Journal of the National Black Association for Speech-Language and Hearing

INFLUENCE OF AGE OF ACADEMIC L2 EXPOSURE ON MAZE USE IN BILINGUAL ADULTS

Rahul Chakraborty, Ph.D.
Texas State University
San Marcos, Texas

Celeste Domsch, Ph.D.
Texas State University
San Marcos, Texas

Maria Diana Gonzales, Ph.D.
Texas State University
San Marcos, Texas

ABSTRACT

This study examined the influence of age of academic second language (L2) exposure on mazes. Seventeen bilingual adults, varying in ages of initial academic L2 exposure and proficiency, formed two groups. Participants described three culturally-calibrated pictures in L2. From their narratives, pauses, repetitions, and revisions were measured. A time domain measure, empty pause, was sensitive to L2 exposure and proficiency. Fewer empty pauses were used by bilinguals with higher L2-proficiency. The influence of cognitive-linguistic processing was discussed. Overgeneralizing the findings is cautioned as the target languages, nature of the participants, language proficiency of the bilinguals, and the tasks may vary across studies.

KEYWORDS: Bengali; Bilingualism; Maze; Picture description; Proficiency; Pauses

INTRODUCTION

Historically, in spite of methodological variability across studies with bilingual speakers, there is a popular belief that an early age of exposure to a second language or L2 has an independent and isolated advantage on speakers' L2 production. While some studies have used maturational constraints as an explanatory device (e.g., Johnson & Newport, 1989; Long 1990; Pinker 1994), other studies have recommended against overdependence on the maturational account by reporting post-maturational age effects (Bialystok & Hakuta, 1999; Birdsong, 1992; Flege, Yeni-Komshian & Liu, 1999; Han & Odlin, 2004; Munoz & Singleton, 2011) and have argued against overgeneralization of the strong position of maturational account. Flege et. al., (1999) have suggested that the nature of the native language or L1 and L2, as well as the amount and quality of the input, are also critical variables in the ultimate attainment of native-like L2 (see, Birdsong & Molis, 2001). Singleton (1989) analyzed extensive data and suggested that, despite an initial advantage for the older learners in L2, younger learners were at an advantage in the long run. Regardless of the underlying mechanism involved in L2 speech production, it is usually accepted that early exposure to an L2 offers advantages to bilinguals in all linguistic tasks and even in minimizing production of mazes.

Bilingual adults offer an interesting test case for/of since they function at an advanced level of motor speech and L1 acquisition, but vary in L2 proficiency. Producing two languages might impose a higher cognitive load than acquiring and producing only one language (Edmunds, 2006; Gutiérrez-Clellen & Kreiter, 2003; Silva-Corvalan, 1994). For example, a story-telling task demands conceptualizing the narrative, and requires a substantial amount of attentional resources (Levelt, 1989). The complexity of the picture content, proficiency in the target language, and the nature of the task all likely impose a processing load on speakers' linguistic system. Any increase in processing load might disrupt the normal speech production mechanism, of which mazes may be an example. In this paper, we discuss the influence of L2 proficiency on maze production in bilingual adults.

Maze production

Mazes are interruptions in the forward flow of speech that occur in all speakers. Usually, mazes are described as "…a series of words (or initial parts of words), or unattached fragments which do not constitute a communication unit and are not necessary to the communication unit" (Loban, 1976, p. 22). Production of mazes may be used as an index of language development and proficiency (Loban, 1976). Mazes could be speaker-dependent, content-sensitive, language-specific, or even dialect-specific (e.g., Cruttenden, 1986; Nippold, 2007; Swerts, 1998). Production of mazes indicates a speaker's uncertain response to the demands of language processing and is a consequence of the speaker's covert repair activity while monitoring through the perceptual-loop, surfaced overtly through revisions, pauses, and/or repetitions (Levelt, 1989). Mazes are reported to be byproducts of three independent control functions: (1) attempt to control the context-ambiguity of the message; (2) attempt to control the establishment of syntactic and phonological patterns; and (3) attempt to control the relationship between a speaker's linguistic intention and overt utterances (Fletcher, 1990; Levelt, 1989; Navarro-Ruiz & Rallo-Fabra, 2001). As a consequence of repair activity in production adjustments, listeners hear pauses, repetitions, and revisions, affecting all possible linguistic constructs including phonology, morphology, syntax, and semantics (e.g., Lennon, 1990; Navarro-Ruiz & Rallo-Fabra, 2001; Postma, Kolk & Povel, 1990; Poulisse, 1999), along with the neurophysiological processes involved in speech production mechanisms (e.g., Fletcher, 1990; Levelt, 1989; Navarro-Ruiz & Rallo-Fabra, 2001).

