

## Language Attrition Spectrum (LAS) A Case Study Of The Relation Between L2 Attrition And Language Preferences

Khalaf Alharbi

### Abstract

*This longitudinal study analyzed the language production of a bilingual returnee child who moved from Saudi Arabia to the US at age two and returned at eight. The goal was to understand if the Language Attrition Spectrum (LAS) Hypothesis influenced the child's ability to switch between languages. Over 48 weeks, data were gathered via surveys and mini-video clips recorded by the parents, spanning periods before, during, and after the COVID-19 pandemic. Analysis using Minitab Software showed variances in verbal production between the first (L1) and second language (L2). L2 usage increased during quarantine due to reduced L1 interactions with peers but decreased post-quarantine. The LAS proves to be an instrumental hypothesis for pinpointing variances in language attrition, pushing forward the comprehension of language preference shifts. The primary limitation was its smaller sample size due to resource and cultural constraints.*

**Keywords:** *Language Attrition Spectrum, language preference, L1 & L2, returnee child.*

### Introduction

The present study examines the language production of an eight-year-old female returnee who is bilingual in English and Arabic. The participant resided in Saudi Arabia until the age of two, after which she relocated to the United States. The objective of this study is to explore the patterns of L1 and L2 language usage and determine whether language preferences can be affected by reversal. The primary emphasis lies in the examination of the variability in language usage that occurs within the context of everyday interpersonal exchanges. Most importantly, the study proposes L<sup>1</sup>anguage Attrition Spectrum Hypothesis to find a legitimate explanation for the shifting of the subject's L1 (Arabic) and L2 (English) usage in an environment of relatively limited exposure during COVID-19, with Arabic (L1) as the dominant societal language and aims to determine if LAS applies to determine the reversal of language preference.

The data collection began the month when she returned from the US to Saudi Arabia and lasted 12 months, and this period fell during the COVID-19 pandemic quarantine. Linguistically, it appears as though the cognition of a bilingual child is caught between two opposing forces, much like a feather caught in overlapping winds. The child is the feather, and the languages are the conflicting winds. To fit in the native community, the child needs to interact in L1 throughout data collecting. Due to the COVID-19 pandemic, her daily routine was disturbed and she had fewer opportunities to connect with her peers, reducing her exposure to her L1. The child reactivated L1 months following the quarantine curfew. I studied the child's oral communication between her dominant L2 and L1 throughout the year. The tokens of this work have been gathered naturally, i.e., during her playtime with her sibling.

There have been studies conducted on the decline of L2 among returnees (Flores, 2010, 2015; Tomiyama, 1999, 2000). However, no research has been conducted on the trends of oral speech production in Arabic- English bilingual returnee children. The present study addresses a notable gap in the current body of literature by introducing the LAS Hypothesis, which aims to provide a thorough explanation of the mechanisms of language preferences underlying L2

attrition in bilingual returnee children. This study objectifies that the impact of language preferences on the attrition of L2 may be substantial. The occurrence of code-switching, which refers to the alternating use of different languages, is often seen as an initial sign of language loss. Over a period of time, when the child chooses one language over another, this fluctuation stabilizes. Although the current stabilization does not instantly indicate attrition, consistent reduction in the use of any of the languages may eventually lead to attrition.

## **Background**

### **Language attrition**

Language attrition, a relatively new field in applied linguistics, has garnered significant attention from researchers (Wei, 2014). Defining language attrition precisely refers to language loss or deterioration. For instance, Wei (2014) believes language attrition is "[T]he reverses the process of language acquisition" (p.1603). This statement suggests that when learning a new language, there may be a tendency to forget or lose previously known languages. It is common for individuals to experience this as they acquire a new language, according to Flores (2015). Language attrition is defined as a "non-pathological degradation" (Schmid et al., 2004) "of a previously acquired native language" (Karayayla & Schmid, 2019. p.107), and it happens regardless of whether a person loses any linguistic characteristics or abilities in their L1 or L2. Non-pathological language attrition occurs when bilinguals do not use their L1 or L2 for an extended period. As a result, they forget some aspects of that language when pressured to use it again. The need to understand what occurs when a language is lost and how a speaker perceives the language deterioration lies at the core of language attrition research.

Researchers argue regarding the effects of attrition on linguistic knowledge and skills since it could be the form or structure of language that might be influenced among bilingual people and children. Some studies investigated how different linguistic components, such as morphology, syntax, phonology, or lexis, undergo the shift because of language attrition. Flores (2019) examined the oral speech of Portuguese heritage speakers who grew up in Germany but later moved to Portugal during their childhood or adolescence. She analyzed oral speech data and examined how childhood bilingualism may alter over time. The findings showed that the length of exposure to German predicted the production accuracy rate of nominal inflection among the 14 speakers, implying that their morphological knowledge had not fully stabilized due to the return. A different dataset from a heritage speaker who returned to Germany after living in Portugal for four years and was immersed in the language again showed a considerable decline in incorrect case, gender, and plural marking, indicating that the attrited linguistic knowledge may reactivate with time.

There is much evidence that receptive skills are lesser affected by attrition than the productive skills of bilingual speakers (Schmid & Mehotcheva, 2012). However, the degree and level of the speakers may lose their productive skills still need to be determined. Some linguistics consider language attrition as the deactivation of the first learned linguistic skill or aspect is forgotten earlier than later ones (Schmid, 2011). Critically, Bardovi-Harlig and Stringer (2010) do not validate this; instead, the competence of the learned linguistic skill or component is the critical criterion in attrition of that aspect. If the speaker has advanced command of linguistic knowledge, it is less likely to deteriorate (Bardovi-Harlig & Stringer, 2010). They developed a general model for assessing L2 attrition and retention by evaluating various variables involved in the process. The set of variables was defined as variables in the proposed model, which can change over time in reaction to shifts in discrete periods. These fluctuations occur during the general process of language acquisition and attrition. One of the parameters determining language attrition is the "frequency of reinforcement" (p. 9). When an advanced or sophisticated level of language use is achieved, it may become less vulnerable to, or perhaps resistant to, attrition. Bardovi-Harlig and Stringer's (2010) general model calls for future research in L2 attrition, and this study is an attempt to respond to this call.

