

Pragmatic assessment in Egyptian stuttering children

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Background

Pragmatics, the use of language in context, has been investigated only recently in the language of children who stutter. Some investigators have begun to address how the language and fluency of stuttering are influenced in different communicative settings. Some recent data have suggested that there may be a propensity for a delay or differences in certain areas of language learning for children who stutter compared with normal fluent children, specifically in vocabulary, pragmatic, or syntax development.

Aim

The aim of this study was to assess pragmatic skills in Egyptian Arabic-speaking children who stutter and to determine the relation between stuttering and the pragmatic aspect of language for future planning of a pragmatic-focused rehabilitation program for children who stutter.

Participants and methods

The sample in this study included 20 Egyptian Arabic-speaking children diagnosed to have stuttering and 20 children with normally developed language who spoke fluently. Both groups were of average intelligence; their age ranged between 4 and 7 years. All were from the same socioeconomic strata and were selected from the outpatient clinic Kasr El-Aini Hospital. All participants were subjected to a pragmatic assessment and language assessment applied in the Phoniatric Unit, Kasr El-Aini hospital.

Results

Scores of pragmatic skills were significantly lower in the stuttering group than the control group, except in object function skills. Preverbal communication skills decreased with increasing degree of stuttering and with an increase in Bloodstein stages of stuttering. Otherwise, other pragmatic skills showed no linear correlation with increasing degree of stuttering severity or an increase in Bloodstein stages of stuttering.

Conclusion

Scores of pragmatic skills were significantly deficient in the stuttering group. All this should be considered during planning of a rehabilitation program for stuttering.

Keywords:

Arabic-speaking children, pragmatic assessment, pragmatic skills, stuttering

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Introduction

Pragmatic behavior, especially as reflected in speech acts, is clearly at the intersection of language and culture as it is often not enough to string a series of words together grammatically; they must be in a meaningful sociocultural context as well [1]. Pragmatics is the combination of language components (phonology, morphology, syntax, and semantics) in functional and socially appropriate ways [2]. Historically, researches have compared the length and complexity of the syntactic constructions produced by children who stutter with those of children who do not stutter and have generally found the children who stutter to be relatively deficient. More recently, some investigators have begun to address how the language and fluency of children who stutter are influenced in different communicative settings [3].

Language components are interrelated and codependent. That is, when children are in an unfamiliar social context,

their use of a new, complex syntactic form may contain errors. However, that same newly learned, complex syntactic form is more likely to be produced correctly in a familiar social context. It was found that when the syntactic demands on a language-learning child are increased, it becomes more difficult to maintain fluency. This has led investigators to question whether there is a relationship between language learning and fluency and whether excessive demands on a child's language repertoire can have a negative effect on fluency maintenance [3].

Stuttering is a speech disorder that is primarily characterized by repetitions (sounds, syllables, part-words, whole words, phrases), pauses, and prolongations that differ in number and severity from those of normally fluent individuals. Onset usually occurs around the time that language skills are developing, and is generally gradual in nature [4].

The nature of the association between language and stuttering in young children has been the focus of debate for many years [5]. One purpose of investigating the pragmatic competencies of children who stutter was to determine whether knowledge of children who stutter 'use of language in context' has relevant fluency treatment implications [3].

Objectives

The purpose of this study is to assess pragmatic skills in Egyptian Arabic-speaking children who stutter and to determine the relation between stuttering and the pragmatic aspect of language for future planning of a pragmatic-focused rehabilitation program for children who stutter.

Participants and methods

The sample in this study included 40 Egyptian children; their age ranged between 4 and 7 years and they were from the same socioeconomic strata. Twenty children had been diagnosed to have stuttering and 20 children had normally developed language and spoke fluently. Both groups were of average intelligence. This sample was selected from the outpatient clinic Phoniatric Unit, Kasr El-Aini Hospital.

Protocol of stuttering assessment (applied in the Phoniatric Unit, Kasr El-Aini Hospital, Cairo University)

(a) Patient interview: personal, family, past history.

History of stuttering: onset, course, duration. Condition worsens during: speaking to strangers, exams, classroom recitations, speaking on the phone, anger, and or excitement. Condition improves during: speaking with family, reading, automatic speech, speaking slowly, word substitution and/or circumlocution, Avoidance of speech situations.

Developmental phase according to the Bloodstein developmental phase categorization [6].

