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A PSYCHOLINGUISTIC ANALYSIS ON THE FALSE-START PRODUCTION RATES OF TURKISH SPEAKERS

Türk Konuşmacıların Yanlış Başlangıç Üretim Miktarları Üzerine Psikodilbilimsel Bir İnceleme

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Abstract
This study aims to explore the false-start type of speech disfluency production rates of the native speakers of Turkish based on the age, gender, educational background, and prepared/unprepared speech condition variables. 84 participants from four different age groups (4-8, 18-23, 33-50 and over 50) took part in the study. 33-50 and over 50 age groups were divided into two sub-groups according to their educational level (low-and-high education profiles). Gender distribution was equal in each group. Prepared and unprepared speech samples (for children unprepared speech samples only) of at least 300 words of each participant were collected via face to face interviews and transcribed. For the statistical analysis of the data, Wilcoxon Signed-Rank and Mann-Whitney U Tests and Kruskal–Wallis One-Way Analysis of Variance were used. In terms of the age variable, in the prepared speech, age variable did not influence the false-start production rates whereas, in the unprepared speech, 4-8-year-old participants were more disfluent than the other three age groups (18-23, 33-50, and over 50). In terms of the gender variable, 33-50-year-old males produced more false starts than the females in the same age group in the prepared speech. In the unprepared speech, 18-23 and 33-50-year-old males produced more false starts than the females in the same age groups. In terms of the educational level variable, in the prepared speech, there were no significant differences between the groups. In the unprepared speech, 33-50-year-old elementary/middle school graduate males produced more false-starts than bachelor-master's/doctoral degree holder males in the same age group. In addition, over 50-year-old female professors produced more false-starts than elementary/middle school graduate females in the same age group. In terms of the speech situation variable (prepared/unprepared), it was observed that speech situation variable was not influential on the false-start production rates.
Keywords: Psycholinguistics, Speech Production, Turkish Speech, False Starts.

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Öz

Bu çalışmanın amacı; ana dili Türkçe olan konuşmacıların yanlış başlangıç türü akıcısızlık üretim miktarlarını yaş, cinsiyet, eğitim düzeyi ve hazırlıklı/hazırlıksız konuşma durumu değişkenlerine göre incelemektir. Araştırmada dört farklı yaş grubundan (4-8, 18-23, 33-50, 50 üzeri) 84 katılımcı yer almıştır. 33-50 ve 50 üzeri yaş grubu katılımcılar eğitim düzeylerine göre (düşük ve yüksek eğitim düzeyi) iki alt gruba ayrılmıştır. Her yaş grubunda cinsiyet dağılımı eşit olarak planlanmıştır. Yüz yüze görüşmeler vasıtasıyla her bir katılımcıdan en az 300 sözcükten oluşan hazırlıklı ve hazırlıksız konuşma örnekleri toplanmış (çocukların oluşturduğu grupta yalnızca hazırlıksız konuşma örnekleri) ve çevriyazıya dönüştürülmüştür. Verilerin istatistiksel analizinde, Wilcoxon Signed-Rank Testi, Mann-Whitney U Testi ve Kruskal–Wallis Tek-Yönlü Varyans Analizi kullanılmıştır. Yaş değişkeni bağlamında elde edilen veriler incelendiğinde, hazırlıklı konuşma durumunda yaş değişkeni yanlış başlangıç üretim miktarlarını etkilemiyorken hazırlıksız konuşma durumunda 4-8-yaş grubu katılımcıların diğer üç yaş grubundaki (18-23, 33-50, 50 üzeri) katılımcılara kıyasla daha az akıcı oldukları gözlemlenmiştir. Cinsiyet değişkeni bağlamında, 33-50-yaş grubundaki erkekler aynı yaş grubundaki kadınlara kıyasla hazırlıklı konuşmada daha fazla sayıda yanlış başlangıç üretmişlerdir. Hazırlıksız konuşma durumunda ise, 18-23 ve 33-50-yaş grubundaki erkekler aynı yaş gruplarındaki kadınlara kıyasla daha fazla sayıda yanlış başlangıç üretmişlerdir. Eğitim düzeyi değişkeni bağlamında, hazırlıklı konuşma durumunda gruplar arasında anlamlı bir farklılık bulunmamaktadır. Hazırlıksız konuşma durumunda ise, 33-50-yaş grubundaki ilkokul/ortaokul mezunu erkekler aynı yaş grubundaki lisans/lisansüstü mezunu erkeklere kıyasla daha fazla miktarda yanlış başlangıç üretmişlerdir. Buna ilave olarak, 50 üzeri yaş kadın profesörler aynı yaş grubundaki ilkokul/ortaokul mezunu kadınlardan daha fazla sayıda yanlış başlangıç üretmişlerdir. Konuşma durumu değişkeni (hazırlıklı/hazırlıksız) bağlamında ise, konuşma durumunun katılımcıların yanlış başlangıç türü akıcısızlık üretim miktarlarına etki eden bir değişken olmadığı gözlemlenmiştir.