Empirical studies demonstrated that language attrition occurs in monolingual and bilingual speakers with varying degrees of effectiveness (Schmid & Köpke, 2017). Nonetheless, the underpinning causes that impact or trigger language attrition are numerous and complex and should be explored in future research. To begin with, age is an essential variable that dramatically affects language attrition in bilingual speakers (Karayayla & Schmid, 2019). For instance, Flores (2010) investigated language attrition in German-Portuguese bilinguals by employing the only distinctive variable, i.e., age. The participants were divided into two groups. One consisted of early childhood (between ages seven and ten), and the other group had eleven or older participants when they moved to a foreign country (Germany). She concluded that the early childhood group showed attrition signs more than the older group suggesting that language loss in early childhood might be due to insufficient input to L2.

Another factor to consider is a complete change in the speaker's social environment and that is also relevant to the present study. For instance, migration to other nations is a typical phenomenon for various reasons. Monolingual children who immigrate with their parents eventually become bilingual in a foreign country. These immigrant children naturally acquire the host language of that country, and it becomes their dominant language because of the conducive environment and enormous exposure to the host language (Flores, 2015). As a result, they can speak the host language easily and fluently like a native speaker without much effort. However, research suggests that L2 acquisition may also lead to L1 attrition in younger children. Therefore, the language status may be reversed upon returning to the original country (Flores, 2015). Furthermore, it is observed that bilingual returnee children are more vulnerable to divergence because they want to access the comfort level of interaction with their peers in the native community. For example, bilingual returnee children may frequently switch between languages to adapt to the new surroundings they would encounter in their homeland.

### **Bilingual development and language preference**

It is vital to explore L2 acquisition and bilingual development within the boundaries of L1 and L2 to understand the complicated process of attrition in bilingual speakers. The process of second language acquisition and bilingual development may clarify how the system of L1 and L2 works independently or somehow dependent on each other and illustrate the factors that may impact the language system externally or internally. Whether L1 or L2, Paradis (2004) asserts in the incidental acquisition of linguistic competence that is implicitly stored, automatically used and supported by procedural memory. Implicit linguistic competence, metalinguistic knowledge, pragmatism, and motivation are at least four of the brain's mechanisms needed for acquiring and using a language. He believes that both monolingual and bilingual speakers use all four systems. Previous research demonstrates that once an L2 is learned, it cannot be isolated from the speaker's L1 and that both language systems exist side by side (Schmid & Köpke, 2017). The development of bilingual knowledge and its processing involves adjustments to the first language system (Schmid, 2011). Because of the two-way interaction between languages, bilinguals process their native language differently than monolinguals (Yilmaz & Schmid, 2018).

Moreover, bilingual children may sometimes demonstrate different language mixing or code-switching patterns, but there is no qualitative differentiation between mature and young bilingual speakers (Lanza, 1997). Empirical research showed that attrition is more pronounced in children than adults because children, particularly young ones, often have an imperfect or incomplete grasp of their L1. Language attrition also becomes noticeable in school-going young learners when L2 is the dominant language, especially in academic settings where they are exposed to one of their languages.

Language preference is an aspect that has yet to be extensively considered in the research of child or adult bilingualism, and even not for young bilingual returnee children (Lanza, 1997). A speaker with a balanced amount of both language proficiency is called a balanced bilingual speaker. Studies show that in real life, such speakers have been rarely found because one language is preferred one way or another (Daller et al., 2011; Meisel, 2019; Olsson & Sullivan, 2005). From the language preference standpoint, Olsson, and Sullivan (2005) believed that

dominance in a bilingual's language is "bilingual preference" (p. 1750) that is a bilingual speaker may have one dominant language depending on the speaker's interactional context. Meisel (2019) indicated a similar view, "the dominance of one language is a reflection of a speaker's environment, and this is rarely balanced concerning the presence of the two languages." He argued that the frequent change in the social context makes it difficult for bilingual speakers to maintain balance in their languages. Any changes throughout a bilingual speaker's lifetime could impact which language prevails, which might continue changing repeatedly. Therefore, Meisel (2019) asserted that dominance is "a highly variable factor" (p. 135) that needs to be explored by future research.

### **Language attrition in young bilingual returnees**

Kubota et al. (2021) described returnees as a subset of bilinguals who, in most cases, migrate from their original birthplace and spend a significant period of their early lives in a foreign culture before returning to their hometown. However, studies focusing on returnee child's language attrition are few in line and show inconsistent findings. Flores (2015) pointed out that in childhood, L1 or L2 language attrition is "a socio- and psycholinguistic phenomenon" (p.1) that takes place if there is a substantial shift in the input degree and type of L1 or L2. On the contrary, the present study considers internal factors like freedom of choice and what changes in language usage patterns would occur if the user shifted between the L1 and the L2 without any external pressure.

Tomiyama (2000) reports a longitudinal study of a Japanese male returnee child's L2 attrition in an L1 environment. The research provides a macroscopic perspective of the language attrition trend across 32 months, separated into two phases. The first stage (Tomiyama, 1999) lasts from the second to the nineteenth month following the subject's return, whereas the second stage (Tomiyama, 2000) lasts from the twentieth to the thirty-third month of the returnee. The investigation recorded language behavior patterns in the subject's linguistic subsystem. The results indicated divergent attrition tendencies in the subject's speech output, and the subject's performance fluctuated throughout the study period. However, some linguistic aspects, like morphology, showed that language attrition had occurred while vocabulary production and fluency were consistent, and no apparent changes were recorded. In this regard, Paradis (2004) mentioned that vocabulary has different traits than the rest of the linguistic component, and the same assumption could be ruled out on language attrition.

