AMERICAN UNIVERSITY OF BEIRUT

THE IMPACT OF LANGUAGE VARIETIES AND DOMAINS ON LEBANESE ELEMENTARY SCHOOL STUDENTS' TRUST IN TESTIMONY

by

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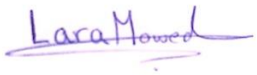

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ABSTRACT

OF THE THESIS OF

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The literature on children's trust in testimony has examined various factors that could influence the beliefs they form based on what they hear said around them. One of those factors is the characteristics of the language of the testimony (e.g., accent, same as the native language of the child). This factor was the particular focus of this study. Studies have indicated that children's sensitivity towards language and accent begins very early in life and impacts their selective learning and selective trust in testimony. This study examined trust in testimony in the context of elementary schooling in Lebanon which is a multilingual context reflecting the diversity of languages used in Lebanese society and where different languages are allocated to different subjects within the Lebanese curriculum: science and mathematics are taught in a foreign language (English or French) and social studies and humanities subjects are taught in Modern Standard Arabic). This study examined the effect of language variety (English, Modern Standard Arabic, Lebanese Dialect), domains (science and social), grade (one and five), and gender (males and females) on children's trust in testimony and whether there are interactions between those factors. This quantitative study was conducted with 44 Lebanese students, 22 from grade one and 22 from grade five. The students were recruited from middle SES private Lebanese school which implements the Lebanese curriculum. Each participating student was presented with paired statements dealing with topics in the scientific and social domains and were asked to decide whom they believe. Each statement was presented in one of the three different languages/language varieties: English language, Modern Standard Arabic, and Lebanese dialect (Ammiyah).

Students' responses were analyzed using descriptive statistics to compare the frequencies and percentages of the language preferences for each comparison pair. Descriptive statistics were presented in the form of cross-tabulation of frequencies and percentages. In addition, binary logistic regressions were performed to identify in each case any statistically significant main effects of domain, grade, or gender and any pairwise interactions. Overall, English was the preferred variety in the science domain which it was an option in comparison to both Modern Standard Arabic and Lebanese dialect. Both Modern Standard Arabic and Lebanese dialect were the equally preferred varieties in the social domain. When comparing Arabic language varieties, there was a marginal preference for Modern Standard Arabic over Lebanese dialect in both domains (science and social). Generally, both English and Lebanese Dialect were the

preferred varieties in grade one, while English was the preferred variety in grade five. English was the preferred variety when it was an option in comparison to Modern Standard Arabic and Lebanese dialect in both males and females. When comparing Arabic language varieties, males marginally preferred Lebanese dialect over Modern Standard Arabic, while females more clearly preferred Modern Standard Arabic over Lebanese dialect. The findings of this study have implications for language-in-education policy in Lebanon and in the Gulf region. The findings of the study suggest that policy makers in Lebanon and Gulf region might be wise to consider language allocation approaches other than the ones that are typically used.

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INTRODUCTION

Background and Rationale

As human beings, we are at a boundless advantage that we have two sources that we can learn from them. We either learn from our experiences of the world directly or indirectly from other people. In other words, we learn through our direct interactions with the world around us, but we also acquire knowledge from others' testimony. The accumulation of concepts and information in various domains (scientific, historical, or religious) is largely a result of knowledge exchange that is acquired by testimony (Harris, Koenig, Corriveau, & Jaswal, 2017). People often rely on other's testimony rather than their first-hand experience to form beliefs about the world. For instance, we rely on our history teacher to teach us when World War I or the Russian revolution started.

Learning from others' testimony is not limited to a particular domain or notion; testimony can range from complex scientific concepts such as the function of the brain to the simplest information such as knowing the temperature of the weather outside. Testimony can come in different communicative forms; it can be verbal testimony (learning about the latest news in your city from a news broadcast) or written testimony (information presented in textbooks) (Harris et al., 2017). Children depend on others' testimony in learning about the world when they cannot learn by direct observation. For instance, children learn from others' testimony about unobservable religious entities (God and soul) or about unobservable scientific entities (germs and oxygen).

Past studies have indicated that even though children depend on other's testimony about things they cannot learn through direct observation, they are not passive learners. In other words, studies have shown that children do not blindly accept information especially if it contradicts their first-hand experience (Harris & Koenig, 2006; Harris, Pasquini, Duke, Asscher, & Pons, 2006). Thus, from an early age, children are selective learners in various domains. Moreover, past studies have revealed that children exhibit a developmental progression in how they choose and weigh informant's cues when choosing whom they prefer to believe and learn from (Clement, Koenig, & Harris, 2004). As children grow older, they become more selective and skeptical when choosing whom to trust even if the informant has a record of reliability.

Numerous studies in the literature have examined various factors that influence children's judgments about the testimony they are hearing from people. One of these factors is the speaker's past reliability. Young children prefer to learn from an informant who has a past history of reliability in labeling novel objects correctly compared to an informant who has labeled them incorrectly (Jaswal & Neely, 2006). Another factor is the informant's accuracy. Children prefer to endorse the testimony of accurate informants over inaccurate informants when labeling novel objects (Koeing & Harris, 2005). Moreover, children also consider the informant's knowledge-state status when deciding whom to trust. Children prefer to learn from the knowledgeable speaker rather than the hesitant speaker (Sabbagh & Baldwin, 2001). Also, among the cues children use as an indicator of informant's trustworthiness and credibility is the bystander's appraisal of others and group consensus. Past studies have revealed that young children exhibit preferences to informants who have earned bystander consent and group agreement in their selective learning (Fusaro & Harris,

2008). Young children also use informants' gender as a factor when evaluating testimony from others. When learning about novel words, four and six-years-old children prefer to endorse the testimony of informants of their own gender (Ma & Woolley, 2013). In addition, informants' ethnicity affects children's trust in testimony. Studies have shown that toddlers prefer to receive toys from same-race people than from different races (Kinzler & Spelke, 2011). Furthermore, children weigh informants' language and accent when deciding whom to trust. Kinzler, Corriveau, and Harris (2011) found that young children exhibit preferences for native-accented individuals over non-native accented individuals. In light of the findings in the literature on how children use language and accent as a cue for their trust in testimony, given the way languages are allocated in the Lebanese curriculum over social and science subjects (this will be addressed in detail below) and given the use of different languages in the Lebanese society, it is possible that Lebanese students will trust testimony differently in different domains formulated in different languages. For this reason, the themes to be addressed in the literature review include the influence of language and accent on children's trust, the content of testimony that was examined in the literature review, and the linguistic context in Lebanon and the language allocation within the Lebanese curriculum.