(b) Examination: general and ENT examination.

(c) Assessment of patient's stuttering (grading of all items from 0 to 5):

Rate of speech: decreased, increased, or variable.

Stuttering-like disfluencies: part-word, single-syllable word repetition, sound prolongation and blocks, and tense pause.

Other disfluencies: polysyllabic word repetition, phrase repetition, interjections, revision and or incomplete phrase.

Secondary symptoms: associated movement: facial grimaces, head movement, extremities movement, torso movement. Vocal abnormalities: change in vocal quality: sharp shifts in the pitch level, monotonous speech, and skin reactions: flushing, pallor, perspiration, eye contact.

1: occasional, 2: mild, 3: moderate, 4: severe, 5: extremely severe.

Bloodstein phases

Phase I: The stuttering is episodic, with a high degree of spontaneous recovery; stuttering occurs mostly when excited and under communication stress. The prominent symptom is initial syllabic repetition and whole-word repetition; at the beginning of the sentence, there is little concern about stuttering.

Phase II: The disorder is chronic, with little episodes of normal speech; the child is aware of the problem. The stuttering is mainly on the major parts of speech such as nouns and verbs, increases during excitation, and is not restricted to the beginning of the sentence. At this stage, although the patient considers himself a stutterer, he is not paying much attention to his stuttering.

Phase III (most common): Stuttering appears mainly during special situations, especially when speaking to strangers, using the telephone, during examinations, and purchase. In this phase, certain sounds or words appear more difficult, and the child may start using word substitution and circumlocution. Frustration is more than fear appears.

Phase IV: This phase is characterized by feared anticipation of stuttering, feared sound, words, and situations, frequent substituting, circumlocution and avoidance, and in many cases there are some degrees of social isolation.

The data of stuttering assessment are presented for the statistical analysis according to:

- (1) The Bloodstein developmental phases.
- (2) The degree of severity: mild, moderate, and severe.

Extremely severe cases of stuttering are not included in this study.

All participants were subjected to the following evaluation:

(a) *Language assessment:* Standardized Arabic Language Test [7]: only the total language age is used in this study.

(b) *Protocol of Pragmatics Assessment in Arabic-speaking children* [8]: The total score of the protocol of pragmatic assessment is out of 100. Each child had to achieve a score that was within normal for his age in order to be considered to be functioning well pragmatically.

The protocol of pragmatic assessment constitutes the following skills: preverbal communication, object function, managing conversation, intentional communication, and narrative skills.

Each parameter consisted of a certain number of subtest items with a scored ranging from 0 to 4; the subtotal score of each parameter is calculated by adding all scores obtained for the various subitems. A score of 0 represents the least performance in the subtest, whereas a score of 4 represents the highest performance.

I-Preverbal communication: Preverbal communication is evaluated through informal observation of:

- (1) Eye contact/gaze: Eye contact/gaze, for example, consider whether the child has maintained eye contact during assessment.
- (2) Appropriate use of body position and distance from conversational partner.
- (3) Melody (intonation) of voice: appropriate melody to express his/her needs and volume of voice.
- (4) Looking at desired objects/events: This item was observed by placing interesting objects in front of the child and observing whether he looked at it or not.
- (5) Facial expression: This for example, considers whether the child was able to use his/her facial expression appropriately or not.
- (6) Responding to greetings: observe the child's response when you say, 'Hi, How are you' or Put your hands out to shake hands.
- (7) Pointing at a desired object: This item was observed by placing interesting objects in front of the child and observing whether he pointed at it or not.

The subtotal score for preverbal communication was out of 32.

II-Object function: This function measures the ability of the child to understand and name the function of various objects.

To estimate the ability of the child to understand object function, each child was asked to select a certain object by function from an array of four sets each containing four pictures. The items were graded in their difficulty as well as their degree of familiarity to the child. Then the child was asked to select one by asking him/her 'Show me the one that we eat with/blow the nose with/sweep with/sit on'.

Naming object function: the child was given four sets each of four pictures and was asked to explain the function of each one (pictures were graded in their difficulty). For example, 'What do you do with a (name of object)?' (e.g. soap/broom/scissor/thermometer)?

The subtotal score for object function was out of 8.