Maze Use and Maze Types

All speakers produce mazes to some degree (Bedore, Fiestas, Pena, & Nagy, 2006; effect sizes ranged from .000001 to .063). Increased use of mazes might reflect not only language learning and production difficulty (Levelt, 1989; Levelt, 1999) but could also be a marker for lower proficiency in language and for impairment in language (Bedore, et al., 2006; Leadholm & Miller, 1995; Loban, 1963; Nippold, 1993). Bilinguals produce more mazes than monolinguals, more mazes in their non-dominant language (which is not necessarily their L2) (Sandoval, Gollan, Ferreira, & Salmon, 2010), and more in L2 than in their L1 (Gleitman, Gleitman & Shipley, 1972; Gollan, Montoya, Cera, & Sandoval 2008; Ivanova & Costa,

2008; Lennon, 1990; Poulisse, 1999; Rieger, 2003; Wiese, 1984).

However, mazes should not be always considered a marker of reduced language proficiency. To enhance interactive quality, media professionals prefer to speak spontaneously, with unusual hesitations deliberately infused during interviews, rather than reading from a list (Swerts, 1998). Mazes shed light on the production process and have critical value in the overall discourse function (Fromkin, 1973, 1980; Goldman-Eisler, 1968; Levelt & Cutler, 1983; Nooteboom, 1973). Words following mazes have low transitional probability, and thus have potentially high information value (Goldman-Eisler, 1968). For listeners, pauses, which are a type of maze, may offer pre-signals to an upcoming important linguistic content (e.g., Fox-Tree, 1995; Shriberg & Stolcke, 1996). Hence, 'spontaneous' speech should not be always equated with potentially 'functionally inadequate' speech (Kowal, Bassett & O'Connell, 1985) if it contains mazes, because mazes occasionally go unnoticed (e.g., Lickley & Bard, 1996).

Researchers have identified several types of mazes. For example, empty pause (i.e., silent intervals, two or more seconds in length; Nettelbladt & Hansson, 1999), filled pause (i.e., non-linguistic vocalization at the beginning of utterances or between words (Bedore, et. al., 2006)), sound repetition (i.e., repeating a phoneme), part-word repetition, whole-word repetition, phrase repetition, phrase revisions, lexical revisions, and grammatical revisions and connectors (i.e., repetitive use of conjunctions or time markers at the beginning of utterances).

Specifically, pauses and other hesitation phenomena are reported to be one of the detrimental variables that minimize speech intelligibility in a second language, and have also been linked to negative evaluations from listeners (Albrechsten, Henriksen & Faerch, 1980; Bosker, 2014; Pickering, 1999; Olynyk, d'Anglejan & Sankoff, 1987; Reed 2000). Mastering the language-specific use of pauses and hesitation phenomena, especially in L2, could be challenging (Nakajima & Allen, 1993; Swerts & Geluykens, 1994). From the listeners' perspective, pause length and pause placement are known to be associated with speech comprehensibility (Corley, MacGregor, & Donaldson, 2007; Fehringer & Fry, 2007; Nakajima & Allen, 1993; Swerts & Geluykens, 1994). However, mazes, as a critical index of linguistic processing in bilingual adults, have not received sufficient empirical attention in bilingualism (Cenoz, 1998) or speech-language pathology (Bedore et al., 2006).

Language-specific maze frequency has been reported by Edmunds (2006) where he concluded that the semantic load, the length of words, and the level of grammaticization have influenced the rate and type of mazes, as, most likely, speakers were trying to minimize their cognitive loads. Speakers who speak more than one language might exhibit some disadvantage in different language production constructs (Sandoval et al., 2010). Speakers might use mazes when they encounter difficulty finding target words or constructions.