The Influence of Language and Accent on Children's Trust

Concerning the factor of language and accent that is the particular focus of this study, several studies have examined the influence of informant's language and accent on children's trust in the testimony of others. Studies have indicated that children's sensitivity towards language and accent begins very early in life (Kinzler, Corriveau, & Harris, 2011; Kinzler, Shutts, Dejesus, & Spelke, 2009). From early infancy, infants stare more at individuals who speak their native language than individuals who speak a non-native language (Kinzler et al.,

2011). Preschool children prefer to have friends who speak with their native accent to those who speak with a foreign accent (Kinzler et al., 2009). Not only do children prefer native-accented individuals to be their friends but also, they consider them "nicer" than non-native accented individuals (Kinzler & DeJesus, 2013, Experiment 1).

Children's sensitivity towards language and accent not only impacts their friendship and social preferences, but also influences children's trust in testimony when learning from others. From an early age, children develop a sensitivity to accent as a social indicator and use an informant's language as a guiding cue in their selective learning. When presented with native-accented speakers and non-native accented speakers, three, four, and five-year-old children preferred to learn from an informant who speaks in their native-accent rather than an informant who speaks in a foreign accent (Kinzler, Corriveau, & Harris, 2011). Moreover, when a native-accented informant delivered inaccurate information and the non-native accented informant provided accurate information, three-year-old children endorsed the information given by the inaccurate but native-accented information. However, four and five-year-old children endorsed the information provided by the accurate informant regardless of accent (Corriveau, Kinzler, & Harris, 2013, Experiment 2).

The literature on language and accent as a factor that might influence children's trust in testimony has examined both monolingual and bilingual children. Studies have shown that both monolingual and bilingual children may rely on their familiarity with the language as a cue when deciding whom to trust (Akhtar, Menjivar, Hoicka, & Sabbagh, 2012; Yow & Li, 2018). When presented with an English native-accented informant and an informant who speaks a foreign language similar to English, both three to four-year-old monolingual English-speaking children, children who speak English and another language, and children

who speak English and have regular exposure to another language preferred to learn from the English informant more than from the foreign informant (Akhtar et al., 2012). So far, little is known about why children do not trust the testimony of non-native accented individuals. Some researchers have suggested that children might consider non-native accented individuals as non-credible and linguistically less proficient than native-accented individuals (Kinzler et al., 2011; Lev-Ari & Keysar, 2010).

The language of the input is a multifaceted factor. The literature on the language of testimony has addressed the mode of transmission comparing oral versus print testimony. Studies have shown that people tend to trust printed information as a source of testimony more often than oral testimony (Einav, Robinson, & Fox, 2013; Jaswal, 2010).

The Content of Testimony

Another important factor besides the characteristics of the source of testimony is the content of testimony. A limited number of studies have focused on children's ability to cluster knowledge according to domains when deciding whom to trust (Danovitch & Keil, 2004; Lutz & Keil, 2002). Studies have shown that by age 4, children have the ability to ascribe distinctive sorts of information to recognizable experts in different domains (e.g., surgeon, engineer, and social psychology) and to novel experts (e.g., eagle expert, motorcycle expert, and ice cream expert). To decide which speaker can give an accurate information in a specific domain, children use their understanding of the domain of knowledge (Danovitch & Keil, 2004; Lutz & Keil, 2002). For example, 4- and 5-year-old children believe that a bicycle expert is someone who not only has knowledge about bicycles, but also about functioning of cars (near-category domain), functioning of machines (middle category domain), and physics (underlying principles domain). In addition, children believe that an ice cream expert is

someone who not only has knowledge about why people want ice cream when they somebody eating ice cream, but also about the reason ice cream is called “gelato” in Italy. By age 4, children have certain ability to reflect on clues to determine expertise to decide whether the speaker is giving the needed information to a specific domain of expertise. With age, children become better at distinguishing distinctive kinds of expertise, and they use their understanding when deciding whom to trust (Danovitch & Keil, 2004).

So far, the literature has focused on non-observable entities such as scientific entities, religious entities, endorsed entities, and historical events (Harris & Koenig, 2006; Harris, Koenig, Corriveau, & Jawsal, 2017; Harris, Pasquini, Duke, Asscher, & Pons, 2006). Children rely on other’s testimony when learning about things they cannot learn about through first-hand experience. For instance, children depend on adult’s testimony when learning about scientific entities such as germs, and when learning about religious entities such as angels. As we have previously discussed, children are skeptical and selective in their learning from testimony. Even though children rely on adults in learning about unobservable entities, they might reject information that contradicts their first-hand experience (e.g., being told that the Earth is like a ball when they observe it to be flat).

Past studies have shown that children’s degree of belief in scientific and religious entities depends on various factors. The testimony of scientific and religious unobservable entities varies depending on how frequently parents talk to their children about the existence of these entities (Harris & Corriveau, 2014). Children’s level of confidence about the existence of scientific and religious entities might also change with age. Past studies have examined both children’s and their parent’s level of confidence in the existence of scientific and religious entities (Davoodi, Sianaki, Abedi, Payir, Kelly Cui, Harris, &Corriveau, 2019).

Findings of the studies indicated that with age individuals tend to develop more confidence in the existence of scientific entities compared to religious entities, even in religious communities.

The content of testimony also includes endorsed beings (e.g., Santa Claus), equivocal beings (e.g., ghosts), impossible entities (e.g., flying dogs). Harris, Pasquini, Duke, Asscher, and Pons (2006) examined four to eight-years- old children's beliefs in the existence of different types of entities. For example, children were asked about their own beliefs about the existence of real entities, scientific entities, endorsed entities, equivocal beings, and impossible entities. The findings of the study showed that children were more confident about the existence of real, scientific and impossible entities, than the existence of endorsed and equivocal entities. Moreover, when asked about their beliefs in the existence of scientific entities (e.g., germs), endorsed entities (e.g., Tooth fairy), and equivocal beings (e.g., mermaid), five and six-year-old children were more confident about the existence of scientific and endorsed entities, than the existence of equivocal beings (Harris and Corriveau, 2014).