III-Managing conversation: This aspect was evaluated by measuring the child's ability to:

- (1) *Initiating conversation:* Initiating conversation through informal observation during the assessment in addition to parental report.
- (2) *Taking turn in conversation:* Taking turn in conversation, for example, the ability of the child to take turns in a conversation as assessed by asking each child to alternately count or recite numbers or alphabets with the assessor (e.g. the assessor says a, the child says b, the assessor says c, the child says d, etc.).
- (3) *Make conversation repairs:* Make conversation repairs when the listener did not understand his/her verbal messages, assessed through informal observations during the assessment in addition to parental report.

(4) *Request for clarification:* Request for clarification was assessed by placing four odd-looking objects on the table in front of the child and the child was asked what they were.

(5) *Correcting others:* This ability was assessed by presenting four sets of pictures to the child, each composed of two pictures. Each pair belonged to the same semantic group, for example, duck and goose/short and pants/dog and fox/spoon and fork. The assessor scored the test item by pointing to a certain picture in each set and incorrectly naming it and the child's response was observed.

The subtotal score for managing a conversation was out of 20.

IV-Intentional Communication: Expressing Greeting was assessed through informal observations during the assessment.

Naming objects: Naming objects was assessed by showing each child four pictures graded in difficulty and was asked to name them.

Making requests: Making requests was assessed by asking each child to draw a circle without immediately providing him/her with a pencil. The ability of the child to make a request was also assessed by placing a desired object, for example, chips, bubbles, or a toy near the assessor or mother and observing whether the child would request for it or not.

Responding to questions: The ability of the child to respond to questions was assessed by asking each child eight various questions graded in difficulty and asked to respond.

The questions included in the assessment are: What is your name?, What is your father's name?, How old are you?, How many fingers do you have?, What can we do with a scissor?, What happens if you go to the nursery late?, When do you usually wake up in the morning?, How often do you have physical education at your school per week?

Expressing emotions: Expressing emotions was assessed by showing each child eight pictures demonstrating various emotional states and was asked to name how each subject in the picture felt, for example, happy, sad, angry, scared, sleepy, sick, shy, or surprised.

The subtotal score for intentional communication was out of 24.

V-Narrative communication: Describing a provided picture: each child was asked to listen alternatively to the assessor while he was describing a certain picture. Then, the child was asked to retell what he would see in the other pictures (four picture cards of a birthday party/beach/grocery store/park). The child's response was then noted and scored according to his ability to use sentences with appropriate cohesion markers.

Maintaining topic of conversation: Maintaining topic of conversation was assessed by asking each child to

describe what he had done in the morning or describe a movie or a cartoon he/she had watched.

Sequencing actions: sets of four pictures each describing a series of or sequential actions were introduced to the child and he/she is asked to chronologically arrange and verbally describe them as well as predict the following action.

Providing explanations and necessary details: Providing explanations and necessary details were assessed by showing each child a picture that demonstrated various scenes or events (e.g. a beach, a picture of a kitchen, a picture of a birthday party, and a picture of a park). Each child was asked a question related to the pictures (e.g. 'What are they doing?'); then, the child answered the question (e.g. 'having a birthday party'), say, how do you know? ('How do you know they are having birthday party?'). Sometimes prompts were used to elicit logical expectations from the child (e.g. 'Because she's blowing out candles and they have party hats'); this was used to detect the inferential abilities of the children.

The subtotal score for narrative skills was out of 16.

The total pragmatic score was then calculated by collectively adding all the subtest scores obtained by the child. Thus, the total pragmatic score was out of 100.

(c) **Audiological assessment:** pure tone audiometry, Otoacoustic emission screening, and Auditory Brainstem Response were carried out for the suspicious cases to confirm normal peripheral hearing.

(d) **Psychometric evaluation:** Stanford Binet test (4th version) to confirm average intelligence [9].

Statistical method

Data were statistically described in terms of mean \pm SD, frequencies (number of cases), and percentages when appropriate. A comparison of numerical variables between the study groups was carried out using the Mann-Whitney *U*-test for independent samples. For comparison of categorical data, the χ^2 -test was performed. An exact test was used when the expected frequency was less than 5. The correlation between various variables was determined using the Spearman rank correlation equation for non-normal variables. *P* values less than 0.05 were considered statistically significant. All statistical calculations were carried out using computer programs statistical package for the social science (SPSS Inc., Chicago, Illinois, USA) version 15 for Microsoft Windows.