Likewise, Flores (2015) investigated the loss of L2 in a bilingual returnee child who moved back to her home country (Portugal) at nine from Germany. Her study analyzed the language dominance shift from the L2 to the L1. After five months of limited exposure to L2 (German), the subject's speech showed signs of language attrition. It was recorded that the subject suffered severe word retrieval problems after 18 months of her return, and she could not construct entire sentences in her L2. Flores (2015) corroborated previous research findings that childhood is critical for losing proficiency in the target language. If a child loses contact with her L2 in childhood, the L2 skills deteriorate over time. However, a point relevant to the LAS spectrum in this study, Flores (2015) believed that a significant movement of the L1 or L2 environment might result in the limited input of the target language, which can gradually deprive the speaker from L2 linguistic skills to any degree or form. Thus, it can be concluded that the speaker's environment plays an inevitable role in childhood attrition.

Most recently, Kubota et al. (2021) is the first study to analyze both languages of bilingual returnee children, indicating that various background factors influence the shift in L1 and L2 linguistic abilities in returnee children. Kubota et al. (2021) reported that L1 and L2 micro- and macrostructure did not change during the study. They concluded that L2 retention varies from person to person because of the differences in L2 microstructure caused by different levels of exposure. Even though the microstructure was reintroduced into the L1 environment, those who continued to learn it improved their L2 skills (English). Tomiyama (1999, 2000); Flores (2015); Kubota et al. (2021) mentioned underpinning factors in language attrition which may

vary in nature; nevertheless, the returnee bilingual child's freedom of choice to select a language in everyday settings has not been examined. For that reason, along with other perspectives on language attrition, the current study aims to fill this gap by analyzing bilingual preferences to choose a language to communicate as a free choice and regard it as an internal variable that might (not) promote the dominance of that language.

### Language Attrition Spectrum (LAS) Hypothesis

In this research, the author hypothesizes that a bilingual person faces a sort of challenge, a transient state, which is a tug-of-war between the acquisition and attrition levels of L1 and L2. The author calls it the "Language Attrition Spectrum." LAS coordinates the bilingual's ability to retrieve his native or foreign linguistic components.

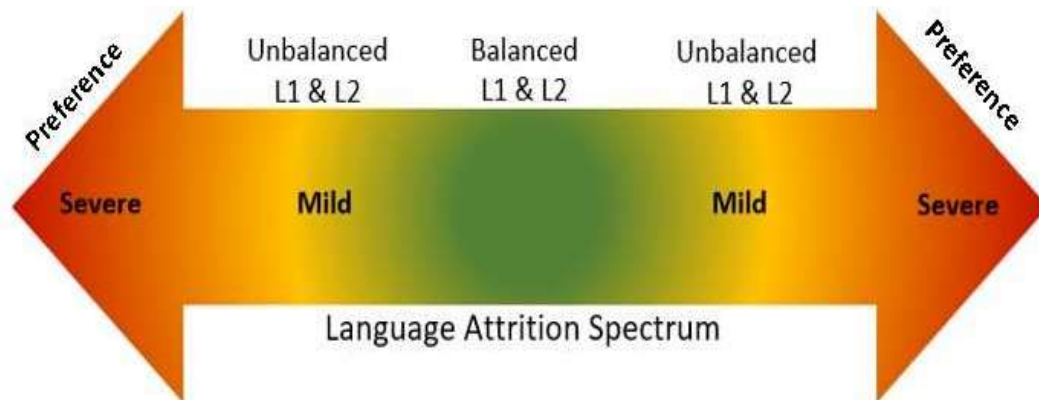


Figure 1. Language Attrition Spectrum

Figure 1 Alt text. A visual representation of the 'Language Attrition Spectrum' illustrating the fluctuating balance between L1 and L2. The spectrum, color-coded, indicates various levels of language presence. Arrows signify the opposing dynamics of L1 and L2 attrition, showcasing a bilingual person's transitional status between acquiring and forgetting linguistic components of both languages.

The hypothesis assumes that the LAS may have different levels, like the spectrum, according to the situation in which it occurs, as shown in Figure 1. For example, a bilingual may display a presence in one of the LAS regions represented by different colors when reducing language usage, either L1 or L2. However, the attrition dynamics of L1 and L2 run opposite, as shown by the arrows in Figure 1.

It is to say, for example, if a bilingual abandon only L1 totally, the LAS may be severe to overcome; similarly, if they rarely utilize L2, the same process could occur. It must be noted that the divisions are loosely based and may only be used for reference. In addition, the most remarkable and intriguing region in this figure is the LAS flat area, shown by the green color. The author suggests that this LAS region could apply to bilinguals who have not been employing L1 and/or L2 at all or have been employing both L1 and L2 at a similar frequency but much less than an average bilingual would do. To explore the issue, the study addresses the following research question:

RQ 1: How does the fluctuation of oral speech in a bilingual returnee child relate to language attrition regarding language preference and the ability to reverse fluctuations?

### Subject Profile

The subject was an eight-year-old female child born in Saudi Arabia who had immigrated to the US when she was two. Her exposure to English began almost in the same period. She had three family members and her parents were fluent in both Arabic and English. However, her father spoke in English usually, whereas her mother employed Arabic with her during daily

conversation. Her younger sibling used English as the medium of communication, although he possessed a toddler-level L2 acquisition, which is necessary to consider. In short, the subject often received a similar amount of L1 and L2 in family communication.

Given that, she could be considered a bilingual speaker at the onset time after her return to Saudi Arabia. The parents' survey responses showed that she was an excellent Arabic speaker.