Based on vocabulary knowledge and speech production disfluencies, researchers have reported a bilingual disadvantage in some work (Bialystok, 2001; Bialystok, Luk, Peets, & Yang, 2010; Gollan & Acenas, 2004; Gollan, Montoya, & Bonanni, 2005; Gollan, Montoya, & Werner, 2002; Gollan & Silverberg, 2001). For example, even though the main focus of her work is the advantage of bilinguals over monolinguals in other areas, in particular executive function, some studies (Bialystok, 2001; Bialystok et al., 2010) have reported lower vocabulary-knowledge-scores for bilinguals in each language than for monolingual speakers of that language across the lifespan. In tasks that require rapid lexical access and retrieval, disadvantages have also been documented for bilingual adults; they exhibited relatively slower response time and committed more errors in picture naming even in their dominant language, obtained lower scores on verbal-fluency tasks, experienced more tip-of-the-tongue statements and demonstrated more interference in lexical decision tasks (Michael & Gollan, 2005). The nature of utterance complexity and L1 versus L2 are also known to influence maze production with more mazes observed in complex sentences than in simple sentences in both L1 and L2, but more in L2 (Eckert, 1990; Hopper, 2014). Thus, in a bilingual population, pervasive disfluencies as a potential index of increased processing load are not rare (Bialystok, 2001; Bialystok et al., 2010); mazes could be reflections of such disfluencies.

Purpose of the Current Study

Adults with early L2 exposure have a different nature of linguistic experience compared to speakers with late L2 exposure. For example, the frequency of L2 input and motoric practice, neurolinguistic processes in L2 and

social usage of L2-related behaviors all clearly differentiate the two groups in the long run. Variations in linguistic experience induce variations in language processing, which in turn, could create potential variations in maze behaviors. The current paper explores the relationship between age of initial L2 exposure, L2 proficiency and mazing behaviors through spoken narratives of bilingual adults in their non-dominant language, L2.

The current study compared maze use in adults who have Bengali as their first language (L1) and English as L2 but who differed in their initial age of academic exposure (early vs. late) to L2, English. The type of mazes used may shed light on how the age of academic L2 exposure and L2 proficiency relate to dysfluencies. The Bengali – English bilingual adults offer an interesting test case as mazes used in English by speakers from the post-colonial environment of the Indian subcontinent have never been reported. Examining the following three questions, we attempt to understand how L2 proficiency and mazes interact in adult bilingual speakers: 1) Does frequency of maze use vary as a function of L2 proficiency? 2) Do patterns of specific maze type (e.g., pauses, receptions, revisions etc.) vary as a function of L2 proficiency? 3) Do patterns of maze behavior vary as a function of stimuli type?

METHODS

Participants

Seventeen bilingual adults participated (ages ranged from 24 years to 40 years; M = 28.71; 9 females, 8 males) with Bengali as their L1 and English as their L2. Of the seventeen unpaid volunteers, nine had a history of early academic exposure to English (beginning at elementary school age) and raw scores 17-25, M=20.6, SD=3.75 on the *Test of Adolescent and Adult Language-Third Edition* (TOAL-3) (Hammill, Brown, Larsen, & Wiederholt, 1994) that indicated high proficiency; henceforth they are known as the early/high group. The remaining eight participants had late academic exposure to English (after 12th grade) and low English proficiency, as indicated by raw scores on the *TOAL-3* (3-8, M=7, SD=2.73) (henceforth, the late/low group). The L2 proficiency scores were obtained to ensure that the two groups clearly differed in their proficiency scores and there was no overlap. All participants reported a history of normal speech, language, and neurological development, and passed a hearing screening at 20 dB at .5 kHz, 1 kHz, 2 kHz, 4 kHz and 6 kHz using pure tone audiometry.

