-n-white pictures in Hindi shown it to them. Participants were not imposed with any time pressure. And therefore, they were constantly encouraged by the researcher to provide any other relevant information which they wanted to add-in in the description of the pictures. The administration of the part of second session with each participant took around 15-20 minutes to complete.

Prior to the beginning of the third session, the researcher randomly picked up NS (Moderate AWS), and SC (Severe AWS) as "*Speakers*", and RR (Very Severe AWS) as "*CP*" in the study. During the third session, the Speaker and the CP were asked to sit on comfortable chairs at a distance of about 2 feet in between them and facing towards each other in one of the rooms located on JNU Campus. Two Nokia 6 TA-1021 DS camera phones were used for audio-video recording. The two camera phones were placed on tripods in such a way that each of these were facing towards one of the AWS in the conversational dyad. The researcher then read out a set of instructions in Hindi to AWS participants in the conversational dyad that (i) all the conversational topics were written in Hindi on a piece of paper which were kept in a box placed in front of them, (ii) any one of the participants of

the conversational dyad was responsible for reading out the topic aloud in Hindi so that both the participants were able to understand their topic of conversation, (iii) both participants of the dyad were responsible for putting across their thoughts in Hindi only, and *lastly* (iv) a timer was placed for their convienence so that the participants could check their time and finish their conversation within a stipulated time-period of fifteen minutes.

After listening the instructions from the researcher, any one of the participants in the dyad, either Speaker or CP, took the paper of conversational topic out from the box placed in front of them, and read out the topic loudly to the other participant. After this, both the participants began their conversation in Hindi. A ten minute break was given prior to the beginning of the second conversation.

Camera and Tripod: Audio-video recording of second and third sessions of the research study were undertaken during the data collection procedure.

Data Analysis

The conversational speech data collected from AWS participants was transcribed in two steps. In the first step, the researcher went over the two conversational videos repeatedly and transcribed "*what has been said*" in the videos in standard Hindi orthography. The researcher at this stage did not apply any coding scheme. And therefore, ignored the transcription of other interactional aspects such as, coding of suprasegmental features, eye gaze, laughter, whispering, SLDs, & "*other*" normal disfluencies (ODs), etc. in the conversational transcripts. Once the orthographical transcripts were ready, the researcher moved to the second step of transcript examination. In this step, an integrated coding scheme was developed in order to identify "*ordinary*" (Jefferson, 2004, p. 24-31) and "*impaired*" conversations in the collected samples (MacWhinney, 2000; Ratner, Rooney, & MacWhinney, 1996) consisting of SLDs, ODs, eye gaze, and suprasegmental features (refer,

Appendix B). The application of two steps resulted in the generation of convention-based conversational transcripts.

Discussion

The research paper examines two important turn-taking behaviors i.e. *Completion*, and *Interruption* produced by two Hindi-speaking AWS CPs while talking with another Hindi-speaking AWS Speaker in our conversational speech data. One of the reasons for selecting these two turn-taking behaviors in our study is that frequent complaints are being registered by AWS in their clinical reports where they mention how fluent speakers complete their words or sentences; and interrupt them on a regular basis (The Indian Stammering Association, 2016). On receiving such kind of behaviors from fluent speakers during conversations, discourages AWS to socialize further in the future. However, very little is known if the same set of behaviors are being produced by AWS CPs themselves while talking with another AWS Speaker. In addition, under what circumstances such instances of turn-taking behaviors are being produced by two Hindi-speaking AWS CPs is investigated.

The researcher critically examined the two conversational speech data for locating the two turn-taking behaviors. It was found that even AWS CPs produced such behaviors in response to stuttered speech of AWS Speaker. These are explained below:

C_1: NS↔RR (Moderate AWS CP ↔ Very Severe AWS Speaker)

The researcher found only one instance of production of Completion behavior by Moderate AWS CP in response to stuttered speech of Very Severe AWS Speaker. An excerpt from the conversation is given below:

S {£→}: हाँ↓। ↑और ^^मेरा ^^मानना है कि ^^आप ^^अगर कि(/↩)सी को भी ^^बच्चा गों(/↩)द के लिए ^^दें↓

^^↑तो ^^जाँच परकर दे↓ **(.)** ↑ कि वो ^^परिवार उ(/↩)सके स(/::)

(Long prolongation of 15 secs)

"Yes. And I believe that if you allow anyone to adopt the child, then do through investigation. To examine whether that family……"

CP {£→}: साथ दें↓।

"Support him".