Context of the Problem

A distinctive characteristic of Lebanon is the linguistic diversity among its people. Arabic is considered the official language, but several other languages are used widely in various communities, such as Armenian, Kurdish, English, and French. The French mandate on Lebanon is one of the reasons behind this linguistic diversity in Lebanon. During the French mandate (1923-1943), the French language was introduced into the educational sector and became the official language in Lebanon along with Modern Standard Arabic. In addition, the global spread of English and Lebanon's permissive

language in education policies, meant that English became increasingly dominant in Lebanese education and society. Moreover, linguistic diversity emanates from the presence of diverse ethnic groups, different religions, and different cultures. Finally, Arabic itself is a diglossic language with a standard variety (Modern Standard Arabic) used for literacy (e.g., school textbooks, novels, newspaper) and formal oral communication (e.g., in religious sermons) and an oral dialect, which varies regionally in the Arab world, and is used for everyday communication (Ferguson, 1959; Tohme,2019). So, in Lebanon, the Lebanese dialect is one of the children's primary languages. This multilinguistic diversity has resulted in the common phenomenon of code-switching and code-mixing between Modern Standard Arabic, Lebanese Arabic, French, and English and other languages. This language diversity had an impact on and was impacted by the Lebanese educational policy. Although Arabic is considered the official language in Lebanon, the new curriculum issued in 1997 after the Lebanese independence (1943) provided Lebanon its trilingual character. This new curriculum allowed foreign languages (English and French) to be used as a medium of instruction (Shaaban, 1997). Therefore, scientific subject and mathematics are taught in English or French, while humanities and social studies subjects are taught in Arabic (Esseili, 2017). This could be traced back to the French mandate in which they announced Arabic and French as Lebanon's official languages (Shaaban & Ghaith, 1999). Another related issue is the distribution of scientific subjects and social studies subjects per week. In other words, the learning of scientific subjects consists of more hours per week than the learning of social studies subjects, which can imply to learners that these subjects, and the languages in which they are taught, are more valued than other subjects and languages (Bacha, Bahous, & Nabhani, 2011).

Given the phenomenon of diglossia, Lebanese students' trust in testimony may vary with Arabic language varieties: we might ask, which variety leads to greater trust the Lebanese dialect language used with the family and friends or the formal Arabic language of literacy that children first learn at school and use in the humanities and social studies subjects they are taught? Also, Lebanese students' trust in testimony may differ for the foreign languages they are exposed to when compared to Arabic (in its two varieties).

Preliminary research has already suggested that Lebanese high school students and university students exhibited different attitudes towards learning foreign languages in distinctive subjects. Shaaban and Ghaith (2002) studied university Lebanese students' perceptions of linguistic vitality in Arabic and foreign languages (English and French). The findings of the study showed that Lebanese students consider the Arabic language as a representation of their identity and as a tool they use in everyday conversations and religious activities. The English language was valued as the most crucial language because they viewed it as a globalized language needed in the global market and diverse domains and industries. However, some Lebanese students considered French as an essential language for self-representation and use in cultural events. In addition, Lebanese high school students showed positive attitudes towards learning scientific concepts in a language rather than Arabic language because they believed that the Arabic language might hinder their understanding of the concepts as they believed that translation is not possible (Thonhauser, 2000). Lebanese students prefer to learn scientific subjects in the English language because they believe that it will provide access to the global market, and it provides access to more desirable professions, such as medicine and engineering, at an international level (Orr & Annous, 2018).

In light of the literature reviewed, the context of Lebanon, and Lebanese students' attitudes towards different languages, this study examined trust in testimony in the context of elementary schooling in Lebanon which is a multilingual context reflecting the diversity of languages used in Lebanese society and where different languages are allocated to different subjects within the Lebanese curriculum (science and mathematics are taught in a foreign language English or French) and (social studies and humanities subjects are taught in Modern Standard Arabic). The present study examined the effect of language varieties (English, Modern Standard Arabic, Lebanese Dialect), domains (science and social), grade (one and five), and gender (males and females) on children's trust in testimony and whether there are interactions between those factors.

Research Questions and Hypotheses

This study addresses two research questions:

1- Does elementary Lebanese students' trust in testimony vary as a function of language (English as foreign language, Modern Standard Arabic as formal local language of literacy and spoken Lebanese dialect)?

   Hypothesis: Students' preferential trust in the testimony formulated in the English language will be greater than their preferential trust in both varieties of the Arabic language. Students' preferential trust in testimony formulated in both varieties of the Arabic language will vary. Younger students' preferential trust in the testimony in the spoken Lebanese dialect will be greater than in the testimony in the Modern Standard Arabic. Older students' preferential trust in the testimony in the Standard Modern Arabic will be greater than in the testimony in the spoken Lebanese dialect.

2- Do the factors of domain, grade and gender interact with language in influencing trust in testimony in elementary school children in Lebanon?

Hypothesis: Yes, there will be an interaction of domain, grade and gender with language in influencing trust in testimony in elementary school children in Lebanon.

There will be an interaction between language and domain. Students will trust the testimony dealing with scientific content more when formulated in English language and will trust the testimony of social content more when formulated in Arabic. A tentative hypothesis is formulated to suggest that trust in testimony dealing with the social domain will be greater in Modern Standard Arabic than in the Lebanese dialect.

Also, the factors of language and domain will differ as a function of grade during elementary years. As students' progress through the elementary years and experience more formal schooling in Lebanon with its approach to language allocation across the curriculum, their trust in English and Modern Standard Arabic will increase and their trust in Lebanese dialect will decrease. For example, their trust in scientific content formulated in English will increase with time and their trust in social content formulated in Modern Standard Arabic will increase with time. There will be also an interaction between gender and language. Males and females in both grades will have different preferential trust in the testimony of languages.

CHAPTER 2

LITERATURE REVIEW

Introduction

If you briefly think about the information that you have lately received, you'll doubtlessly notice that it came from what others told you. For instance, a chef who told you about the ingredients of a dish, a journalist who told you about recent events in your country, or a friend who told you about the weather outside. We often rely on the testimony of others in gaining information about the world (Harris, Koenig, Corriveau, & Jaswal, 2017). In other words, testimony is a ubiquitous and invaluable source of knowledge that we get or give in everyday life. Harris and Koenig (2006) define testimony as an assertion by which a speaker transmits a message to a listener that isn't necessarily based on the speaker's reliable first-hand experience. Learning from testimony can enable us to engage and interact with the social world around us. Testimony can convey information in various domains, including scientific, religious, historical, and other domains. Testimonial learning can range from learning about unobservable entities such as germs to the simplest facts such as your date of birth. Moreover, testimony can include oral communication and written information such as the information presented in a magazine, textbooks, and ingredients in a cooking book (Harris et al., 2017). Indeed, much of our knowledge and beliefs about the world stem from testimony.