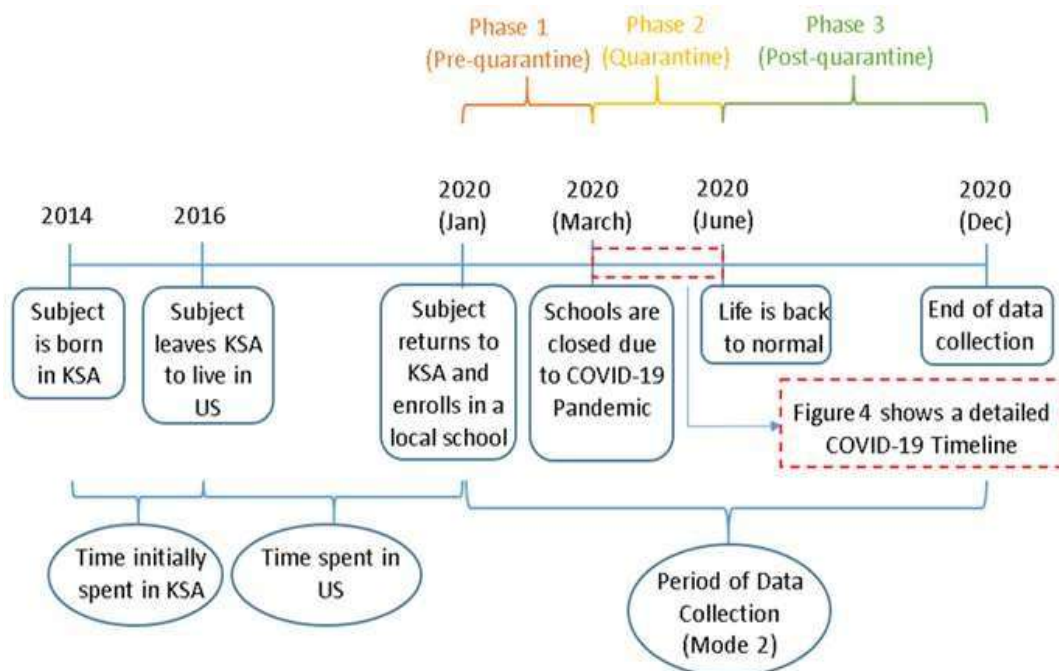


Figure 2. Subject Profile & Data Collection Timeline (not according to scale)

Figure 2 Alt text. A timeline showcasing the subject's bilingual journey from early life, and her return to Saudi Arabia. The chart highlights key linguistic interactions and influences, detailing her exposure to both L1 (Arabic) and L2 (English) amidst familial settings and the three phases: pre-quarantine, during quarantine, and post-quarantine.

Figure 2 portrays the timeline of the subject's profile linked with the data collection phases. During her six-year stay in Indiana state in the United States, she attended a local childcare facility until age four, kindergarten until six, and public school until she was eight. Her classmates were all English speakers and English (subject's L2) was the dominating language at school. Her parents noted that she seldom played with Arabic-speaking children. Therefore, during her stay in the US, her social life revolved around the L2 environment.

The subject returned to her homeland, Saudi Arabia, at eight. She enrolled in a local Saudi school in Riyadh, the capital of Saudi Arabia. However, shortly after joining, the outbreak of the COVID-19 pandemic happened, and the Saudi Government announced school closure. The subject attended the school on campus only for about two months, and then the school reverted to online classes. It should be noted that Arabic (the subject's L1) was used as the school teaching medium. Although L2 input in the environment decreased, her use of L1 and L2 when conversing with family members remained the same.

### Materials and Methods

A Mixed Methods (MM) research approach, also known as a multi-stage research design, was applied for data collection and analysis to understand and generate conclusions for the present case, which is the reversal of language preference and fluctuation of oral speech by the subject. MM designs purposefully integrate qualitative and quantitative data and analytical techniques to go beyond the results supported by either a qualitative or quantitative method alone (Creswell & Plano Clark, 2011), providing a more panoramic view of the problem.

The data for this study is collected in two modes. The first mode is through an open-ended survey filled out by the subject's parents (Appendix 1). The second mode of data elicitation took place at her house. The parents were requested to record short videos (i.e., at least one video during playtime for the subject and her younger brother every week for an entire year). Her father recorded the first video in the first week of the family's arrival to her homeland Saudi Arabia, while the last one was taken in week 48. As a precaution, the parents were instructed not to interact with the children during the recording time to avoid external factors affecting the subject's language preference.

Seventy-six video clips were captured, compiled, interpreted, and evaluated during the study period. Their length varied because there was no set time or duration for the video sessions. The most extended token is 2:57, while the shortest is 48 seconds. During the week, particularly during the quarantine, the parents often submitted more than one video. Although no oral or written tests were conducted in this study, the data gathered from the real-time observations and video clips of the subject's communication were quantified and analyzed through MiniTab Software.

The elicited data appears in three separate phases (Figure 2). The pre-quarantine phase began when the subject returned to her L1 environment. Then, the quarantine phase covered the period when she was in the COVID-19 quarantine with her family. Finally, the post-quarantine phase was when the subject returned to her daily life after the pandemic. The COVID-19 timeline plays a crucial role in the present study, as demonstrated in Figure 3, and referenced in Figure 2.

The researcher transliterated all the tokens to make the data accessible and understandable for analysis. Furthermore, a trained and experienced (Saudi) university professor in linguistics validated the transcription's accuracy. Transcribing the subject's speech production in each clip helped the researcher decide which language she intended to use.

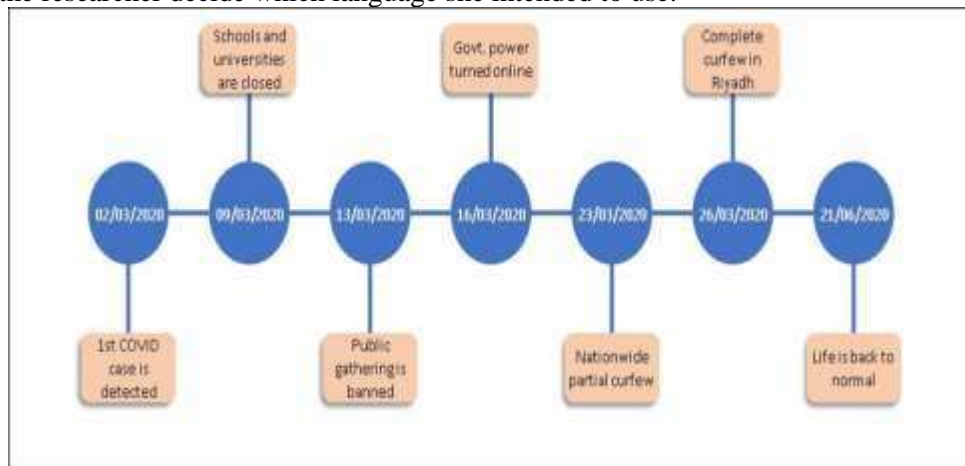


Figure 3. COVID-19 Pandemic Timeline in Saudi Arabia

Figure 3 Alt text. A chronological representation of the COVID-19 pandemic timeline in Saudi Arabia, marking the date of the first detected case through to the point of life normalizing. The timeline provides a clear visual of key pandemic milestones in the region.