Anahtar Kelimeler: Psikodilbilim, Konuşma Üretimi, Türkçe Konuşma, Yanlış Başlangıçlar.

Introduction

One of the basic differences between the spoken language and the written language is the fact that writing is a slow, deliberate, editable process, whereas speaking is done on the fly (Chafe, 1985: 105). Therefore, it is not wrong to say that even though it is possible to produce a perfect written text at the end of the production process by correcting the disfluencies encountered; spontaneous speech production is deprived of this advantage.

Speech disfluencies interrupting the flow of speech are defined in many different ways in the related research literature (Fox Tree, 1995, Clark & Wasow, 1998; Gósy, 2001; Bard et. al, 2001)

In its broadest sense, the term disfluency refers to breaks that are normal, abnormal, or ambiguous (i.e., sometimes regarded as normal and sometimes abnormal) in the continuity of producing phonologic, lexical, morphologic, and/or syntactic language units in oral speech (American Speech-Language-Hearing Association Special Interest Division 4, 1999: 3).

The diversity that has been put forward by the related research in the literature regarding the terms used for describing disfluencies also manifests itself in the classification of speech disfluency types. Speech disfluency is classified differently in various studies (Maclay & Osgood, 1959; Martin & Strange, 1968; Hieke, 1981; Postma et. al, 1990; Clark & Wasow, 1998; Bear et. al, 1993; Bell et. al, 2000; Menyhárt, 2003). Speech disfluency types could be classified into seven categories regarding the related research literature: filled gaps, hesitations, prolongations, false starts, slips of the tongue, and repetitions. In the current study, false start type of disfluencies have been analyzed.

False starts are named differently as in “fresh starts” (Heeman & Allen, 1994) and “restarts” (Bortfeld et. al, 2001; Menyhárt, 2003) in the research literature.

The term “false start” has been used by O’Shaughnessy (1992) to define the situations in which the speaker interrupts the flow of speech to restart an utterance.

Heeman & Allen (1994: 295) define a false start as a type of disfluency in which the speaker abandons what she was saying and starts again. They exemplify it as follows:

> the current plan is we take- **okay let's** say we start.

Maclay & Osgood (1959: 24) divided false starts into two sub-categories, namely “retraced” and “non-retraced” false starts, on the basis of whether or not the speaker backed up in an attempt to correct one of the words he had already used.

Hindle (1983: 127) defined false start type of disfuency as a somewhat different sort of self-correction, less sensitive to syntactic structure and flagged not only by the editing signal but also by a lexical item. In his study, it is stated that a false start is signaled by a standard edit signal followed by a specific lexical item drawn from a set including well, ok. see, you know, like I said, etc. The researcher exemplified this as follows:

> That's the way if-- **well everybody** was so stoned, anyway.
>
> But when l was young I went in-- **oh I** was nineteen years old.

The researcher also emphasized that in addition to the lexical signals, specific intonational signals might also be involved in false starts.

Clark & Wasow (1998: 201) has been stated regarding false start type of disfluencies that when speakers change their minds about what they are saying, they may suspend their speech and then add to, delete, or replace words they have already produced.

Eklund (2004: 164) classified false starts under the category of repairs and emphasized that the idea behind a repair was that something needed to be corrected. According to Fitzgerald et. al (2009: 256), in a false start, an utterance is aborted and then restarted with a new train of thought. They exemplify false starts as follows:

> and [**i think he’s**] + he tells me he’s glad he has one of those
>
> [**amazon was incorporated by**] {uh} well i only knew two people there

In a study related to speech comprehension, Fox Tree (1995: 714) suggests that false starts make the recognition of the target word following the disfluency harder.