Learning from the testimony of others begins early in our lives which provides young children an opportunity to learn about many things. Children depend on other's testimony

for forming beliefs and gaining knowledge about the world that they cannot acquire through direct observation. For instance, they learn about the shape of the earth (Harris and Koenig (2006), the functions of the brain (Harris and Koenig, 2006), the physical world (Jaswal, 2010), and about germs and angles (Harris, Pasquini, Duke, Asscher, & Pons, 2006). Despite children's dependence on other's testimony, they don't blindly accept and trust testimonies, especially when it conflicts with their first-hand experience. Thus, previous studies have suggested that children are selective learners when it comes to learning from testimony.

It is critical to investigate the development of children's trust in the testimony of others to broaden our understanding of how they learn and whom they choose to trust. Trust in others is critical to children's language development and knowledge acquisition (Harris, 2007). A growing body of literature has reported evidence about children's complexity in distinguishing information provided by speakers. Much of the work has focused on children's weighing of the characteristics of the source of testimony when choosing whom to trust. This chapter is organized as follows. First, the chapter presents an overview on the characteristics of the source of testimony that influence children's preferences and trust. Second, this chapter presents the developmental changes in children's selective learning from testimony. Third, the chapter presents an overview on the content of testimony discussed in the literature review. The linguistic context in Lebanon is then presented followed by the language allocation across the Lebanese curriculum.

Characteristics of The Source of Testimony That Influence Trust

Overview of the Range of Characteristics Studied

Even though children receive knowledge from numerous sources, they are aware that not all sources are trustworthy (Harris & Koenig, 2006). Literature has revealed a few factors that influence children's trust in the testimony of others when judging knowledge offered by different informants. One of the factors is the speaker's past reliability. Though young children rely on others to learn, they develop a balance between naively trusting others and being critical and incredulous to prevent learning incorrect knowledge (Gelman, 2009). This allows children to critically accept information from informants who they believe are reliable. Past studies have shown that from infancy, children develop a sense of skepticism when learning from informants. For instance, Chow, Poulin-Dubois, and Lewis (2008) showed that 14-months old infants selectively preferred to pursue the eye-gaze of a previously reliable informant rather than a previously unreliable informant when hiding an object. Throughout preschool years, children become more sophisticated in trusting information provided by reliable and unreliable speakers. For instance, children accept information given by an informant with a history of reliability regardless of the informant's age (Jaswal and Neely, 2006).

Gender stereotyping is also one of the factors that might influence children's selective learning from others. From early childhood, children exhibited gender-based preferences towards other people. For instance, three and four- old-months infants nurtured by a male babysitter focused their looking on males more often than females. Conversely, infants nurtured by female babysitters focused their looking more on females than males (Quinn, Yahr, Kuhn, Slater, & Pascalis, 2002). During preschool years, children's sensitivity towards

gender becomes more recognizable and noticeable. In learning about the functions of novel objects, four and six-year-old children preferred to learn from same-gender informants (Ma and Woolley, 2013).

When learning from others, children also consider the speaker's knowledge-state. For instance, Sabbagh and Baldwin (2001) assessed three and four-years old children's preferences when learning about novel words from knowledgeable or ignorant speakers. The findings of the study showed that both age groups preferred to learn from the knowledgeable speaker more than the hesitant speaker. In a subsequent study, where the knowledgeable speaker appeared to be hesitant, four-year-old children relied on the past reliability of the knowledgeable speaker and still learned from him. However, three- year- old children ignored speaker's past reliability (Sabbagh and Baldwin, 2001).

Another factor that influences children's selective learning from others is bystander's agreement and group consensus. Studies have shown that children tend to take into account bystander's agreement and group consensus when they have no information about the informant's past reliability (Fusaro & Harris, 2008). When presented with informants who previously earned bystander consent and informants who earned bystander discord, children chose to trust the testimony of informants who earned bystander consent (Fusaro & Harris, 2008). Besides bystander consent, children monitor group consensus when choosing whom to learn from. In tasks including naming unfamiliar novel objects, preschool children preferred to follow the informants who previously gained the majority group agreement (Corriveau, Fusaro, & Harris, 2009). Nevertheless, when children were presented with in-group and out-group informants, the influence of majority agreement was weaker compared to group membership (Chen, Corriveau, & Harris, 2012).

When making social judgments, people often rely on ethnicity. In early infancy, three- month-old Caucasian (Kelly, Quinn, Slater, Lee, Gibson, & Smith, 2005) and three-month-old Chinese infants (Kelly, Liu, Liezhong, Quinn, & Slater, 2007) showed a preference in looking at faces of individuals who belong to their own ethnic group. On the contrary, Kinzler and Spelke (2011) found that 10-month-old infants accept toys equally from people of their own race group and people from other race groups. In addition, two-year-old children provided toys equally to own-race people and other-race people (Kinzler & Spelke, 2011). Last but not least, past studies have showed that children consider informant's accuracy more profoundly than other informant's characteristic such as social category, accent, and knowledge-state. In learning about labeling familiar objects, three-and four-year-old children prefer to endorse the testimony of accurate speakers than inaccurate speakers (Pasquini, Corriveau, Koenig, & Harris, 2007).

The influence of language and accent has also been studied. For example, Kinzler, Corriveau, and Harris (2011) found that young children exhibit preferences for native-accented individuals over non-native accented individuals. Since this study focuses, in particular, on language as a factor influencing trust in testimony, this work will be discussed in more details in the next section.