S {£→}: साथ। हाँ। साथ दें उसका।

"Support. Yes. Support him."

In the above conversational dyad, Moderate AWS CP shared his views on adoption policy in India with Very Severe AWS Speaker. It is evident from the excerpt that due to extreme stuttering severity; it was extremely difficult for Very Severe AWS Speaker to conduct talk-in-interaction without any communication breakdown with his partner. During normal circumstances, *Completion* behavior are produced when a speaker could not able to finish his or her utterance within a stipulated time-frame. This inability can be extended to brief difficulty in searching a word for a moment, or collecting thoughts into words. The CP, however, does not wish to take up the floor of conversation. While production of such behaviors is considered normal by fluent communities during conversations. AWS, however, feels offended if their listeners try to complete their words or sentences. This has been frequently reported in the clinical reports of AWS.

In our case, both the interactants were people with stuttering disorder. Therefore, it is understandable that their approach towards each other during conversation would be different from fluent listeners and sympathetic to one another. This is one of the reasons that when Very Severe AWS Speaker prolonged a sound for almost 15 seconds, Moderate AWS CP then intervened to facilitate the Speaker to come out of his stuttering event and produce the word. The finding from our examination provides enough support to previous research finding (Freud et al., 2016) that Completion behaviors are produced by CP in anticipation to

help the AWS Speaker, and not to offend them. It is, therefore, important on the part of clinicians to make AWS aware about such turn-taking behaviors of CPs during conversations.

C_2: SC↔RR (Severe AWS CP ↔ Very Severe AWS Speaker)

The researcher found several instances of production of Interruption behavior by Severe AWS CP in response to stuttered speech of Very Severe AWS Speaker. One of the excerpts from the conversation is given below:

CP {£→}: आपको↑ तो जब **[/]** वो आपसे **^^**मिलने को **^^**आई है↓। ↑या **^^**आया है↓। देखने में तो अच्छा ही↓ टीप-टॉप बनके **^^**ही↓ तो आएगा आपके पास↓। या आएगी आपके पास↓।

"Whenever that person came to see you. He or she should have dressed up well."

S {£→}: नहीं **+/.**

"No"

CP {£→}: हमें↑ उसके बारे में **^^**क्या पता↓ ↑कि अपने ↑वहाँ ल**(/↩)**इती है↓? ↑वो **^^**↑कैसे र**(/↩)**हती है↓?

"How do we know if she fights at her place? How she lives at her place?"

In the above conversational dyad, the Severe AWS CP shared his views on marriages in India with Very Severe AWS Speaker. The researcher found that although Moderate AWS CP was considerably more sympathetic towards the severity level of his AWS Speaker. The same cannot be said in the current conversational dyad. Throughout the conversation, it was found that Severe AWS CP did not give his partner enough time to put across his viewpoint. And therefore, interrupted the utterances made by Very Severe AWS Speaker quiet frequently. One of the plausible reasons for exhibiting such behavior could be that the Speaker had a very extreme degree of stuttering which might have had prompted the CP to take up most of the conversation time by speaking himself and hence, gave lesser time to the Speaker to share his viewpoint. Another reason that had been proposed by Freud et al. (2016, p. 518) was related to the concept of "*time loss*". During conversation with AWS, usually

fluent listeners feel the pressure of time lost during the occurrence of stuttering events. It is for this reason that fluent listeners intervene with an intention to avoid probable situation of communication breakdown between them. It is, however, interesting that despite the involvement of both the participants with stuttering disorder, the Severe AWS CP exhibited similar turn-taking behavior while conversing with Very Severe AWS Speaker.