False starts have been classified as three different types of speech disfluency, namely additions, deletions, and substitutions in some studies. In such a research, Shriberg (1994: 15) has exemplified these three different types of false starts as follows:

> show the flights -- show the **morning** flights to boston (insertion)
>
> show the flights **that** -- to boston (deletion)
>
> show the **morning** -- show the **evening** flights to boston (substitution)

Similarly, in their study aimed to put forward a system for labeling self-repairs in spontaneous speech, Bear et. al (1993) categorized false starts under the title of repairs and labeled the false starts that were placed at the repair site in the disfluency structure as replacements, insertions, and deletions.

One of the biggest problems that false starts have caused in speech disfluency research is the difficulty experienced in distinguishing them correctly and reliably from the repetition and hesitation type of disfluencies.

Shriberg (1996: 14) mentions the influence of speech rate on disfluency production and as a result, she concludes that faster speakers "get ahead of themselves", and thus often have to retract provisional starts and begin anew.

In the current study, the influence of age, gender, speech situation (prepared/unprepared), and education level variables on false start type of disfluency production rates of Turkish native speakers has been analyzed. The specific questions investigated in the current study are: (1) Are there any meaningful differences among the false-start production rates of children, teenagers and adult speakers of Turkish? (2) Does the gender of the speaker influence the production rates of false-starts in Turkish speech? (3) Do Turkish native speakers produce more false-start type of speech disfluencies under certain speech situations (prepared/unprepared)? (4) Is educational level an influential variable on the production rates of false-start type of disfluencies in Turkish speech?

Method

False start disfluency data was gathered from the conversations which had been recorded and transformed into transcriptions. Six groups were constructed from Turkish native speakers aged between 4-8 (14 participants), 18-23 (14 participants), 33-50 (two-sub groups-28 participants), and who were over 50-year-olds (two-sub groups-28 participants). 18-23-year-old participants were chosen from university students or new graduates. 33-50-year-old participants were divided into two sub-groups as elementary-middle school graduates and bachelor-master's/doctoral degree holders. Over 50-year-old participants were also divided into two sub-groups according to their educational levels as elementary-middle school graduates and professors. Except children, all participants volunteered to take part in the study and claimed that they had no hearing loss, any special developmental disorders, or neurological problems. Via face-to-face interviews speech samples of at least 300 words from each participant both in the prepared and unprepared speech situations were gathered and transcribed. Because of the difficulties that would arise from obtaining a sample of prepared speech in the group of children, only unprepared speech samples were collected in this group. Prepared speech samples of the participants were obtained after giving the questions to be asked in face-to-face interviews to the participants in advance. In this way, they could plan their speech beforehand. The samples of the unprepared speech were gathered by asking the questions that the participants had not seen before the interviews spontaneously during the interviews. All participants answered 12 questions both in prepared and unprepared speech situations except children. Topics that are meaningful to all participants such as, work, hobbies, career, giving directions, or instructions have been chosen. Participants answered the questions in a setting where they feel comfortable (either at their workplaces or at their homes). There was no one in the room other than the researcher and the participant during the interviews. The children answered 23 questions in total in their own classrooms full of toys or other teaching equipments at their kindergartens. They were alone with the researcher during the interviews. Since it was difficult to keep the children concentrated on something for a long time, topics which could keep them interested and use their imagination were chosen, such as fairy tales, and their favorite cartoons/toys, etc. or questions such as what they would do if they were invisible/they could fly etc. Each false start has been marked by hand one by one in the transcript. The

false start rates of the speakers were calculated by taking an average of false starts in every 100 words. The gathered data was analyzed by taking age, gender, education level, and speech situation (prepared/unprepared) variables into consideration.

Findings

Wilcoxon Signed-Rank Test, Mann-Whitney U Test and Kruskal-Wallis One-Way Analysis of Variance were used for the statistical analysis of the data.

An Analysis of the "False Start" Type of Disfluencies According to Age Variable

The differences among the three different age groups in the prepared speech and four age groups in the unprepared speech, in terms of the false start rates, have been analyzed with Kruskal-Wallis One-Way Analysis of Variance. The findings are as in Table 1:

Table 1: The False Start Rates of Different Age Groups in the Prepared and Unprepared Speech