Language and Accent as Characteristics of the Source of Testimony and their Effects on Preference and Trust

Concerning the factor of language and accent that is the particular focus of this study, several studies have examined the influence of informant's language and accent on children's trust in the testimony of others. Children exhibit preferences for native-accented individuals over non-native accented individuals (Kinzler, Corriveau, & Harris, 2011). These preferences

seem to emanate early in children's development and remain throughout their childhood. Infants stare longer at speakers who speak their native language, and they prefer to get dolls and food that are given or recommended by native-accented individuals rather than non-native accented individuals (Kinzler et al.,2011). Preschool children prefer to have friends who speak their native accent to those who speak a foreign accent (Kinzler, Shutts, Dejesus, & Spelke, 2009). One should mention that in the previous findings, children's distinction between speakers' native and foreign accents is not based on their analysis of understandable speech. Nonetheless, children prefer those who speak their native accent over those who speak a non-native accent even though they understand the speaker in both cases.

Not only do children prefer to trust those who speak their language, but they consider them more friendly than those who speak a foreign language. When presented with speakers who speak native versus non-native accent and speakers who speak native versus foreign language, five and six-year-old English monolingual children prefer to be friends with speakers who speak in their native accent and with those who speak their native language. Also, children consider individuals who speak their native accent and native language as "kinder" than individuals who speak non-native accent and language (Kinzler, Shutts, DeJesus, & Spelke, 2009, Experiment 1 and 2). In Kinzler et al.'s (2009) study (Experiment 3), same-age white monolingual children were presented with pictures of white and black speakers without any language clue, and they were asked to choose whom they prefer to be friends with. Findings showed that children preferred to be friends with white speakers over black speakers. However, when presented with pictures in parallel with voice recordings in Experiment 4, children revealed social preferences for different-raced speakers but with

native-accent over same-race speakers with a foreign accent (Kinzler et al., 2009). Such results indicate that children consider language and accent more profoundly than race.

Selective trust for native-accented over foreign-accented individuals guides not only children's selections among friendship or social mate, but also it impacts their readiness to emulate and learn from different speakers. Kinzler, Corriveau, and Harris (2011) introduced four and five-year-old monolingual children who speak English as their first language to two informants: one who speaks the English native accent and another who speaks in a foreign accent. Children were presented with a movie where informants recited a story. Then, children were presented with a video where the two informants were performing a silent novel object function. After that, the experimenter asked the children a couple of questions to explore children's preferences toward informants. For example, they were asked which informant they would ask about the name of the object or how they think the object can function. The researchers found that preschool children chose the demonstration given by the informant who speaks their native accent over the non-native accented informant. However, these results changed in a follow-up study when foreign-accented informants labeled the objects accurately and native-accented informants intended to provide an inaccurate answer (Corriveau, Kinzler, & Harris, 2013, Experiment 2). In this study, Corriveau et al. (2013) found that all three-year-old children endorsed the native-accented speaker, while four and five-year-old children tended to endorse the accurate speaker regardless of her accent. Such a result would suggest that during early childhood, children undergo a developmental change in their dependence on epistemic factors when choosing whom to trust. Furthermore, when the accuracy of the speakers varied across conditions (100% accurate vs. 0%, 75% accurate

vs. 25%), four-year- old children endorsed the labels presented by the accurate speaker regardless of her accent.

So far, the literature review on children's selective trust and selective learning has focused on monolingual children. Nevertheless, there is a growing body of research on these preferences in bilingual children which has been conducted mainly in bilingual communities. For instance, Akhtar, Menjivar, Hoicka, and Sabbagh (2012) introduced three to four-year-old monolingual English-speaking children, children who speak English and another language, and children who speak English and have regular exposure to another language. Children were provided with two speakers who labeled novel objects and known objects. One speaker talked in the English language, and the other talked in a foreign language similar to the English language. After playing the video, children were then asked which speaker they prefer to endorse the labels from. Akhtar et al. (2012) revealed that children in the three language groups endorsed labels from the English speaker over that of the foreign speaker. Remarkably, only children who are exposed to more than one language but are not bilingual, endorsed the novel labels provided by the foreign-accented speaker when asked for the label's name in the foreign language. The researchers predicted that this result is due to children's metalinguistic consciousness and openness to more than one language, although they might not be aware of the rules and structures of both languages (Akhtar et al., 2012). Thus, children exposed to a second language demonstrate more endorsements for the non-native accented speaker than children with no exposure.

In contrast, the findings of Souza, Byers-Heinlein, and Poulin-Dubois's (2013) study didn't support this assumption. Souza et al. compared how five-to six-year-old English or French monolingual and English and French bilingual children in Montreal weigh speakers

with unfamiliar and non-native accents versus individuals who speak a native accent. Children were presented with speakers who speak English or French with a native accent and a speaker who speaks an unknown non-native accent. Children were then presented with pictures of the speakers, and they heard their voices telling declarative statements where the English native speakers talked in native English language, the French native speakers talked in native French language, and the non-native accented speakers talked in both languages. Children were asked to pick the speaker they prefer to be their friend. Since bilingual children have a greater linguistic experience than monolingual children, the researchers expected that bilingual children might be socially flexible and are less influenced by language than monolingual children. Further, they suggested that bilingual children may have fewer in-group biases than monolingual children and may show greater social flexibility. However, these predictions were not consistent with the findings of their study that showed that both monolingual and bilingual children showed more preferences with the English/ French native accented speakers over the non-native accented speakers. Yet, the authors assumed that if bilingual children showed preferences to native-accented speakers then they are compelled by their knowledge with a certain accent. Note that in this study, the non-native accent was unfamiliar to both monolingual and bilingual children. Hence, it was suggested by the researchers that bilingual children might show preferences with familiar accent to unfamiliar accent, but they might not exhibit a social preference between speakers who speak a native accent and a well-known foreign accent. Unpredictably, the findings indicated that both groups of children exhibit preferences for speakers who belong to their group and that children's exposure to a second language doesn't necessarily lead to social elasticity. The researchers provided two possibilities why bilingual children showed preferences for

speakers who speak their native accent over unfamiliar non-native accented speakers. First, it is possible that at younger ages, children rely on familiarity as a driver of social preferences. Second, children may use the speaker's language as a cue to make social judgments.