## Results

This longitudinal study tracks the oral speech production of the subject for 48 weeks. The data interpretation is as follows:

**Table 1** A summary of weekly no. of L1 words spoken with examples for each month/quarter of the year.

Quarter	Month	No. of L1 words spoken weekly	Examples		
Quarter 1	January	Week 1	0		
		Week 2	1	la..la (no..no)	
		Week 3	2	La sediqti ismaha Nouf. Right?	
		Week 4	3	(My friend's name is Nouf. Right?)	
	February	Week 1	2	La tswih e'ndna Abadan	
		Week 2	4	(Do not do it here at all.)	
		Week 3	4	Ant bes jebtah hina	
		Week 4	3	(You just brought it here.)	
	March	Week 1	4	Ana asawi Rainbow (I am doing a rainbow.)	
		Week 2	5	Ant bas rameth kithaa	
		Week 3	3	(You just threw it like this.)	
		Week 4	2	Ya waylik.. talmas	
	Quarter 2	April	Week 1	2	Ant hina Okay!
			Week 2	1	(Be here, Okay!)
			Week 3	1	Leave it haggi leave it
			Week 4	0	(Leave it, it is mine, leave it.)
May		Week 1	1		
		Week 2	0		
		Week 3	1	Maby (I don't want to.)	
		Week 4	0		
June		Week 1	0		
		Week 2	0	Ant go there. (You go there)	
		Week 3	0		
		Week 4	1		
Quarter 3		July	Week 1	2	Ta'aal (Come over)
			Week 2	5	La tkharebha
			Week 3	7	(Don't ruin it)
			Week 4	5	Basawi lik sayarah.
	August	Week 1	6	(I'll make you a car)	
		Week 2	9	Difaha lwara	
		Week 3	7	(Push it back)	
		Week 4	14	Sediqti tehibbaha	
	September	Week 1	10	(My friend loves it)	
		Week 2	9	Tra ba'alim my mom.	
		Week 3	7	(I'll tell my mom)	
		Week 4	14	Mo' ala kaifi ant.	
					(It's not up to you.)
					Ana akbar menik.
					(I'm older than you.)
					Rooh jibha



<b>Quarter 4</b>	October	Week 1	18	(Go grab it.)
		Week 2	22	Maby al'ab ma'ak. (I don't want to play with you.)
		Week 3	17	Yalla nil'ab barra.
		Week 4	23	(Let's play out.)
	November	Week 1	16	Imsikha min henak.
		Week 2	21	(Hold it from there.)
		Week 3	26	Whain hathik althnyah?
		Week 4	24	(Where is the other one?)
	December	Week 1	27	Tehib hathi aw hathi?
		Week 2	24	(Which one do you love?)
		Week 3	29	Mo ma'ay wallah. (I swear I don't have it.)
		Week 4	21	Walla la a'allim mama. (I swear I'll tell mom.) Khalihum mo haggatik. (Leave them those are not yours.) Barooh ajim' asir. tabi? (I'll go grab juice, do you need some?)

## Observations

### 1<sup>st</sup>-12 month

As stated, the subject acquired Arabic (L1) at home in Saudi Arabia until she was two. After moving to the US with her parents, she started using L2. She learned English as a second language effortlessly with environmental exposure till she returned to Saudi Arabia at eight. The researcher closely observed and examined 72 video clips of the gathered data, as depicted in Table 1.

### Summary of monthly data collected in the form of video clips

**Table 2.** Monthly summary of L1 words spoken.

Month	Mean	SE Mean	SD	Minimum	Maximum
Jan	1.500	0.645	1.291	0.000	3.000
Feb	3.250	0.479	0.957	2.000	4.000
March	3.500	0.645	1.291	2.000	5.000
April	1.000	0.408	0.816	0.000	2.000
May	0.500	0.289	0.577	0.000	1.000
June	0.250	0.250	0.500	0.000	1.000
July	4.75	1.03	2.06	2.00	7.00
Aug	9.00	1.78	3.56	6.00	14.00

Sept	10.00	1.47	2.94	7.00	14.00
Oct	20.00	1.47	2.94	17.00	23.00
Nov	21.75	2.17	4.35	16.00	26.00
Dec	25.25	1.75	3.50	21.00	29.00

The monthly summary of mean L1 words spoken (Table 2) shows an initial increase. However, as the subject went into quarantine in March, the mean started to decrease, indicating that she was not incorporating L1 into her communication much at this stage. However, as life returned to normal in the second last week of June, the L1 preference for the subject's environment urged her to employ L1 words in her spoken language. The increasing trend continued towards the end of the year, with the last three months bringing very high gains (such as a 100% increase from September to October). This can further be visualized using the heatmap shown in Figure 4, which shows lighter areas gradually transitioning to darker areas at the end of the year, showing higher usage of L1.