Results

The age of the sample of this study ranged from 4 to 7 years, with the mean (SD) age of the stuttering group in months of 66.60 ± 10.57 ; for the control group, the mean (SD) age in months was 66.00 ± 10.95 . The difference was statistically insignificant [*P* value = 0.86 (> 0.05)].

The severity of stuttering as determined by examination was as follows: four children had mild (20%), 10 had moderate (50%), and six had severe (30%) degrees of

stuttering. Bloodstein phases of stuttering as determined by examination included phase I (20%), II (45%), III (30%), and IV (5%).

The stuttering children scored highly significantly lower than the control group in the total language scores. The mean (SD) language score for the stuttering group was 87.080% (3.5956%). The mean (SD) language score for the control group was 90.400% (2.3930%) (*P* value = 0.001). The difference was highly significant.

Table 1 shows that children with stuttering scored significantly lower than the control group in all pragmatic items, except in the object function item, for which the difference between the two groups was insignificant.

Tables 2 and 3 show a comparison of pragmatic skills in the different degrees of severity as well as in the different Bloodstein phases in the stuttering group under study: it was found that there was nonsignificant difference ($P > 0.05$), except in the preverbal communication score as ($P < 0.05$).

The correlation between the language scores and the chronological age of the stuttering group and of the control group under study (Figs 1 and 2) showed that although in the stuttering group there was an indirect significant correlation of the total language score with increasing age [$r = -0.476$, *P* value = 0.034 (< 0.05)], there was a highly significant direct correlation of the language score with increasing age in the normal fluent control group [$r = 0.639$, *P* value = 0.002 (< 0.01)].

Table 4 shows that there is a nonsignificant correlation between all scores of pragmatic skills and the chronological age of the stuttering group (Fig. 3) (*P* value > 0.05), except in the preverbal communication score, as there was an indirect significant correlation ($P < 0.05$). In the control group, a positive significant correlation was found between all pragmatic skills scores and the age of the control group (Fig. 4) (*P* value < 0.05), except in object function and in the managing conversation score, where the correlation was insignificant (*P* value > 0.05).

Table 5 shows that there is a significant correlation between the severity of stuttering and the preverbal communication score as well as the total pragmatic score among the cases studied; the correlation with the Bloodstein phases is significant only with the preverbal communication ($P < 0.05$). Otherwise, the correlations are insignificant for both the items.

Table 1 Comparison between the mean of the scores of pragmatic skills in the stuttering group and the control group

Items	Group (mean \pm SD)		<i>P</i> value
	Case	Control	
Narrative communication	12.70 \pm 1.922	14.70 \pm 1.081	0.000**
Intentional communication	16.05 \pm 1.538	21.40 \pm 1.501	0.000**
Managing conversation	12.50 \pm 3.940	17.85 \pm 1.424	0.000**
Object function	7.85 \pm 0.489	8.00 \pm 0.000	0.178
Preverbal communication	24.10 \pm 4.898	31.75 \pm 0.550	0.000**
Total pragmatic scores	73.40 \pm 9.610	93.70 \pm 3.450	0.000**

Data are presented as mean \pm SD.

**Highly significant difference (*P* value < 0.01).

Table 2 Comparison between the means of the scores of pragmatic skills of the different degrees of stuttering among cases

Items	Stuttering severity (mean \pm SD)			P value
	Mild (N=4)	Moderate (N=10)	Severe (N=6)	
Narrative communication	12.25 \pm 1.258	13.10 \pm 1.969	12.33 \pm 2.338	0.598
Intentional communication	16.25 \pm 1.708	16.40 \pm 1.350	15.33 \pm 1.751	0.450
Managing conversation	12.75 \pm 4.113	14.00 \pm 2.828	9.83 \pm 4.622	0.123
Object function	8.00 \pm 0.000	8.00 \pm 0.000	7.50 \pm 0.837	0.086
Preverbal communication	29.00 \pm 2.582	24.00 \pm 3.367	21.00 \pm 6.000	0.025*
Total pragmatic scores	78.25 \pm 7.932	75.90 \pm 5.646	66.00 \pm 12.602	0.072

Data are presented as mean \pm SD.