The two groups were comparable in their academic qualifications (i.e., all were college graduates) and L1 experience. All were born and brought up in Kolkata, India, where Bengali is the official state language. The parents of all the participants were native speakers of Bengali. All participants were exposed to English at the same age in their school (i.e., from the kindergarten level). However, the two groups differed in their nature of English exposure in school. The early/high group had simultaneous exposure to Bengali and English from the kindergarten level as the content language in school for the early/high group was English; the language of instruction was English. For the late/low group until grade 12, Bengali was the content language or the language of instruction in school; the English language was only a course/subject that focused on grammar and prose. For the late/low group, the content language in academia became English only when they started at their undergraduate institution. Then the two groups arrived in the United States of America (USA) for their graduate studies. The early/high and the late/low groups were comparable in their initial age of arrival in the USA; they all arrived in the USA as graduate students from India. Their years of exposure to English in the USA were similar (Refer to Table 1).

Table 1: Participant Demographic Information.

Groups	Early/High	Late/Low
Academic Qualifications	Graduate Students	Graduate Students
L1 Experience	Bengali Since Birth	Bengali Since Birth
Parents	Native Bengali Speakers	Native Bengali Speakers
Initial Age of Arrival in the U. S.	20 to 25 Years	20 to 25 Years
Language of Instruction at School	English	Bengali

In a case history form, all participants chose Bengali as their most proficient language. Bengali proficiency was not formally measured. The use of a monolingual English-speaking control group was excluded because of

their inherent difference in language processing mechanisms and potential confounds with socioeconomic status, education, and life-experience. The research reported in this manuscript adheres to basic ethical considerations regarding the protection of human participants in research and has been approved by Texas State University's Committee on the Use of Human Research Subjects. Written consent was obtained where participants were told that their identity would remain anonymous and that they could withdraw at any time during the experiment.

Stimuli and Procedure

The participants described three separate picture cards in English, their L2. All pictures were drawn from the *Boston Diagnostic Aphasia Examination* (Goodglass, Kaplan & Barresi, 2001). The first was the "Cookie Theft" picture, depicting a scene from Western civilization in regard to the people pictured, the setting, and the actions in the picture. The second and third pictures were sequenced drawings of fables, often attributed to Aesop (Pinkney, 2000) that are common to both English and Bengali. The second picture is based on Aesop's fable (Pinkney, 2000) of the lion and the mouse, and shows a lion, who, after catching a mouse, decides to release him. In gratitude, the mouse reciprocates with an equitable life-saving gesture towards the lion. The third picture depicts Aesop's fable (Pinkney, 2000) of the fox and the crow, where the crow loses a piece of food when a fox tempts the crow to open its mouth and sing.

The participants were presented one picture card at a time. To ensure that the gradation of non-nativity in the pictures remained consistent across the participants, the pictures were presented in a fixed order of Cookie Theft (most foreign) first, the Lion and the Rat (fewer elements of non-nativity existed) second, and the Fox and the Crow (common across both L1 and L2 cultures) third. The participants were asked to describe the pictures by telling a story (i.e., "I am going to ask you to describe three pictures. Look at each picture. Spend as much time as you want. Describe what you see in the picture."). No time limits were given. The audio samples were recorded using PRAAT acoustic software (Boersma & Weenink, 2009).

Measures

Two graduate students used broad transcription to transcribe the audio samples. The graduate students had successfully completed coursework in phonetic transcription and language sample analysis prior to this project. There were 51 transcripts (17 participants x 3 pictures/sequences each). Two experimenters analyzed productions using PRAAT acoustic software. Along with the total number of mazes, productions were coded into three separate categories: time-dependent measures (i.e., empty pauses and filled pauses); measures for repetitions (sound repetition, part-word repetition, whole-word repetition, phrase repetition); and measures for revisions (phrase revisions, lexical revisions, grammatical revisions); connectors (repetitive use of conjunctions or time markers at the beginning of utterances).

The types of mazes coded were: empty pause, filled pause (e.g., Um* she's washing dishes), sound repetition (e.g., The [w*] window is open), part-word repetition (e.g., The [pl*] plates are in the sink), whole-word repetition (e.g., The [plates*] plates are in the sink); phrase repetition (e.g., [The plates are*] the plates are in the sink), phrase revisions (e.g., The [blates*] plates are in the sink), lexical revisions (e.g., The [sister*] mother is washing the dishes, mother → sister), and grammatical revisions (e.g., [She*] The mother is washing the dishes) and connectors (see Table 2).