Since our target in this study is the Lebanese society and language-mixing is a normal activity in the Lebanese society, it is significant to look at the influence of language-mixing on children's trust in testimony in other countries. Even though past studies showed positive attitudes toward language mixing as a unique type of communication and a symbol of national identity, other studies showed that some bilingual individuals show negative attitudes towards mixing the languages they speak (Yow and Li, 2018). Nevertheless, there are a few studies that examined whether language mixing could impact children's selective trust. In a recent study, Yow and Li (2018) investigated whether monolingual and bilingual children in Singapore employed informants' language mixing as a cue for selective trust in novel word learning. They compared monolingual children who speak the English language and bilingual children who speak two languages: English and Mandarin Chinese. The children were then presented with two speakers; each speaker told a short story with or without language mixing. Children were then asked to choose one speaker they would be friends with, which speaker made mistakes when labeling objects, and which one they would learn labels from. The speaker who used language mixing either used two languages that were familiar to bilingual children or mixed two languages that both bilingual and monolingual are not familiar with. Results showed that bilingual children preferred to be friends with the speaker who didn't mix languages and instead used only one language. Moreover, they believed that speakers who mixed languages were not good enough at identifying things and they chose to endorse the names offered by the speaker who spoke one

language more than the speaker who mixed two languages regardless of whether the speaker mixed familiar or unfamiliar languages. On the other hand, the monolingual children favored the speaker who mixes languages over the single-language speaker. Therefore, language-mixing can act as a source of knowledge that children rely on when determining their language-based preferences, to weigh the credibility of the informants, or to choose whom to trust. The findings of this study indicate that bilingual children preferred to be friends with the speaker who didn't mix languages and instead used only one language, and they use language-mixing as a signal for selective trust compared with monolingual children. Researchers predicted that monolingual children revealed a similar association with language-mixing and single-language informants since they viewed both speakers as part of their community. Note that monolingual children in this research have little exposure to a second language, and they live in a community where language mixing is regularly spoken. This could explain the reason why monolingual children considered both speakers as in-group members. The results of this study advocate that group affiliation only may not describe or explain preschooler's selective trust and language-based preferences.

Both monolingual and bilingual children may rely on their familiarity with the language as a cue when deciding whom to trust. However, when children are presented with two familiar languages, bilingual children may prefer neither the monolingual speaker nor the bilingual one. This was seen when Byers-Heinlein, Behrend, Lyakout, Girgis, and Poulin-Dubois (2017) investigated language-based social preferences of four to six-year-old English monolingual and English French bilingual children raised in Montreal, which is considered a bilingual city. Children were presented with English native accent speakers, French native accent speakers, and bilingual English and French speakers. Children were then presented

with the pictures of the speakers, they heard the voices making declarative statements, and they were asked to pick the speaker they want to be friends with. The authors found that monolingual children showed preferences for dominant-language speakers. Surprisingly, bilingual children exhibited no social preferences for either of the speakers. Further, the findings showed that some bilinguals preferred the monolingual speakers while others preferred the bilingual speakers. Thus, these results do not support an in-group favoritism interpretation. It is possible that children's familiarity with both languages could explain the results of this study, taking into consideration the linguistic diversity in Montreal.

Other factors that might influence children's social preferences and selective learning are cultural practices and social norms. For instance, in studies conducted in Montreal where English and French languages are commonly used, bilingual children exhibited similar connections with both monolingual and bilingual informants. On the contrary, in the study conducted in Singapore where language-mixing is not welcomed and considered as less professional, bilingual children preferred the speaker who spoke one language over the speaker who mixed language. Thus, language seems not the only factor that guides children's reliance on the testimony of others, but a bunch of factors that could impact their selective trust.

To date, relatively little is known about why people do not believe non-native speakers. Previous studies have discussed two main explanations as to why children tend not to believe speakers who speak a non-native language. The first explanation is that children consider non-native speakers as linguistically less proficient than native speakers. In the second experiment in Kinzler et al.'s (2011) research, the experimenters asked the children why the speakers who speak their native accent or who speak a non-native accent made a

mistake in labeling the names of the novel objects. Children considered that the foreign-accented speaker gave an inaccurate answer because she didn't know the answer, while they considered that native-accented speaker was just pretending. These findings are consistent with Corriveau and Harris (2009) who revealed that preschool children are more likely to explain the inaccurate answers in terms of the informant's ignorance when the speaker was an unfamiliar teacher. Additionally, three-year-old children corrected foreign-accented speakers more than native-accented speakers when they provide an inaccurate answer, and they responded and reacted more when the native speaker was joking (Kinzler et al., 2011). Such findings indicate that children use an informant's language as a guiding cue for making their social judgments. Besides, these findings would suggest that children in their preschool year develop a sensitivity to accent as a social indicator. Native accented individuals are sensitive to foreign-accented individuals, and they may consider them as out-group members.

The second explanation is that children believe that non-native speakers are less credible than native-accented speakers. Researchers have predicted that a speaker's accent could impact their credibility for two reasons. First, an accent acts as a signal. Second, it makes the speech harder to understand (Lev-Ari and Keysar, 2010). As stated above, native accented individuals are sensitive to non-native accented individuals, and they may consider the language as an indicator that the individual is an out-group member. However, if the non-native accent plays the role of an indicator that an individual is a group or out-group member, then it is not the accent that affects the credibility of the speaker, but it is a result of the biases and prejudgments (Lev-Ari and Keysar, 2010). In a study conducted by Lev-Ari and Keysar (2010), they proposed that native individuals believe less the non-native individuals because their accents are harder to understand. In Experiment 1 of this study, the researchers tested

whether simple statements sound less true when said with foreign-accented informants than native-accented informants. They presented thirty native English participants with native-accented speakers and non-native English speakers who speak with a mild or heavy accent. After participants listened to all statements, they were asked to measure the truthfulness of each statement on a line, with one end marked as certainly false and the other marked as certainly true. As predicted, native-accented speakers were rated as more truthful than foreign-accented speakers. The researchers proposed that when native accented speakers perceive information shared by non-native accented speakers as less truthful, they misjudge their difficulty of comprehending the speech as the truthfulness of the information. Therefore, they proposed that the heaviness of the accent may act as a signal that impacts participant's difficulty in understanding the speech. Yet the truthfulness of the mildly and heavy accent did not vary. Thus, the researchers suggested that the heaviness of accent might not act as a sufficient cue. For this reason, they conducted a second experiment to explore whether awareness of the source of difficulty would decrease the influence of accent on truthfulness. In the second experiment, participants were said to rate the difficulty of the statements on a scale that ranged from very easy to very difficult. Statements uttered by mildly accented speakers were rated as truthful as the ones said by native speakers. Yet, they assessed sentences by speakers who spoke with a heavy accent as less truthful than the others. The researchers concluded that when individuals are aware of the difficulty of understanding non-native accents this could impact their judgment of the speaker's credibility, they manage to prevent this misattribution.