Conclusion

To conclude, it is evident from the examination of two conversational speech samples that Moderate AWS CP produced Completion behavior in response to stuttered speech of Very Severe AWS Speaker. On the other hand, Severe AWS CP produced Interruption behavior in response to the presence of Very Severe AWS Speaker. The significance of understanding these two distinct findings stemmed from the realization that it is extremely important to take into account circumstances that results in the production of turn-taking behaviors during conversations. The findings from such comprehensive analysis towards this line of investigation should then be incorporated in the therapy programs to understand specific points in the conversations which sends acoustic signals to the listeners to produce turn-taking behaviors. Or, the perceived attitude of listeners towards AWS which is again manifested in the form of behaviors during conversations.

Conflict of Interest

The researcher does not have any conflict of interest.

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Table Legend

Table 1: Background Information of AWS Participants

Participant ID	Age (in years)	Sex	Mother Tongue	Educational Qualification
NS	27	Male	Hindi	B. Tech
SC	46	Male	Hindi	Graduation
RR	21	Male	Hindi	Pursing B.A.

Table 2: Stuttering Severity Levels of AWS Participants

Participant ID	Measurement of Stuttering Severity using the SSI-4 of AWS Participants							
	A (S-1 + S-2)		B	C	Total Score (A +B +C)	Percentile Rank	Stuttering Severity Level	Speech Naturalness
	S-1	S-2						
NS	5	6	8	6	25	41-60	Moderate	4
SC	6	8	10	9	33	78-88	Severe	6
RR	9	9	12	9	39	96-99	Very Severe	8

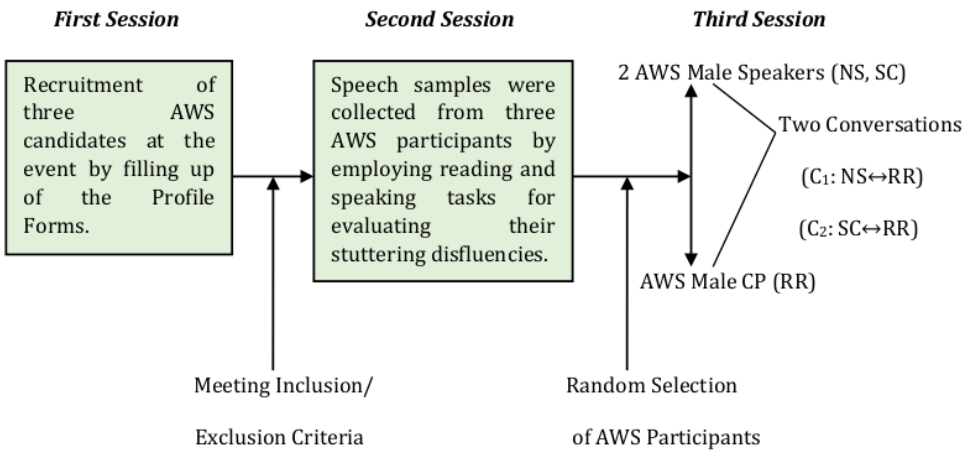
(**Note:** S-1= Speech Sample 1; S-2= Speech Sample-2; A = Frequency Score; B = Duration Score; & C = Physical Concomitant Score)

Table 3: Syllables Produced by AWS Participants during Speaking Task

Participant ID	**Speaking Task**	
	Speaking Task 1 (Divided Attention Picture)	**Speaking Task 2 (The Cookie Theft)**
NS	129	164
SC	686	339
RR	118	101

Figure Legend

Figure 1: Schematic Illustration of Research Design



Appendix A

Conversational Topics

Conversational Topic-1 (Dyad- NS and RR):

इन दिनों बच्चों को गोद लेने की प्रक्रिया भारत में काफी प्रचलित हैं। कई प्रतिष्ठित लोगों ने जैसे कि स्व. श्री. अटल बिहारी वाजपेयी, सुष्मिता सेन, रविना टंडन थडानी, सलीम ख़ान, या मिथून चक्रवर्ती ने तमाम कानूनी कठिनाइयों का सामना करते हुए एक बच्चे को गोद लिया है। वही आज भी आपको ऐसे कई परिवार देखने को मिल जाएँगे जहाँ बच्चे को गोद लेने के बाद उनके साथ कई प्रकार के दुरव्यवहार देखने या सुनने को मिलते हैं। आप क्या सोचते है कि इस दिशा में लिए गए सामाजिक व कानूनी कदमों से किस प्रकार दोनों (निःसंतान दंपत्ति और अनाथ बच्चों) का जीवन लम्बे समय में सुखमयी बनने में मददगार साबित होगा?