	FALSE STARTS			
AGE	**PREPARED SPEECH**			
	FEMALE		**MALE**	
	Mean ± SD	**Median (Min_Max)**	**Mean ± SD**	**Median (Min_Max)**
4-8 Year Old n=14	-	-	1.38 ± 0.51	1.24 (0.42-2.54)
18-23 Year Old n=14	1.30 ±0.92	1.06 (0.24-3.46)	1.08 ± 0.83	1.02 (0-2.73)
33-50 Year Old n=28	1.13 ±1.17	0.85 (0-5.04)	0.87 ± 0.78	0.67 (0-3.37)
Over 50 Year Old n=28	1.00 ±0.52	0.94 (0.20-2.45)	0.94 ± 0.60	0.84 (0-2.34)
p		0.46		0,031*

Mean; Arithmetic mean, SD; Standard deviation
*p<0.05 **p<0.01 ***p<0.001

The comparison of the false start production rates of 18-23, 33-50, and over 50-year-old participants reveals that the median for 18-23-year-olds is 1.06 (0.24-3.46), it is 0.85 (0-5.04) for 33-50-year-olds, and it is 0.94 (0.20-2.45) for over 50-year-olds. The difference is not statistically significant (p=0.46>0.01).

In terms of the assessments regarding the false start production rates in the unprepared speech situation, the median for 4-8-year-old participants is 1.24 (0.42-2.54), whereas it is 1.02 (0-2.73) for 18-23-year-olds, 0.67 (0-3.37) for 33-50-year-olds, and 0.84 (0-2.34) for over 50-year-olds. The difference is statistically significant (p=0.031<0.05). 4-8-year-old children's false start medians is higher than those of other participants in three different age groups (18-23, 33-50, and over 50).

As a result, age variable did not have an influence on false start production rates in the prepared speech situation. However, in the unprepared speech situation, false start production rates of 4-8-year-old children were significantly higher than those of the other participants in three different age groups (18-23, 33-50 and over 50). In the unprepared speech situation, 33-50-year-old participants had the lowest false start production rates in the current study.

An Analysis of the "False Start" Type of Disfluencies According to Gender Variable

The Mann-Whitney U Test has been used to examine whether the participants differed in the results of prepared and unprepared speech false start disfluency assessments in the context of gender variable. The figures gathered from the statistical analysis of the false start type of disfluency data for 4-8, 18-23, 33-50 and over 50-year-old participants are as shown in Table 2:

Table 2: False Start Rates in the Prepared and Unprepared Speech According to Gender Variable

	FALSE STARTS				
AGE	**PREPARED SPEECH**				
	FEMALE		**MALE**		
	Mean ± SD	**Median (Min_Max)**	**Mean ± SD**	**Median (Min_Max)**	**p**
4-8 Year Old n=14	-	-	-	-	-
18-23 Year Old n=14	1.00 ± 1.67	0.89 (0.24-1.93)	1.70 ± 0.99	1.72 (0.58-3.46)	0.23
33-50 Year Old n=28	0.67 ± 0.56	0.50 (0-1.68)	1.59 ± 1.45	1.01 (0.51-5.04)	0.02*
Over 50 Year Old n=28	0.91 ± 0.41	0.94 (0.20-1.49)	1.11 ± 0.61	0.87 (0.44-2.45)	0.70
AGE	**UNPREPARED SPEECH**				
	FEMALE		**MALE**		
	Mean ± SD	**Median (Min_Max)**	**Mean ± SD**	**Median (Min_Max)**	**p**
4-8 Year Old n=14	1.26 ± 0.44	1.29 (0.42-1.89)	1.49 ± 0.59	1.19 (0.92-2.54)	1.00
18-23 Year Old n=14	0.54 ± 0.44	0.31 (0.21-1.20)	1.69 ± 0.65	1.66 (1.0-2.73)	0.005**
33-50 Year Old n=28	0.42 ± 0.32	0.41 (0-1.08)	1.31 ± 0.86	1.09 (0.17-3.37)	0.000***
Over 50 Year Old n=28	0.89 ± 0.57	0.75 (0-1.96)	0.98 ± 0.65	0.93 (0-2.34)	0.73

Mean; Arithmetic mean, SD; Standard deviation
*p<0.05 **p<0.01 ***p<0.001

As shown in Table 2, the false start median of female participants in the 4-8 age group is 1.29 (0.42-1.89), and the male participants' median for the same age group is 1.19 (0.92-2.54) in the unprepared speech situation. The difference is not statistically significant (p=1.00>0.05). Gender variable was not influential on the false start production rates of 4-8-year-old children.