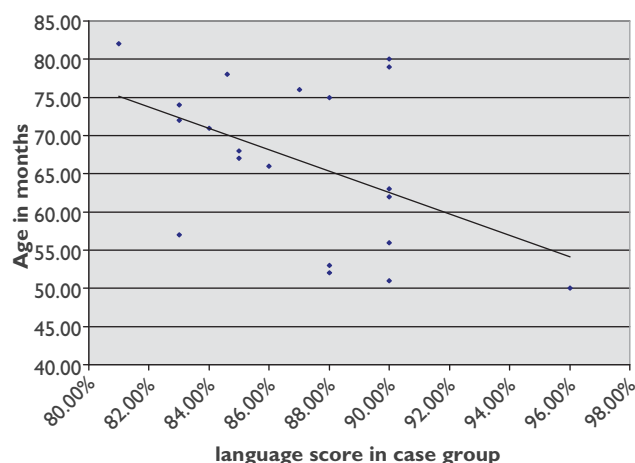
*Significant difference (P value < 0.05).

Table 3 Comparison between the scores of pragmatic skills of the different Bloodstein phases of stuttering among the stuttering group (N=20)

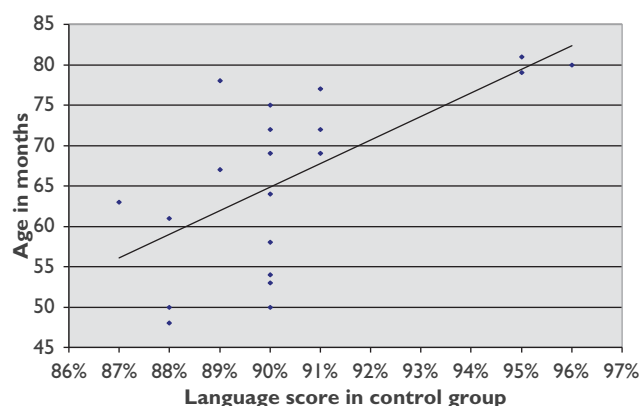
Items	Bloodstein phases (mean \pm SD)				P Value
	I	II	III	IV	
Narrative communication	12.25 \pm 1.258	12.67 \pm 2.179	13.00 \pm 2.449	13.00 \pm 2.000	0.942
Intentional communication	16.25 \pm 1.708	16.11 \pm 1.764	15.50 \pm 1.291	16.33 \pm 1.528	0.866
Managing conversation	12.75 \pm 4.113	13.22 \pm 3.667	11.25 \pm 4.113	11.67 \pm 6.028	0.789
Object function	8.00 \pm 0.000	8.00 \pm 0.000	7.50 \pm 1.000	7.67 \pm 0.577	0.266
Preverbal communication	29.00 \pm 2.582	24.67 \pm 3.122	19.25 \pm 2.217	22.33 \pm 8.386	0.022*
Total pragmatic communication	78.25 \pm 78.25	75.11 \pm 7.474	66.50 \pm 8.813	71.00 \pm 16.703	0.293

Data are presented as mean \pm SD.

*Significant difference (P value < 0.05).

Figure 1

Correlation between language scores and the chronological age of the stuttering group.

Figure 2

Correlation between language scores and the chronological age of the control group.

Discussion

In this study, the highly significant lower scores in pragmatic skills in the stuttering group compared with the control group, except in object function skills, indicate the presence of significant deficient pragmatic skills in the stuttering children. Pragmatic enhancement should be considered during planning of a rehabilitation program for stuttering children.

The significant lower total language score of the stuttering group than the control group in this study is in agreement with Ratner [10], who considered language as a risk factor for stuttering; the link between stuttering

and language is especially intuitive in young children. It was found that the onset of stuttering, typically between the ages of 2 and 4 years, coincides with the critical period of accelerated expansion in children's expressive and receptive language. A few current articles have supported the idea that stuttering is basically a disorder of language development [11–13].

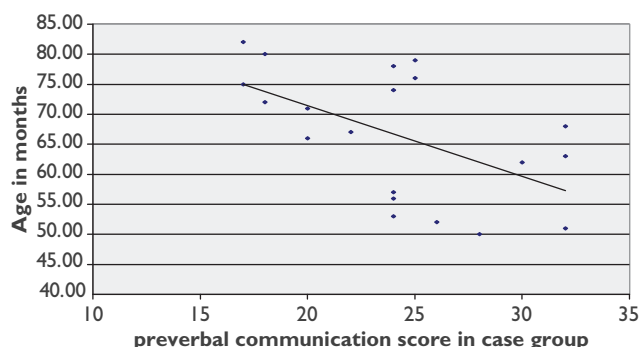
Several studies of utterance planning and attention processes in stuttering have raised the prospect of the involvement of working memory in the disorder. It was believed that there are potential links between stuttering and two elements of Baddeley's working memory model (phonological memory and central executive) [14].