These days child adoption procedure is very popular in India. Many celebrities such as Late Shri. Atal Bihari Vajpayee, Sushmita, Raveena Tandon Thadani, Salim Khan, or Mithun Chakravarti fought tough legal battle to adopt a child. However, you would still find many families where children after adoption are subjected to various kinds of misbehaviors. What do you think how social and legal steps taken in this direction would be helpful to the lives of both childless couples, and orphan children for their betterment for longer period of time?

Conversational Topic-2 (Dyad-SC and RR):

सामाजिक दृष्टिकोण से, बीते कुछ दशकों में भारत में विवाह की परिभाषा काफ़ी बदल गई है। इसका सबसे बड़ा कारण सामाजिक प्रणाली में सुधार आना, महिलाओं का सशक्तिकरण होना और रोज़मरा के जीवन में टेक्नोलॉजी का काफ़ी उपयोग होना है। जहाँ माता-पिता द्वारा तय किए गए विवाह की प्रथा आज भी भारत के कुछ हिस्सों में (छोटे शहर, कज़्बा, और गाँव) में प्रचलित है, वहीं दूसरी ओर बड़े शहरों में "प्रेम-विवाह" करने की सोच ज़्यादा प्रबल है। किन्तु पिछले कुछ वर्षों में, मुम्बई जैसे बड़े शहरों में "लिव-इन रिलेशनशिप" में रहना ज़ोर पकड़ रहा है। इस तरह के रिलेशनशिप को सामाजिक स्वीकृति न मिलने के बावजूद भी, कानूनी मान्यता प्राप्त होने की वजह से आज कल के युवक/युवती इस विकल्प को भी धीरे-धीरे अपना रहे है। आप की नज़र

में, इन तीनों विकल्पों में से कौन-सा सबसे, सामाजिक और कानूनी दृष्टिकोण से, उचित है? आप ऐसा क्यों सोचते है?

In last few decades, the definition of marriage in India has drastically changed from societal point of view. One of the biggest reasons for this change has been improvement in the societal system, empowerment of women, and use of technology in day-today life. While, "arrange marriages" are still very much practice in small towns, cities, and villages, the idea of "love marriages" in big cities has become quite prevalent. However, in last few years, the idea of "live-in-relationship" in big cities like Mumbai is slowly becoming popular. Despite receiving strong resistance from the society, this kind of relationship is slowly becoming a viable option for the youths after getting recognized in the eyes of judicial system of our country. In your opinion, out of these three options, from the perspective of society and judiciary, which one of these is appropriate? Why do you think in this way?

Appendix B

Transcription Symbol

Time-Interval

(.) *Dot in parentheses* indicates a brief interval (+/- a tenth of a seconds) within or between utterances.

Characteristics of Speech Production

_ An *Underscoring Sign* indicate some form of stress, via pitch, and/or amplitude. A short underscore indicates lighter stress than does a long underscore.

↑ An *Upward Arrow* indicates rising tone.

↓ A *Downward Arrow* indicates falling tone.

[/] A *Solidus within Square Brackets* indicate multisyllabic word repetition which is shown immediately after the repeated word. For example: I would like to opt for Psychology [/] [gloss: I would like to opt for Psychology-Psychology-Psychology].

+/. A *Plus Sign followed by a Slash, and Dot* indicates interruption which is used when an utterance is left incomplete by the speaker because the other person in the dyad interrupts the speaker. For example:

A: I am going to +/.

B: School.

A: Yes. I am going to school.

Eye Gaze

{£→} A *Pound Sign with Rightwards Arrow* indicate looking towards.

Stuttering-Like Disfluencies

^^ A *Double Up Arrowhead* indicates block which is shown immediately prior to the blocked segment without any intervening spaces. For example: ^^He is nice.

(/↫) A *Slash followed by a Leftward Arrow with Loop within Round Brackets* indicate sound, or syllable repetition within a word. For example: ba(/↫)by [gloss: ba-ba-ba-by].

(/**:**) A *Slash with a Colon within Round Brackets* indicates prolonged segment which is placed after the prolonged element. For example: s(/**:**)omething [gloss: ssssssomething].

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