Table 2: Examples of the Types of Mazes.

Maze type	Example
Empty pause	2+ seconds of silence
Filled pause	(Um) she's washing dishes.
Sound repetition	The (w) window is open.
Part-word repetition	The (pl) plates are in the sink.
Whole-word repetition	The (plates) plates are in the sink.
Phrase repetition	(The plates are) the plates are in the sink.
Phrase revision	The (blates) plates are in the sink.
Lexical revision	The (sister) mother is washing the dishes.
Grammatical revision	(She) the mother is washing the dishes.

The experimenters coded the total number of mazes and the frequency of individual maze types. Due to the expected variations observed in the duration of description and the number of morphemes used, frequency of each maze-type was converted into a percentage score. It should be mentioned that the word count included words in mazes but did not include filled pauses. These percentages were submitted for statistical analyses. Inter-rater reliability was calculated on approximately 20% of the dataset; for frequency of

mazes, it was 98.5% and for type of maze, it was 94.2%, averaged across all categories.

Statistical Analyses

Several repeated measures ANOVAs were performed. The two bilingual groups were compared for the total number of mazes used, the percentage of use of time-dependent mazes (duration of pauses), and the percentage measures based on frequency for repetitions and revisions. The between-group factors were bilingual group status (early/high vs. late/low). The within-group variables were types and percentages of mazes. The statistical significance level was set at .05.

RESULTS

Analyses of the data revealed that the two bilingual groups did not differ in their total number of mazes, F (1,15) = 0.02, p =.87, h_p^2= .001. The early/high group produced a similar number of mazes to the late/low group. There was no group-by-picture interaction observed, F (2, 30) = 2.84, p =.07, h_p^2= 0.16; across the three pictures, the two groups produced similar number of mazes.

The two groups differed in their use of time-dependent mazes (i.e., empty and filled pauses), F (1, 15) = 4.67, p = .04, h_p^2= .24. The early/high group used a significantly smaller percentage of pause time than did the late/low group. A group by pause-type interaction was observed, F (1, 15) = 4.97, p = .04, h_p^2= .24. Post-hoc testing (Tukey HSD) revealed that the early/high group used a lower percentage of empty pauses than the percentage of empty pauses used by the late/low group; the two groups did not differ in the percentage of filled pause use. The early/high group used similar percentages of empty and filled pauses and so did the late/low group. When repetitions and revisions were analyzed, the early/high and the late/low groups did not differ in their percentage of repetition use, F (1, 15) = 1.4, p = .25, h_p^2= .08. Similarly, the two groups were not different in their percentage of revisions, F (1, 15) = 0.02, p =.88, h_p^2= .001. In summary, the two proficiency groups did not differ in their total number of mazes. However, they differed in their use of empty pauses. The nature of the picture stimuli did not influence variations across the two groups (refer to Figures 1 & 2).

Figure 1. Percentage of pause time used by the early/high (filled triangle) and late/low (filled circle) for three pictures; left panel P1 – cookie theft, middle panel P2 –the Lion and the Rat; right panel P3 - the Fox and the Crow. Error bars represent standard errors. EP – empty pause, FP – filled pause.