Table 4 Correlation between the pragmatic skills and the chronological age of the stuttering group and the control group under study

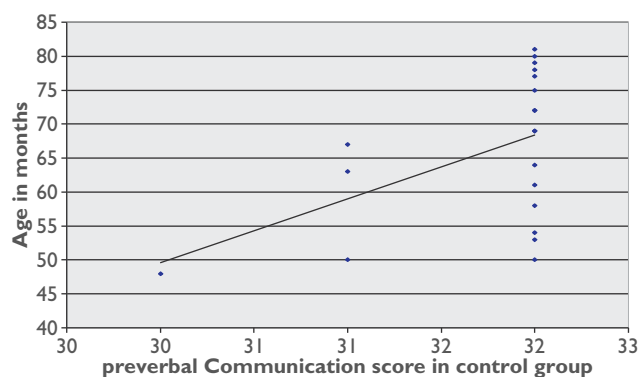
Chronological age	Narrative communication	Object function	Managing conversation	Intentional communication	Preverbal communication	Total pragmatic score
Stuttering cases (<i>N</i> =20)						
Correlation coefficient (<i>r</i>)	0.250	-0.267	0.88	0.037	-0.548	-0.236
<i>P</i> value	0.250	0.256	0.711	0.877	0.012*	0.317
Control group (<i>N</i> =20)						
Correlation coefficient (<i>r</i>)	0.734	0.187	0.385	0.496	0.472	0.680
<i>P</i> value	0.000**	0.248	0.094	0.026*	0.036*	0.001**

**Highly significant correlation.

*Significant correlation.

Figure 3

Correlation between preverbal communication and the chronological age of the stuttering group.

Figure 4

Correlation between preverbal communication and the chronological age of the control group.

Evidence has shown that working memory is one of the psycholinguistic bases of stuttering [15].

These results are not in agreement with Anderson and colleagues [16–18], who agree with many parents' reports that their child showed a spurt in language development just before the onset of stuttering, speaking in longer sentences and using new words. Watkins and Johnson [5] reported that there are factors that may account for this discrepancy, for example, variables such as the age of the participants, the age of stuttering onset and the time elapsed between onset and data collection for a particular study, the socioeconomic

background of participants, the time since the onset of stuttering, the types of language skills measured, and the tools used to measure language abilities.

The results presented in Table 1 indicate that the children who stutter are less able to use the pragmatic skills than their control peers. These findings are in agreement with Swiney and Reeves [19], who found that pragmatic weakness in stuttering children is presented as academic failure, indicating communication breakdown; they may not know how to seek repetition or clarification. Also, children who stutter may not know when to restate, explain, or revise their message and may have difficulty using and benefiting from language in the classroom; even when a breakdown is identified, word avoidances may affect children who stutter in their ability to clarify, restate, or explain themselves.

These findings are also in agreement with Weiss and Zebrowski [20], who selected a story-retelling task. Their results revealed that all of the stories told by the children who stutter were shorter than those told by children who do not stutter, irrespective of listeners. Analysis of the stories told to the native listeners by the children who stutter, however, demonstrated that these stories were somewhat longer than the stories that were told to the experienced listeners. When the stories produced by the children in both groups were evaluated for the essential information or 'communication units,' they contained rather than length, the groups looked very similar. That is, even though the children who stutter had produced shorter story retelling, the retellings included the critical information that allowed the listener to understand the main points of the story. One explanation offered by the authors was that stories told by the children who stutter may have been shorter because these children had learned that one good way to avoid stuttering was to talk less. More importantly, the children who stutter appeared to recognize the needs of their listeners, although they may have sacrificed story length to avoid stuttering.