In the 18-23 age group, female participants' median is 0.89 (0.24-1.93), and the male participants' median is 1.72 (0.58-3.46) for the prepared speech situation. The difference is not statistically significant(p=0.23>0.05). In the unprepared speech situation, the

results are different from the prepared speech situation. The false start median is 0.31 (0.21-1.20) for females, whereas it is 1.66 (1.0-2.73) for males. The difference is statistically significant (p=0.005<0.05).

In the 33-50 age group, female participants' false starts median is 0.50 (0-1.68), whereas the male participants' false start median is 1.01 (0.51-5.04) for the prepared speech situation. The difference is statistically significant (p=0.02<0.05). The results are similar for the unprepared speech. The median of false starts is 0.41 (0-1.08) for females, whereas it is 1.09 (0.17-3.37) for males. The difference is statistically significant again (p=0.000<0.001).

There is no difference between the prepared and unprepared speech false start disfluency evaluations for the over 50-year-old female/male participants. Prepared speech situation false start median is 0.94 (0.20-1.49) for females while it is 0.87 (0.44-2.45) for males. The difference is not statistically significant (p=0.70>0.05). For the unprepared speech situation, the false start median for females is 0.75 (0-1.96), and it is 0.93 (0-2.34) for male participants in the same age group. The difference is not statistically significant again (p=0.73>0.05).

As a result; gender variable did not have an influence on the false start type of disfluency production rates of 4-8 and over 50-year-old participants. For the 18-23-year-old participants, even though gender variable did not affect the false start type of disfluency production rates in the prepared speech situation, in the unprepared speech situation 18-23-year-old male participants produced more false starts than the female participants in the same age group. 33-50-year-old female participants spoke more fluently in terms of false starts both in the prepared and unprepared speech situations than the male participants in the same age group.

An Analysis of the "False Start" Type of Disfluencies According to Education Level Variable

The Mann-Whitney U Test was used to examine whether the participants differed in the results of prepared and unprepared speech false starts type of disfluency assessments in the context of the educational level variable. The figures gathered from the statistical analysis of the false start type of disfluency data for 33-50 and over 50-year-old participants are as shown in Table 3:

Table 3: False Start Rates in the Prepared and Unprepared Speech According to Education Level

	FALSE STARTS				
AGE	**PREPARED SPEECH**				
	FEMALE				
	Mean ± SD	**Median (Min_Max)**	**Mean ± SD**	**Median (Min_Max)**	**p**
	Elementary-Middle School Graduate		**Bachelor's/Master's-Doctoral Degree Holder**		
33-50-year old n=14	0.45 ± 0.40	0.33 (0-1.25)	0.86 ± 0.65	0.88 (0-1.68)	0.23
	Elementary-Middle School Graduate		**Professor**		
Over 50-year old n=14	0.79 ± 0.47	0.96 (0.20-1.47)	1.02 ± 0.33	0.92 (0.61-1.49)	0.53

	MALE				
	Elementary-Middle School Graduate		Bachelor's/Master's-Doctoral Degree Holder		p
33-50-year old n=14	2.30 ± 1.83	1.68 (0.51-5.04)	0.89 ± 0.24	0.85 (0.53-1.25)	0.16
	Elementary-Middle School Graduate		Professor		
Over 50-year old n=14	1.20 ± 0.73	0.97 (0.52-2.45)	1.02 ± 0.52	0.77 (0.44-1.73)	0.80
	UNPREPARED SPEECH FEMALE				
AGE	Mean ± SD	Median (Min_Max)	Mean ± SD	Median (Min_Max)	p
	Elementary-Middle School Graduate		Bachelor's/Master's-Doctoral Degree Holder		
33-50-year old n=14	0.39 ± 0.35	0.34 (0-1.09)	0.40 ± 0.33	0.42 (0-0.97)	0.86
	Elementary-Middle School Graduate		Professor		
Over 50-year old n=14	0.53 ± 0.39	0.49 (0-1.24)	1.26 ± 0.49	1.19 (0.51-1.96)	0.01*
	MALE				
	Elementary-Middle School Graduate		Bachelor's/Master's-Doctoral Degree Holder		p
33-50-year old n=14	1.81 ± 0.96	1.23 (0.90-3.37)	0.82 ± 0.35	0.90 (0.17-1.14)	0.01*
	Elementary-Middle School Graduate		Professor		
Over 50-year old n=14	0.86 ± 0.58	1.04 (0-1.55)	1.09 ± 0.74	0.83 (0.28-2.34)	0.71

Mean; Arithmetic mean, SD; Standard deviation
*p<0.05 **p<0.01 ***p<0.001

In analyses of the false start type of disfluency production rates according to the educational level variable, statistically significant differences was found only in the unprepared speeches of 33-50-year-old males and over 50-year-old females.