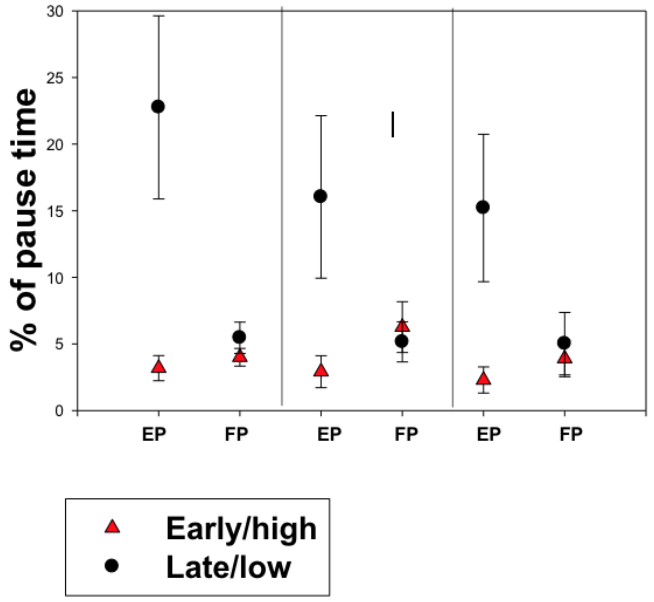
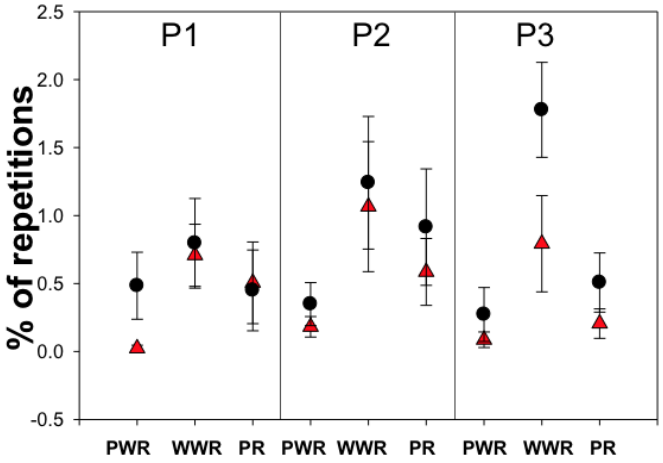


Figure 2. Percentage of repetition used by the early/high (filled triangle) and late/low (filled circle) for three pictures; left panel P1 – cookie theft, middle panel P2 –the Lion and the Rat; right panel P3 - the Fox and the Crow. PWR – part word repetition, WWR – whole word repetition, PR - phrase repetition. Error bars represent standard errors.



DISCUSSION

The two proficiency groups were similar in their mazing behaviors, except in their use of empty pauses. While some research reports have suggested that proficient speakers of a target language use fewer mazes (Bedore et al., 2006; Gleitman,et al., 1972; McKee, Rispoli, McDaniel, & Garrett, 2006; Navarro-Ruiz & Rallo-Fabra, 2001), others have not noted significant differences between proficient and less-proficient speakers (Bedore et al., 2006; Collier, 1989; Hakuta, Goto Butler, & Witt, 2000; Jacobsen & Schwartz, 2005; Nippold, 2007). Nippold (2007) noted that mature speakers sometimes produced excessive mazes in their L1, despite having advanced language skills. This finding of "more fluent, less hesitation" is quite prevalent in the research (Clark & Fox-Tree, 2002; Hilton, 2009, Rispoli, 2003).

Historically, the production of pauses has been used as a window to understand speakers' planning mechanism and is also considered an overt marker of a potential overload of the production system (Goldman-Eisler, 1968, 1972). However, it should also be noted that speakers do not pause every time they plan their productions and all pauses cannot be a result of an underlying language planning mechanism (Garman, 1990). A linear interpretation is discouraged since pauses could be a bio-physical operation to allow influx of air into the respiratory subsystem; they could be a psycho-cognitive device that speakers use to plan their speech or could even be an example of speech-acts serving a communicative function to help listeners identify boundaries in the outgoing chain of syllables. Hence, the difference in the use of empty pauses observed in this study could suggest any of the aforementioned possibilities.

In the field of psycholinguistics, researchers have mainly explored the cognitive functions of pauses and reported that pauses indicate time-outs while speakers search for the next linguistic element or for the next relevant idea (Christenfeld, Schacter & Bilous, 1991; Goldman-Eisler, 1968, 1972; Rochester, 1973). Presence of pauses has been associated with the difficulty of the task-in-hand or the complexity of the content (Schachter, Christenfeld, Ravina & Bilous, 1991). Overall, temporal mazes, such as pauses, are considered symptoms of difficulties encountered in processing and planning (Kenny,1996). The late/low speakers of the current study might have used more empty pauses due to the potential processing load imposed on them due to the task-demand, while accessing specific and relevant permissible linguistic constructs and satisfying the semantic relevance requirement.