Comparison of the scores of pragmatic skills in different degrees of stuttering severity (Table 2) and in different Bloodstein phases of stuttering among cases under study (Table 3) shows that in the stuttering group, there is a significant difference only in preverbal communication skills, which include eye contact, appropriate use of body position, appropriate use of melody, and appropriate use

Table 5 Correlation between stuttering severity and Bloodstein phases with various pragmatic items as well as the total pragmatic score among the stuttering group under study

Items	Narrative Communication	Object function	Managing conversation	Intentional communication	Preverbal communication	Total pragmatic score
Stuttering severity (<i>N</i> =20)						
Correlation coefficient (<i>r</i>)	-0.036	-0.440	-0.346	-0.248	-0.608	-0.487
<i>P</i> value	0.879	0.052	0.135	0.293	0.004**	0.029*
Bloodstein phases (<i>N</i> =20)						
Correlation coefficient (<i>r</i>)	0.140	-0.407	-0.179	-0.091	-0.639	-0.364
<i>P</i> value	0.556	0.075	0.450	0.701	0.002**	0.114

**Highly significant correlation.

*Significant correlation.

of volume of voice, facial expression, looking, and pointing at the desired object. These findings are in agreement with those of Scott and Healey [21], who found that there is a weak relationship between narrative complexity and the frequency of stuttering. The narratives produced by the children who stuttered were analyzed to determine the existence of a relationship between the frequency of stuttering and the level of sophistication of the narrative.

These findings are also in agreement with those of Roseberry and Hedge [22], who reported that some aspects of pragmatic language have been linked to an increase in children's stuttering. For example, parents' use of questions in conversation tends to increase the amount of stuttering children exhibit.

The significant decrease in the preverbal communication can be explained by the fact that with an increase in stuttering severity, there is usually a decrease in eye contact, improper use of voice volume, and abnormal facial expressions, which lead to a decrease in the preverbal communication.

In Fig. 2, the indirect significant correlation of the total language score with the age of the stuttering children indicates that with an increase in chronological age, there is a decrease in the language abilities of children who stutter. However, Fig. 3 shows that there is an improvement in the language abilities in the control group as they become older. These results are in agreement with those of Weiss [3], who suggested that there may be a propensity for a delay or differences in certain areas of language learning for children who stutter compared with children who do not stutter, specifically in vocabulary, pragmatic, or syntax development.

The results of the stuttering group are also in agreement with those of Blood and Seider [23], who reported that 68% of children who stutter have at least one concomitant disorder in articulation (16%), in language (10%), learning disabilities (7%), and reading disabilities (6%), as they grow and reach school age.

Table 4 indicates that although there is a negative significant correlation only in the preverbal communication and the chronological age of the children who stutter, this indicates that with increasing age, there is a decrease in the preverbal communication in children who stutter;

otherwise, there is no linear correlation with the other pragmatic items, and in the control group, there is a significant improvement in the narrative skills, intonational communication, preverbal communication, and total pragmatic scores.

These results indicate that with age, children who do not stutter can achieve and master many pragmatic skills as they master their language, which does not occur in children who stutter. When a stuttering child becomes older, his preverbal communication becomes worse and the other pragmatic skills do not improve.

Swiney and Reeves [19] reported that factors that make pragmatics difficult include rapid adjustments during interaction, sensitivity to the speaking partner, status, setting, body language, and intonation.

This finding is also in agreement with that of Weiss [3], who reported that most language skills are learned by interactions. In terms of pragmatics, normally developing speakers discover that different situations and different communication partners require different types of communication. Even young children make assumptions about a listener's knowledge level and adjust their speaking style on the basis of the listener's size.

This may be explained by the fact that usually at a younger age, when a stuttering child is excited or under some type of pressure, she/he becomes aware of problems with his or her speech. Subsequently, stuttering becomes increasingly chronic and includes repetitions, prolongations, and blocks. Secondary motor behaviors (eye blinking, lip movements etc.) may be used during moments of stuttering or frustration. Also, fear and avoidance of sounds, words, people, or speaking situations usually develops, along with feelings of embarrassment and shame. With advancing age, the stutter is usually classified as an 'advanced stutter', characterized by frequent and noticeable interruptions, with poor eye contact, and the use of various tricks to disguise the stuttering. Along with a mature stutter emerge advanced feelings of fear and increasingly frequent avoidance of unfavorable speaking situations. The child becomes fully aware of his or her disorder and experiences deeper frustration, embarrassment, and shame, which will affect preverbal communication skills such as eye contact, facial expression, and responding to greetings [24].