The false start median is 1.23 (0.90-3.37) for elementary/middle school graduates, and it is 0.90 (0.17-1.14) for bachelor's/master's-doctoral degree holders. The difference is statistically significant (p=0.01<0.05). And over 50-year-old female professors produce more false starts in unprepared speech situation than females who are elementary/middle school graduates. The false start median is 0.49 (0-1.24) for elementary/middle school graduates, and it is 1.19 (0.51-1.96) for professors (p= 0.01). The difference is significant (p=0.01<0.05).

As a result, education level variable did not affect the production rates of false starts in the prepared speech situation. However, in the unprepared speech situation, 33-50-year-old males who were elementary/middle school graduates produced more false starts than

bachelor's/master's-doctoral degree holder males in the same age group. In contrast, over 50-year-old female professors produced more false starts compared to females who were elementary/middle school graduates in the same age group.

An Analysis of the "False Start" Type of Disfluencies According to Speech Situation (Prepared/Unprepared) Variable

The Wilcoxon Signed-Rank Test was applied to find out whether there was any significant differences between the participants' prepared and unprepared speech situation fluency assessments in terms of the false start production rates. Speech situation variable was not analyzed for the 4-8 age group for practical reasons.

An analysis of "false start" type of disfluencies according to speech situation variable (prepared/unprepared) ındependent of gender and education level variables. The findings obtained ragarding the false start production rates of the participants in the age groups of 18-23, 33-50, and over 50 in the context of the speech situation variable are as shown in Table 4:

Table 4: False Start Rates in the Prepared and Unprepared Speech According to Speech Situation Variable

	FALSE STARTS				
AGE	**PREPARED SPEECH**		**UNPREPARED SPEECH**		
	Mean ± SD	**Median (Min_Max)**	**Mean ± SD**	**Median (Min_Max)**	**p**
18-23 Year Old n=14	1.30 ±0.92	1.06 (0.24-3.46)	1.08 ± 0.83	1.02 (0-2.73)	0.096
33-50 Year Old n=28	1.13 ± 1.18	0.85 (0-5.04)	0.87 ± 0.78	0.67 (0-3.74)	0.18
Over 50 Year Old n=28	1.01 ± 5.22	0.94 (0.20-2.45)	0.94 ± 0.60	0.84 (0-2.34)	0.60

Mean; Arithmetic mean, SD; Standard deviation
*p<0.05 **p<0.01 ***p<0.001

As shown in Table 4, there were not any statistically significant differences among the false start production rates of three different age groups in the context of the speech situation (prepared/unprepared) variable. The speech situation (prepared/unprepared) variable was not influential in the production of false start type of disfluency.

An analysis of "false start" type of disfluencies according to speech situation variable (prepared/unprepared) by regarding gender and education level variables. The findings in terms of the false start production rates of all participants in the 18-23, 33-50 and over 50 age groups in the context of speech situation variable (prepared/unprepared) by considering the gender and education level variables, as well are as seen in Table 5:

Table 5: False Start Rates in the Prepared and Unprepared Speech According to Speech Situation Variable by Considering Gender and Educational Level Variables

FALSE STARTS					
	PREPARED SPEECH		UNPREPARED SPEECH		
	Mean ± SD	Median (Min_Max)	Mean ± SD	Median (Min_Max)	p
18-23-year-old n=7	1.01 ± 0.67	0.89 (0.24-1.94)	0.54 ± 0.44	0.31 (0.21-1.20)	0.07
33-50-year-old Elementary-Middle School Graduate n=7	0.45 ±0.39	0.32 (0-1.25)	0.39 ± 0.35	0.34 (0-1.09)	0.61
33-50-year-old Bachelor's/Master's-Doctoral Degree Holder n=7	0.86 ± 0.65	0.88 (0-1.68)	0.40 ± 0.33	0.42 (0-0.96)	0.24
Over 50-year-old Elementary-Middle School Graduate n=7	0.79 ± 0.47	0.96 (0.20-1.47)	0.53 ± 0.39	0.49 (0-1.24)	0.23
Over 50-year-old Professor n=7	1.02 ± 0.33	0.92 (0.61-1.49)	1.26 ± 0.49	1.19 (0.51-1.96)	0.31
MALE					
AGE/EDUCATION LEVEL	PREPARED SPEECH		UNPREPARED SPEECH		
	Mean ± SD	Median (Min_Max)	Mean ± SD	Median (Min_Max)	p
18-23-year-old n=7	1.70 ± 0.99	1.72 (0.58-3.46)	1.69 ± 0.65	1.66 (1.0-2.73)	0.73
33-50-year-old Elementary-Middle School Graduate n=7	2.30 ±1.83	1.68 (0.51-5.04)	1.81 ± 0.96	1.23 (0.90-3.37)	0.40
33-50-year-old Bachelor's/Master's-Doctoral Degree Holder n=7	0.88 ±0.24	0.85 (0.53-1.25)	0.82 ± 0.35	0.90 (0.17-1.14)	1.00
Over 50-year-old Elementary-Middle School Graduate n=7	1.20 ± 0.73	0.97 (0.52 -2.45)	0.86 ± 0.58	1.04 (0 -1.55)	0.24
Over 50-year-old Professor n=7	1.02 ± 0.52	0.77 (0.44-1.73)	1.09 ± 0.74	0.83 (0.28-2.34)	1.00