The results of the current study also suggested that the empty and the filled pauses could be selectively influenced by age of academic L2 exposure or proficiency. The underlying mechanisms are potentially different for empty and filled pauses. For example, Cenoz (1998) examined silent and filled pauses that were hesitation pauses and excluded the ones occurring at grammatical junctures. She reported that two-thirds of the observed pauses were silent and the remainder were filled pauses. Different underlying processing for different types of pauses was also supported, as Cenoz (1998) found a wide variation in the use of filled pauses, and fewer variations in the use of silent or empty pauses. Thus, consistent with the existing literature of age of initial exposure to an L2 (indexed by academic exposure) and its influence on various aspects of language production, age-related influence is also observed in nonlinguistic aspects, such as mazes.

Even though both types of pauses tend to occur in the same positions within sentences (Garman, 1990), from a functional perspective, empty and filled pauses reflect different underlying mechanisms. Empty pauses reflect

the cognitive difficulty associated with the target task, while filled pauses reflect affective states, such as anxiety (Goldman-Eisler, 1968).

The higher frequency of empty pauses observed in the productions of the late/low group might suggest cognitive difficulty, potentially associated with the four stages of speech: planning, conceptualizing a message, formulating the appropriate linguistic forms, and articulating them (Levelt, 1989; Bates & McWhinney, 1987). These stages un simultaneously and prevalence of empty pauses could potentially mark a disruption in any or all of the stages (Clark & Fox-Tree, 2002).

In future studies, it would be interesting to examine the constituents before and after the empty pauses to determine whether specific locations of pause correlate with L1 and L2 proficiency, since time-dependent disfluencies such as pauses are more frequent at the beginning of the constituents than in other positions (Clark & Wasow, 1998; Shriberg, 1994). Studies using event related potentials (ERP) could explore the underlying neurolinguistic processes in production of pauses between utterances and within utterances. We also need to explore language-specific maze use to see if mazing behaviors are due to bilingual status or due to characteristics of the spoken languages (Bedore, et al., 2006).

Conclusion

The objective of this research was to examine influence of age of academic L2 exposure and proficiency on maze productions of bilingual adults coming to a native English-speaking country as students from a post-colonial country. In the initial question, we asked if the overall frequency of mazes is influenced by age of L2 exposure and L2 proficiency of the bilinguals. Our results suggested that age of academic L2 exposure and proficiency did not induce a discernable influence on the overall frequency of maze productions in the two groups of bilinguals. However, the second issue we investigated pertained to the relative distribution of different mazing behaviors and there we observed that, only for the production of empty pauses, the two proficiency groups differed; the early L2 exposed and high L2 proficiency group used a relatively smaller number of empty pauses. As a third outcome, we did not find that any specific picture stimulus was more sensitive than others to capture the proficiency difference between the two groups. Overall, the types of mazing behavior appeared far more complex and reticulated than what we originally assumed. Clearly, the maze-proficiency relationship needs further exploration, as variable findings across studies are reported.

Thus, the results of this study should be interpreted with specific reference to the participants, the tasks, and to the method of analyses. Future studies should include more participants from India with varying L1 backgrounds but English as their L2, thus, minimizing the possibility of Type I and Type II errors. Adding expository samples, delayed imitation tasks, and tasks demanding even more complex linguistic processing might reveal a broader picture of the underlying linguistic mechanisms. Including two monolingual control groups, one for English and the other for Bengali, might offer us better reference platforms. With the increasing number of world Englishes (Schneider, 2014), it is critical to understand how different dialects of English interact with the local L1 in bilingual speakers.

Acknowledgments

Thank you to the following graduate students for transcription and coding: Cynthia Galicia, Lindsey Heffron, Kendall Fritsch, and Katy Williamson. Thanks also to Dr. Eugene J. Bourgeois II, Provost, and Dr. Ruth Welborn, Dean of the College of Health Professions at Texas State University, for research support.

Declaration of Conflicting Interests

The Author(s) declare(s) that there is no conflict of interest.

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