Heatmap for L1 words spoken weekly for each month

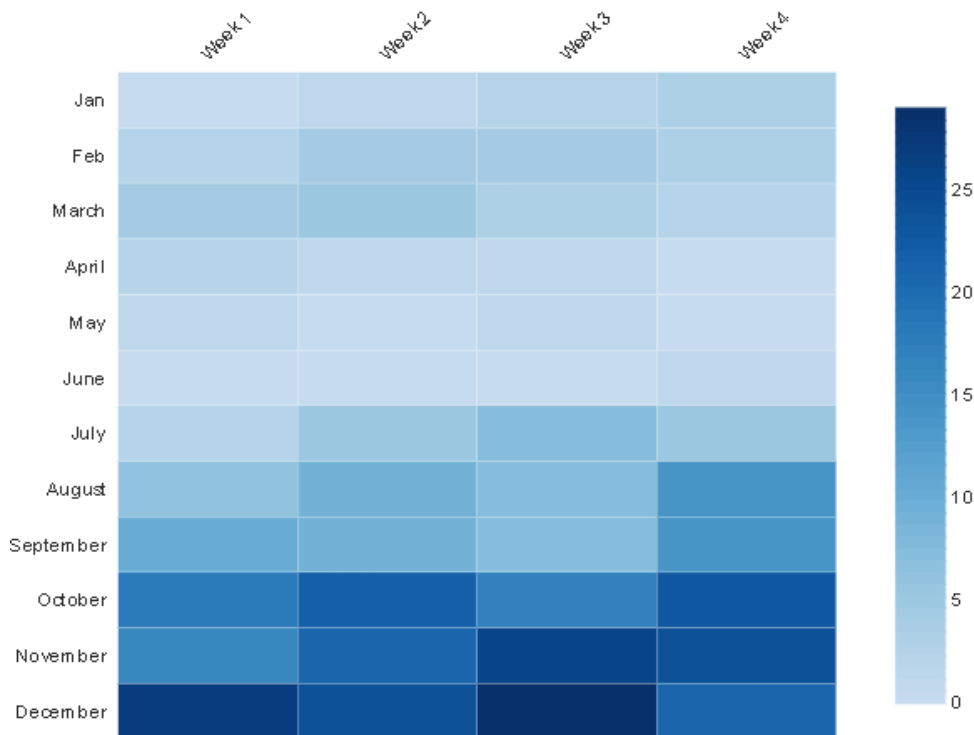


Figure 4. Heatmap of L1 words spoken weekly for each month

Figure 4 Alt text. A heatmap displaying the numbers of L1 words spoken by the subject with weeks on x axis and months on y axis. The map highlights the light blue areas in the initial months, which gradually change to darker blue areas at the end of the year, showing the increasing magnitude of L1 usage.

Phase-wise Trend Analysis

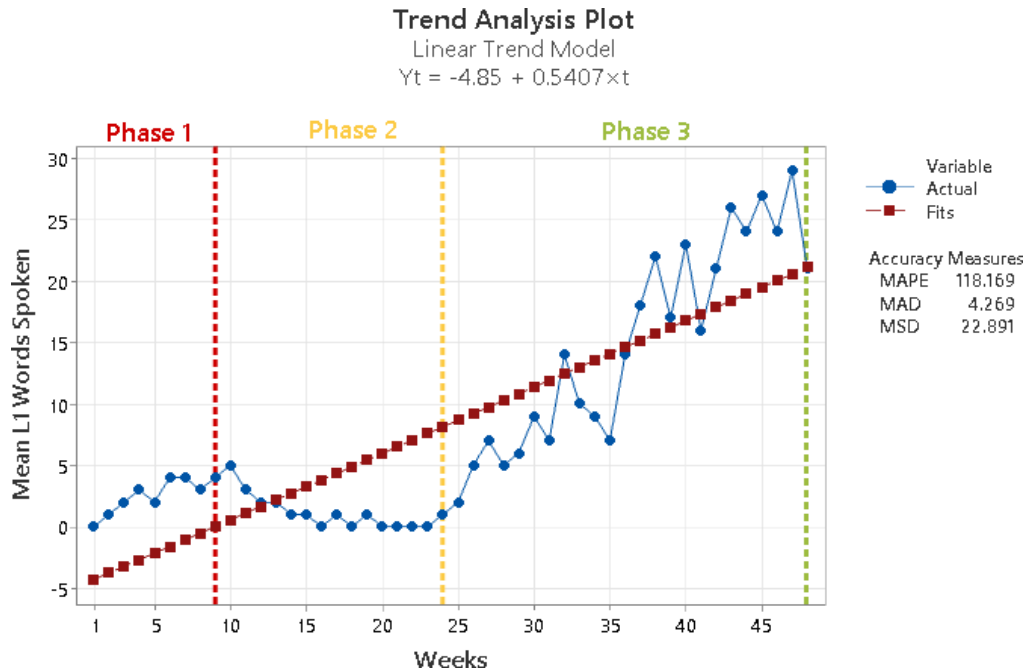


Figure 5. Phase-wise Trend Analysis Plot

Figure 5 Alt text. A Phase-wise Trend Analysis Plot showcasing L1 word counts across three phases: pre-quarantine, quarantine, and post-quarantine. The chart reveals the highest L1 usage in Phase 3, a dip in Phase 2 during quarantine, and moderate usage in Phase 1.

Table 3. Number of L1 spoken words during the three study phases.

Phase	No. of weeks	Mean	SE Mean	SD	Minimum	Maximum
Phase 1	9	2.56	0.475	1.424	0.000	4.000
Phase 2	15	1.13	0.363	1.407	0.000	5.000
Phase 3	24	15.13	1.68	8.24	2.00	29.00

Further delving into the phase-wise trend analysis, according to the results shown in Table 3, the highest mean of L1 words spoken was recorded in Phase 3 (post-quarantine) ( $M = 15.13$ ,  $SD = 8.24$ ), followed by Phase 1 (pre-quarantine) ( $M = 2.56$ ,  $SD = 0.475$ ), and lastly Phase 2 (quarantine) ( $M = 1.13$ ,  $SD = 0.363$ ). As depicted in Figure 5, a visible decrease in the mean L1 words spoken was observed from Phase 1 to Phase 2 because the elimination of the L1 dominant environment during the pandemic resulted in reduced usage of L1 by the subject; however, it may have allowed L2 usage to increase simultaneously, as shown by the monthly recorded results. Furthermore, the data shows clear improvement in using L1 in the post-quarantine phase, again pointing to the reason that the re-continuation of the L1 dominant environment for 24 straight weeks brought a tremendous change in the subject's communication. The measures of error, such as Mean absolute percent error (MAPE), Mean absolute deviation (MAD), and Mean squared deviation (MSD), are given in Figure 5.

Discussion

This longitudinal study examined a 48-week dataset of a bilingual returnee child's oral speech output from the stage when she returned to her native country, Saudi Arabia. The study's

objective was to evaluate the fluctuating trends of language preference and reversibility (L1 & L2) and assess L2 attrition. The elicited data revealed significant findings reinforced by previous research on language attrition and fills the research gap by presenting the LAS Hypothesis.