Mean; Arithmetic mean, SD; Standard deviation
*p<0.05 **p<0.01 ***p<0.001

As a result, the production of false starts was not influenced by the speech situation variable (prepared/unprepared) when the gender and education level variables were also taken into consideration.

Discussion

In the current study, the false start data have shown that age is not an influential variable in false start production for three different age groups (18-23, 33-50 and over 50) in the prepared speech situation. The unprepared speech false start data for four different age groups (4-8, 18-23, 33-50 and over 50) have shown that 4-8-year-old children produced more false starts compared to the other three age groups. Research have shown that the frequency of disfluency production is higher in child speech in relation to the normal language development processes (Ambrose & Yairi, 1999; Gordon & Luper, 1989 (qtd. in Eklund, 2004: 71); Yairi, 1982 (qtd. in Watson & Anderson, 2001: 146)).

In Levelt's speech production model, it is assumed that message generation and monitoring stages of speech production are controlled activities requiring the speaker's continuing attention, but grammatical encoding, form encoding, and articulating phases are automatic to a large degree. Therefore, although conceptualizing and grammatical encoding are interacting for the language-acquiring child, the mature speaker has learned what to encode when preparing a message for expression. (Levelt, 1989: 105). Due to the immature speech production mechanisms in children, they are deprived of this kind of automatic experience.

False start rate did not correlate with gender for 4-8 and over 50 age groups; however, 18-23 and 33-50-year-old males produced more false starts compared to females, there were variations in the speech situation, though.

In most studies males produced higher rates of disfluency compared to females. Johnson (1961) found that 17-24-year-old males' disfluency production rates were higher than females regarding three different tasks they were given (especially fort he task related to their future jobs). Lickley (1994) suggested that 25-45-year-old males had statistically higher disfluency rates compared to females. Related to false start type of disfluencies, there are no such research findings in the literature.

Branigan et. al (1999) investigated sociolinguistic/ psycholinguistic aspects of the issue and suggested that female speakers were more fluent if they had eye-contact with the respondent; however, the gender of the respondent did not influence disfluency production in general.

The findings of the current study indicated that 18-23 and 33-50-year-old females spoke more fluently in comparison to males. This assumption accords with the findings reported in the studies mentioned above. As Branigan et. al (1999) emphasized, there could be some underlying sociolinguistic and psycholinguistic factors regarding the findings of the current study. It is assumed that the social status of the speakers, the roles attributed to males and females in the society, and the structure of the society could also influence disfluency production. In line with this assumption, it also seems meaningful that false start rate has not correlated with gender for 4-8-year-old and over 50-year-old participants in the current study. It is obvious that sociological variables are not meaningful for the children as they are for young people and adults and due to over-50-year-old participants' experience and determined social status gained by age, their speech could be less affected by the gender variable.

In terms of the education level variable, over 50-year-old female professors had higher false start rates than elementary/middle school graduate females in the prepared speech situation. Professors' experience in planned speech situation related to their job requirements probably helped them suppress the production of speech disfluencies to some degree. Menyhárt (2003: 48) points out the negative correlation between the disfluency production rates and the experience in speech production. The researcher asserts that children produce more disfluencies than adults/old people due to the lack of speech experience which is partly due to age and partly to the peculiarities of the school system (the fact that schools provide little opportunity to practice speech).