The literature on the language of testimony has also addressed the language mode of transmission. The language of the input is a multifaceted factor that has an impact on

children's trust in testimony. The literature has discussed oral versus print testimony. Imagine you went to a flower store, and you saw a flower; you imagined that you know its name by saying to yourself: "this is a Tulip!" Then you read the flower tag which says it is an Iris. You would certainly trust the name printed on the tag over your own knowledge. Indeed, individuals trust printed sources of information such as printed labels or stickers as they consider them as a reliable source of knowledge. Another scenario might be that someone who works there might come and tell you "This is an Iris;" you would trust the information given by the employee because he is more knowledgeable about the flowers' names than you are. Trusting the testimony of oral and printed sources of information begins early in our lives. Before learning how to read, children trust the information they receive orally from others. Studies have found that two-year-old children trust oral testimony even when the testimony contradicts their knowledge (Jaswal, 2010). Yet, older children are more selective when trusting what others tell them. Past studies have studied the extent to which pre-readers and early reader's children have trust in print-based information versus oral-based information as a powerful source of knowledge. Studies have indicated that when children develop essential reading skills, they tend to trust print-based information over oral-based information. In a study by Robinson, Einav, & Fox (2013), children were offered conflicting claims given by two toys about the name of an unknown animal. One toy made her claim through reading what was written on the label, while the other toy made only oral claims. Participants were asked to choose the name of the animal given by the two dolls. Results found that younger pre-reader children exhibited no preferences between both toys, whereas early readers preferred to trust the toy who read the printed statement and consider it more reliable than the other toy. Researchers suggested that before children can interpret print, they

trust both oral and printed sources of information equally. However, after learning how to interpret prints, children place more trust on informants who give print-based information.

In summary, children use diverse cues when deciding what makes a trustworthy informant. As we have mentioned above, children exhibit preferences for native-accented individuals over non-native accented individuals. Moreover, children may demonstrate social preferences and selective trust for speakers who speak their native accent but of distinct race over speakers who speak a non-native accent but of similar race. Also, children may trust a reliable informant over an unreliable informant regardless of their accent.

To my knowledge, there are no studies on children's trust in the testimony of language varieties in Lebanon. Given that Lebanon has a unique linguistic diversity that is also reflected in its trilingual educational policy and system. The present study explores whether Lebanese students' trust in testimony could vary by language (English, Modern Standard Arabic, and spoken Lebanese dialect).

Developmental Changes in Children's Selective Learning from Testimony

Past studies revealed that children exhibit a developmental progression in how they choose and weigh informant's cues when choosing whom they prefer to believe and learn from. In trusting the testimony of a reliable informant, four and five-year-old children can disregard the information if it conflicts with their first-hand experience. However, three years old children display less selectivity when choosing a reliable speaker (Clement, Koenig, & Harris, 2004). Hence, as children grow older, they become more selective and skeptical when choosing whom to trust even if the informant has a record of reliability. Another study has examined children's developmental shift in trusting verbal and non-verbal cues. Ghossainy, Al-Shawaf, & Woolley (2021) examined the ability of children of different ages to adjust

their trust in testimony in verbal testimony as a function of non-verbal testimony. Participants were presented with a video of an adult giving verbal and non-verbal cues about the location of something hidden in one of two boxes and then were asked to decide its location. The findings of the study showed that four, five and six-year-olds children trusted the verbal testimony where the sources were coherent. However, when the sources were not coherent, only six-year-olds children trusted the nonverbal cues while four-and five-year-old trusted the verbal cues. Thus, this might be because younger children are not yet aware of non-verbal cues.

Previous studies suggest that between the age of three and four, children display a developmental shift in their trusting the testimony of other people. Studies have shown that as children grow older, they become more skeptical even if the informant is a trustworthy one as their mother (Harris, Corriveau, Pasquini, Koenig, Fusaro, & Clement,2012). Researchers suggest that at a young age, children lack the ability to weigh which marker is the best for information so that they are indiscriminate when choosing between reliable and unreliable speakers. However, younger children are more selective and have more appreciation of the best markers for accurate information. Older children might differentiate the importance between past reliability and confidence as a knowledge indicator, but younger children might rely only on what they see in front of them (Brosseau-Liard, Cassels, &Birch, 2014).

Another explanation suggests that between age three and five children develop a conceptual change in their understanding of a false belief. Further, as children get older, they became more flexible in their understanding of the consistency of the informant, in which they are more aware that sometimes the informants might be accurate and sometimes

inaccurate. However, younger children are more limited in their understanding that an accurate informant is always accurate (Harris, Corriveau, Pasquini, Koenig, Fusaro, &Clement, 2012). Moreover, researchers suggest that as children age, they weigh the informant's epistemic proficiency more heavily than the informant's familiarity. This could suggest that children's developmental shift in their trust of testimony may have a firm maturation constituent. For instance, children become more socially flexible when they enter preschool, as they get to connect with the world beyond their family members (Harris, Corriveau, Pasquini, Koenig, Fusaro, &Clement, 2012).

Not only do children's trusting in the testimony of others differ during childhood, but also it differs between children and adults. Ronfard and Lane (2019) presented four to seven-year-old children and adults with an inaccurate informant. The participants played a game where they need to guess the place of a hidden sticker, in each trial the inaccurate informant made a declaration about the place. After noticing the inaccuracy of the informant, younger children quickly mistrust the informant's claims whereas older children and adults require more claims to make up their minds about the informant's character. Moreover, children and adults had different explanations about the character of the informant. Children believe that the informant was mistakenly incorrect on his claims, while adults believe that the informant made his claims inaccurate consciously. Thus, children's and adult's epistemic trust are not identical. Children's revising of epistemic trust continues to develop during childhood up until adulthood.

The Content of Testimony

Speakers' Expertise in Domains

Since this study focuses on domain as a factor that might influence children's preferences and trust in testimony. This section presents an overview on the content of testimony as a factor that influences trust in testimony. First, this section presents an overview on the ability of children to reflect on speakers' expertise in domains when deciding whom to trust. Then, an overview on children's trust in non-obvious entities as a content of testimony is presented.