The results of Table 5 indicate that with an increase in the severity of stuttering, there is a significant decrease in the preverbal communication and the total pragmatic scores. The same occurs with an increase in the Bloodstein phase but only for preverbal communication. This may be explained by increasing responsibility in conversation planning. The greater the 'pragmatic burden' on the individual, the more likely the occurrence of disfluencies. This affects mainly the preverbal skills, which include eye contact, proper use of intonation, and body movement.

Also, our results are in agreement with those of Weiss and Zebrowski [25], who suggested that there was a link between the amount of responsibility for maintaining turns in conversation and the appearance of disfluencies. The more the responsibility engendered for the speaker, the greater the likelihood for stuttering.

Another explanation for the previous results is that in mild cases, stuttering behaviors are infrequent, brief, and are not accompanied by substantial avoidance behavior and are often called 'situational stuttering' because the person generally has difficulty speaking only in isolated situations. When the behaviors are frequent, long in duration, or when there are visible signs of struggle and avoidance behavior, the stutter is classified as a severe or a chronic stutter and is often accompanied by strong feelings and emotions.

In addition to the disfluency, many individuals who stutter display secondary motor behaviors (muscles tensing up, facial and neck tics, excessive eye blinking, and lip and tongue tremors). In extreme cases, entire body movements may accompany stuttering. The most common characteristic among stutterers is the inability to maintain eye contact with the listener, which may in turn hamper the growth of personal or professional relationships, which in turn will affect preverbal communication skills such as eye contact, facial expression, responding to greetings, appropriate use of body position, appropriate use of melody, and appropriate use of volume of voice.

It is worth noting that the severity of a stutter is not constant and that stutterers often go through weeks or months of substantially increased or decreased fluency. Stutterers universally report having 'good days' and 'bad days' and report markedly increased or decreased fluency in specific situations.

These findings are also agreement with those of Ward [26], who reported that as speech and language are difficult and complex skills to learn, almost all children have some difficulty in developing these skills. This results in normal disfluencies such as single syllable, whole word, or phrase repetitions, interjections, brief pauses, and revisions. In the early years, a child will not usually exhibit visible tension when speaking disfluently and most individuals will be unaware of the interruptions in their speech. Young stutterers' disfluency tends to be episodic. As the stutterer develops, the disfluencies present tend to develop more into repetitions and sound prolongations, often combined together (e.g. 'Lllllets

g-g-go there'). The child will start to become aware of problems in his or her speech. Later on, Stuttering becomes a serious disability and an untreated stutterer usually becomes worse with time. For a developing child, it can result in lower self-esteem and can increase anxiety and stress, all of which only serve to worsen a stutter. Stutters can and often do hamper social development and limit educational and professional opportunities.

With long periods of disfluency, secondary motor behaviors may develop during moments of stuttering. Also, fear and avoidance of speaking situations usually start. The child may have poor eye contact and may use various tricks to disguise the stuttering, anticipate stuttering, and fears and avoids speaking. The child who identifies himself/herself as a stutterer may attempt to choose a lifestyle where speaking can often be avoided.

The findings in this study are also in agreement with those of Swiney and Reeves [19], who found that stuttering affects interpersonal relationships and show that an intervention should not just be focused on the person who stutters, but also all individuals within the communication network; thus, it was suggested to differentiate the symptoms of pragmatic language disorders from situational speaking anxieties in children who stutter and may have difficulty using and benefiting from language in the classroom. Even when a breakdown is identified, word avoidances may affect children who stutter in their ability to clarify, restate, or explain themselves.

This may be explained by word avoidance, situation avoidance, and evidence of fear. As stutterers often resort to word substitution in order to avoid stuttering, some develop an entire vocabulary of easy to pronounce words in order to maintain fluent speech, sometimes so well that no one, not even their friends, know that they have a stutter. The extra effort it takes to scan ahead for feared words or sounds is stressful and the replacement word is usually not as adequate of a choice as the stutterer originally intended. Some stutterers change their own given name because it contains a difficult to pronounce sound and frequently leads to very embarrassing situations, this is in agreement with Ward [26].

Conclusion

Scores of pragmatic skills are significantly deficient in the stuttering group. Preverbal communication skills are decreased with increasing degree of severity of stuttering and increasing Bloodstein stages. The total pragmatic skills increase with age in normal fluent children, but in stuttering children, preverbal communication skills decrease and other pragmatic aspects do not improve. These should be considered during planning a rehabilitation program for stuttering.

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Conflicts of interest

There are no conflicts of interest.

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