In the current study, the education level variable influenced false start production rates just the opposite way for some participants. 33-50-year-old elementary/middle school graduate males produced more false starts in the unprepared speech situation compared to bachelor's/master's-doctoral degree holder males in the same age group. Participants with a lower level of education were probably not familiar to the prepared speech situations and/or a recorded face to face interview which could lead to more disfluency production related to higher anxiety levels.

As for the findings regarding the speech situation variable, there is no statistically significant difference between the prepared and unprepared speech situation false start rates. Related to this, it is important to point out some methodological issues. It is difficult to determine the extent to which each participant practiced the questions of the prepared speech situation before the interviews. This could influence the findings of the current study negatively.

Conclusion

According to the statistical analyses of the false start data in terms of **the age variable;**

In the prepared speech situations (excluding 4-8-year-old participants),

- Age was not an influential variable in the false start production rates of the participants.

In the unprepared speech situations,

- 4-8-year-old participants produced more false starts than the other age groups (18-23, 33-50, and over 50).

According to the statistical analyses of false start data in terms of **the gender variable;**

In the prepared speech situations(excluding 4-8-year-old participants),

- 33-50-year-old males produced more false starts than females in their age groups.

In the unprepared speech situations,

- 18-23 and 33-50-year-old male speakers produced more false starts than females in their age groups.

According to the statistical analyses of false start data for only 33-50 and over 50-year-old participants in terms of **the education level variable;**

In the prepared speech situations(excluding 4-8-year-old participants),

- Education level was not an influential variable in the false start production rates of the participants.

In the unprepared speech situations,

- 33-50-year-old elementary/middle school graduate males produced more false starts than bachelor's/master's-doctoral degree holder males in the same age group. Over 50-year-old female professors produced more false starts compared to elementary/middle school graduate females in the same age group.

According to the statistical analyses of false start data in terms of **the speech situation variable (prepared/unprepared) independently of the gender and education level variables**,

- Speech situation (prepared/unprepared) was not an influential variable in the false start production rates of the participants.

According to the statistical analyses of false start data in terms of **the speech situation variable (prepared/unprepared) regarding the gender and education level variables**,

- Speech situation (prepared/unprepared) was not an influential variable in the false start production rates of the participants even when the gender and education level variables were taken into consideration.

In consequence, most research in the related literature and the findings of the current study have supported the assumption that underdeveloped language production mechanisms in children due to the continuing language acquisition process result in more disfluency production in child speech compared to young people, adults, and older speakers.

As mentioned above, most of the research questioning the influence of gender on disfluency production have shown that men use speech disfluencies much more frequently than women. The findings of the current study regarding the 18-23 and 33-50-year-old participants seem to support that expectation. However, it is clear that gender variable influences false-start frequency in a different way for children and over-50-year-old speakers.

The findings of the current study reveals that factors such as education level and anxiety do not affect disfluency production in a simple way. Different variables could interact with each other in complicated ways.

Finally, there is a lack of research literature regarding the influence of speech situation variable on false-start frequency. Our findings show that it is not an influential variable on false-start production; however, the preparation level of the speakers for the prepared speech situation is an important concern.

Recommendations for Future Research

The initially stated overarching aim of this study is to investigate the influence of age, gender, speech situation and educational level variables on the production rates of false-start type of speech disfluencies. Our findings have shown that children produce more false-starts in face-to-face interviews compared to teenagers and adult speakers as expected. However, more research findings are necessary to investigate the false-start production rates of Turkish native speakers from different age groups in different genres

of speech such as narratives or daily conversations to support our assumptions regarding the age variable. Further research including the false-start production rates of 8-18, and 23-33-year-old participants could also provide more comprehensive findings. In terms of the gender variable, our results have shown that 18-23 and 33-50-year-old male speakers produce more false-starts in general. Further research is required to reveal the underlying psycholinguistic and sociolinguistic factors influencing false-start type of disfluency production in male speech for these two age groups. Gender of the listener should also be concerned in future studies. More research findings are also needed to reveal the complicated interactions among various variables such as the social statuses, anxiety levels and educational backgrounds of the participants. Our results have also shown that speech situation variable is not influential on the production rates of false-starts. Although the current study could serve as an important starting point for analyzing the influence of speech situation variable on false-start production, there are there are some methodological issues that should be concerned in further studies. Studies investigating the false-start production rates in more controlled prepared speech situations taking the preparation level of the speakers into consideration could contribute to our understanding of the issue.

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