As a response to RQ1 the dataset interpretation indicates that language attrition may occasionally be moderate or severe. The attritor interacts with their community, which activates procedural memory (Paradis, 2004), and enables the speaker to choose a language fulfilling the linguistic requirements of the current situation. I refer to it as the Language Attrition Spectrum (LAS). The LAS develops a pattern when attrition makes the individual switch code to the selected language, as Tomiyama (1999, 2000) suggests. Based on the parents' survey outcomes, the subject appeared to have a decent amount of Arabic (L1) and English (L2) proficiency. However, the effect of language preference regarding L2 was evident since she resided in the English language-dominated US environment. Slavkov (2015) asserts that younger children are especially vulnerable to language attrition without extra socialization and input from different sources. This could have led to an incomplete L1 acquisition status due to its limited exposure.

Interestingly, the same might have been the case when the language preference flipped over due to her moving to Saudi Arabia, with reduced exposure to L2. Subsequently, depending upon the environmental shift, this reversal between L1 and L2 preference causes LAS to emerge on the horizon. The fluctuation in the subject's oral speech may be well explained by Olsson and Sullivan's (2005) "bilingual preference" approach based on the bilingual's interactional context. A bilingual speaker may have one dominant language that can change depending on the linguistic environment. The language preference of a bilingual child can be attributed to two reasons: The difficulty lies in assimilating and generating specific structures of one language, as compared to the other, along with the significant exposure to the dominant language in the social environment. As LAS hypothesis aligning with Olsson and Sullivan (2005) demonstrates that language preference is not static; it can vary depending on the linguistic environment. Also, LAS interprets these fluctuations in language preference as preliminary signs of second language (L2) attrition.

The present study found that the subject preferred to communicate in Arabic rather than English when she returned to her native country since young Arabic speakers surrounded her. Her conversational adjustments had shades of convergence and divergence at times, verifying mild trends of negative LAS. It is clear from the situation that she gave up on her L2 due to the lack of exposure to an L2 environment. Slavkov (2015) makes a similar point that a language that has become inactive due to existing external or internal factors can be retrieved rapidly under the appropriate linguistic context as LAS hypothesize. In the present situation, one of the subject's languages may become weaker or disappear but reappear owing to internal factors such as freedom of choice. Another rapid language fluctuation was observed when the subject remained at home with her brother during the quarantine period. Again, she developed LAS but had a positive direction, suggesting Paradis's (2001) perspective, the reactivation of the weak language.

In addition, the findings lend credence to Bardovi-Harlig and Stringer's (2010) contention that competence of the learned linguistic skill or component is the most critical criterion in attrition of that aspect, and the learned linguistic skill is less likely to decline if the speaker has advanced command of linguistic knowledge. Therefore, it could be assumed that the subject had attrited her L2 if not competent enough to revive it in a conducive linguistic environment. During the period she spent at home, the necessity to use Arabic was either extraordinarily restricted or nonexistent because her social communication need was limited to her brother. He was also a beginner Arabic-English bilingual speaker. It suggests that despite limited exposure to L2 during that period, the subject successfully reversed the preference for L1. Figure 5 shows that the L1 preference through the highest mean of L1 spoken words during the first three months was 3.50, whereas it decreased to its lowest point in June at 0.25, the lowest output throughout

the 48-week study. The rapid upward pattern can be seen from July, the seventh month, with a mean of 9.00. The increase in the L1 spoken words continues until December and ends with the highest mean of 25.25, which shows the preference for L1 throughout that period. Even though the data indicates the L1 preference during the last weeks of the research period, the L1 and the L2 fluctuation is also apparent. According to the LAS Hypothesis, it becomes hard to claim that the subject preferred only one of the languages because the language preference patterns might change over a comparatively short time (Olsson & Sullivan, 2005). Contrarily, the phase-wise trend analysis in Figure 5 confirms that L2 attrition can be impeded or even reversed if the speaker is exposed to enough L2 input and environment (Slavkov, 2015) indicating early signs of language attrition. However, future study is needed to determine whether or not the speaker's L2 loss can be reversed if they return to an L2 environment.

Hence, the depicted data confirms that LAS is reversible in specific situations. Presumably, Slavkov's (2015) stance seems relevant that even though they were exposed to their L1 while growing up, many bilingual speakers never fully master their L1, or they would lose certain aspects of it later in life. Although it may be acknowledged that no studies in language attrition could bear similar results because of the enormous differences between the independent and dependent variables, the present study findings align with Flores's (2015) longitudinal study. Her experiment recorded the dominant shifts from the L1 to the L2 of a Portuguese-German bilingual nine-year-old child. However, in the present case, the subject showed the effects of language attrition within two months of her return, whereas Flores's study tracked the attrition signs after five months.

In contrast to Flores's (2015) study, based on my analysis, the subject exhibited early signs of attrition that could be attributed to the linguistic environment she was surrounded by. Further, the possibility that she did not have enough exposure to L2 upon her return to her homeland could explain her rapid language change. Therefore, her language fluctuation was comparatively swifter than Flores' (2015) subject.

The COVID-19 pandemic quarantine added to the subject's linguistic variation. The phase-wise trend analysis reveals an early rise in L1 words uttered (pre-quarantine period), but by week 10, or March 2, the trend diminishes. This deduction matches the COVID-19 pandemic in Saudi Arabia, which closed schools in the second week of March, limiting the subject's use of L1 for communication. Therefore, L1 utilization reduced at the start of phase 2 (quarantine) in the phase-wise trend analysis graph. The trend line virtually stays at 0 throughout the quarantine, with sporadic single- or double-word use, most prevalent in April or May. The flat line from week 20 to week 23 shows that by May, the subject had stopped utilizing the L1 with her brother. According to the LAS Hypothesis, this phase may be due to extreme L1 decline and L2 preference peak. The social context in which the individual experienced rapid communication changes pre- and after quarantine may explain this pattern. The current study supports Schmid's (2011) claim that the L2 system may be prolonged if an L2 speaker is accepted into society and uses the language daily. Nonetheless, Schmid (2011) considers attritors after puberty, whereas in the present case, the attritor is an eight-year-old returnee child. As the schools were re-opened in the 3<sup>rd</sup> week of June (Phase 3), the subject was again put into an L1-dominant environment, directly influencing her use of L1 in her communication. The average positive trend continues until the data collection period of 48 weeks. The plot's best-fit line is  $Yt = -4.85 + 0.5407t$ , which indicates a positive gradient, therefore, depicting that the number of L1 words spoken by the subject increased over time.

In addition, the subject's code-switching seems to be the exhibition of convergence (Toribio, 2004), which per Giles's Speech Accommodation Theory, is an individual's propensity to adopt their interlocutors' communication medium to bridge the interactional gap (Soliz & Giles, 2014). As a result, the subject unconsciously chose what best fulfilled her need to interact with her brother. In one way, striving to bridge the gap in social interaction, she made some language alterations that are somewhat challenging to implement, given her current linguistic ability to form snap judgments. This also supports the LAS because the LAS pattern in this research data demonstrates that no external variables (e.g., parental guidance or teacher talk) influence the subject's language choice. It was up to her judgment to decide when the necessity arose. Given

this fact, the subject's decision would strengthen language selectivity, resulting in the preference for either language.

Additionally, not all linguistic elements are affected in precisely the same way. The LAS blurred regions can demonstrate this reversal phase of language preference. It can be noted that the subject herself chooses what language to keep or attrite according to the discourse requirements and switches codes frequently and, at times, irregularly. Empirical research indicates that "Language attrition is selective" (Wei, 2014, p.1603). Her conversation did not include any words from the Arabic language (Table 1) at the beginning of the data collection. She used the Arabic particle "la" (No) as early as the second week and switched the code. While changing the code, she consciously maintained some aspects of her language, e.g., syntax, structure, or morphology, as per the communication requirement, which bilinguals usually do (Schmid, 2011). The LAS Hypothesis suggests that language usage fluctuates while the speaker keeps some aspects of one language system more than the other.

The present study also has some similar shades to Flores (2010). The example of two of her Portuguese subjects, Eunice and Helena, can be implied here, who returned to their homeland at an early age and did not use their L2 (German) after returning to the L1 community. However, they did not get much exposure to the L2 and did not use it for communication, believing they could no longer use German for their linguistic needs. Surprisingly, during the interview for the study, they quickly switched the code to German, and according to Flores (2010), it happened with most of the subjects. Therefore, it could be implied that, like the child in the present study, the returnees could fluctuate between their L1 and L2 if suitable linguistic exposure was provided. In the fourth week, the subject's L1 incomplete acquisition caused her to code-switch the word rainbow while producing the sentence "Ana asawi Rainbow" (I am doing a rainbow). In English, 'rainbow' is a 5000-level vocabulary word spoken by the subject, suggesting that her L2 lexicon is better than the rest of her linguistic characteristics. According to Paradis (1994), "[t]he acquisition of vocabulary is less sensitive than morphosyntax to the age of first exposure (p.3)". It may also indicate L2 loss because she used a mixed sentence. However, if Retrieval Fail Hypothesis applied to the child's case, it could be said that she had inaccessibility to the required linguistic item (Loftus & Loftus, 1976). Later on, from the preceding weeks' data, it was observed that she retrieved the linguistic capability successfully, which is a novel finding in this study.

This study contradicts Mishina-Mori (2011) since there is no parental pressure on the subject to acquire a language. This could be considered a potential limitation of this study since the subject's parents were already aware of the study's objectives and voluntarily chose not to indulge or impact the subject's decision to select the preferred language.

After school resumed, the subject used L1 within and outside her home to connect with her community. Due to academic and personal exposure to the L1, her L1 oral speaking was refined like native Arabic speakers. L1 production fled from the seventh month through the end of the year. However, the subject's little English usage may indicate LAS owing to L2 environmental input inaccessibility. In conclusion, bilingual returnee children should be exposed to both languages to maintain their bilingual competence (Flores, 2015); otherwise, the LAS Hypothesis would seem applicable in predicting the reversal of language preference leading to L2 attrition.

## **Conclusion**

The present paper attempted to provide a deep insight into the language attrition of a young bilingual returnee. It has presented a variety of perspectives on language attrition which may prove to be a rich contribution because Arabic-English returnee children face many challenges from various linguistic aspects that have yet to be investigated by previous research. Primarily, the study focused on the LAS Hypothesis, occurring in the subject's oral speech production that has yet to be investigated from this perspective. The LAS may be observed throughout the 48-week collected data in the subject's oral speech production. She chose the medium of

communication that best fulfilled her L1 or L2 needs without any societal pressure and displayed fluctuation in language preference over time as early indicators of attrition. Unlike the other studies in the field of language attrition, the present study lacks in the number of subjects. With the author's limited resources and cultural constraints, assigning and tracking a larger population for a longitudinal study was impossible. Future research may apply the LAS Hypothesis to a larger population to further explore the language attrition spectrum. LAS is a promising hypothesis for categorizing language attrition stages if it gets further contributions to trace language attrition from the initial stage to the severe level of attrition.

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## Appendix 1

Parents' Survey  
LAS open-ended questions

How old are your children, and where were they born?

How long have they lived in America?

What is the language of communication at home in America?

For example, 50% Arabic and 50% English.

If your children were able to speak Arabic before returning to Saudi Arabia, how do you describe it?  
(For example, fluent or broken Arabic).

Did your children go to daycare, kindergarten, and public schools, and how many hours did they stay there every day?

Who was sitting with the children more, the mother or the father?

Did your children mix with Arab children of the same age?



What was the language of communication between them?

Have you noticed that any specialist or teacher in America told you about language delay problems in your children?

When your children used to play together in America, what language did they use?

If English was their language in the US, were they using Arabic words?

How old were your children when you returned to Saudi Arabia?

When they returned to Saudi Arabia, did your children speak Arabic with their peers?

What is the language of communication at home in Saudi Arabia? Please give approximate percentages.

Did your children go to public or private international schools?

When did you notice that your children started to use some new Arabic words?

Have you noticed that your children prefer to use one language more than another? Mention the language.

After the pandemic, have you noticed that your children use one language more than the other?