Up to now, much of the research has been focused on children's ability to assess cues such as a speaker's accent, inaccuracy, past reliability, group consensus, gender, and race. Nonetheless little attention has been given to other speaker characteristics that could influence children's trust such as a speaker's expertise. There are some differences between expertise and ignorance. Being *ignorant* means that an informant lacks the knowledge in a certain domain. Lacking *expertise* means that the informant lacks the specialization knowledge related to the question given (Mills, 2013). Thus, identifying lack of expertise is tricky because someone can be expert in some domains and have basic information in others.

Studies have shown that by age 4, children have the ability to ascribe distinctive sorts of knowledge to recognizable experts in different domains (e.g., surgeon and engineer) and to novel experts (e.g., dog expert and motorcycle expert). To decide which speaker can give accurate information in a specific domain, children use their broad understanding of the domain of knowledge (Lutz & Keil, 2002). For example, four-and five-year-olds children

distinguish that a bicycle expert is someone who has knowledge of bicycles as well as the functioning of cars (near-category domain), functioning of machines (middle category domain), and physics (underlying principles domain). By age 4, children develop some skills to be able to use clues to conclude expertise to decide whether the speaker is giving possible "trustworthy" information related to creating an appropriate claim. With age, children become better at distinguishing distinctive kinds of expertise, and they use their understanding when deciding whom to trust (Danovitch & Keil, 2004).

Studies have shown that with age, preschool children become aware that it is possible for a knowledgeable informant to be expert in one domain and ignorant in other domains (Danovitch & Keil, 2004; Lutz & Keil, 2002). These studies have shown that children use their conceptual knowledge about kinds to understand that people have distinctive expertise, and that expertise can be presented in distinctive manners. For example, someone who can have knowledge about plants is more likely to have some knowledge about soil as opposed to knowledge about the human's respiratory system. These differences in knowledge that experts give might be tricky for children (Danovitch & Keil, 2004; Lutz & Keil, 2002).

Danovitch and Keil (2004) studied the ability of children at ages 5, 7, 9 and 11 to cluster knowledge in relation to coherent patterns in the domain of physics and social psychology. This study examined children's ability to generalize a person's knowledge in the domain of physics and social psychology when goals, topics, and principals were set in conflict. Children were asked to decide which of two specific topics an expert would know more. For instance, a statement on the topic related to physics discipline that someone

knows a lot about is “This person knows all about why large marbles make small marbles go farther when they bump into them.” A statement on the topic related to social psychology discipline that someone knows a lot about is “This person knows all about why if one kid has an ice cream in the playground, then other kids will have one also”. A different topic related to the topic presented were provided in different ways. For each discipline (physics and social psychology), a different goal and topic was presented for children to choose. For instance, for the physics discipline” Do they know why a hammer drives a nail better if you swing the hammer faster?” For social psychology, “Do they know why people smile when they see an old friend?”. Another choice was presented with different discipline with same goal and topic. Also, another choice was presented with same topic but different goal and discipline (Danovitch and Keil, 2004). The findings have shown that younger children are able to cluster knowledge based on topics and common goals, while older children are capable cluster knowledge based on disciplines. In addition, this study showed that clustering in the domain of physics was more powerful and appeared earlier in young children than clustering in the social psychology domain. The findings have shown that children’s ability to cluster knowledge changes during elementary years. Children as young as 5 years old are capable to recognize casual regularities when clustering knowledge in the domain of physics. For instance, adults as well as young children will assume that if a person knows about how rockets fly that person will also know more about how airplanes fly but not how plants reproduce. Children are not necessarily able to understand the specific concepts and laws behind flying airplanes, but they recognize the causal patterns relating to mechanics. By age 4, children are capable to recognize casual regularities when clustering knowledge in the domain of social

psychology. For instance, children will assume that if someone knows why kids want ice cream when they see somebody else eating it will know why ice cream is called “gelato” in Italy (Danovitch & Keil, 2004; Lutz & Keil, 2002). The way domains were described and presented in Danovitch and Keil (2004) study was used in this study.

Children’s Trust in Non-Obvious Entities

Children, as well as adults, learn from the testimony of others about things they cannot observe or learn about through the first-hand experience. Children often rely on people’s testimony when learning about non-obvious things such as religious entities, spiritual entities, scientific entities, endorsed things, and historical events. For instance, in the case of scientifically identified entities children learn about the shape of the earth, the function of human body organs, and the process of the animal’s life cycle. Young children could accept other’s claims that some animal-like ostrich is certainly a kind of bird (Jaswal, 2010). Children firmly rely on adult’s testimony in learning about past historical events, historical characters, and extinct animals. In addition, children learn from adult’s testimony that the earth is spherical. However, they might reject such testimony since it conflicts with their first-hand experience since what they feel and believe is that the earth is flat (Harris, Koenig, Corriveau, & Jawsal, 2017). Therefore, children rely on adult’s testimony when their direct experience is unattainable or when they cannot prove assertions to themselves (Harris & Koenig, 2006).

Children’s dependence on other’s testimony is not limited only to the factual/scientific realm. They can accept and believe in the existence of God and the afterlife (Harris & Koenig, 2006). Even though children rely on people’s testimony, they could ignore or refuse information that is not in agreement with what they previously had experienced.

Thus, they come to accept verbally the knowledge that they cannot directly observe themselves. For this reason, in the spiritual domains, young children must depend on other people's testimony about spiritual entities. Moreover, research has also examined children's ability to differentiate between reality and fantasy (Woolley & Ghossainy, 2013). Children between the ages of three and eight-year-olds face a difficulty in differentiating between reality and fantasy. Young children are considered "naïve skeptics" when they judged the reality level of fictional news.

Studies have shown that children learn about scientific and religious entities from the testimony of adults. Children's confidence about the existence of some scientific entities or religious entities can vary depending on the sequence of testimony that they obtain. In other words, the testimony of these unobservable entities might vary depending on how many children receive talk about the existence of unobservable entities such as when children learn to wash their hands before eating to remove out germs. The talk they receive is highly connected to the levels of existence and levels of confidence in these entities. The more children receive talk about entities in these domains, the more they develop confidence in their existence. Harris, Pasquini, Duke, Asscher, & Pons (2006) compared four to eight-years-old children's judgment on the existence of five entities such as scientific entities (e.g., germs), impossible (e.g., flying pigs) and real entities (e.g., trees), endorsed things (e.g. Santa clause), and equivocal things (e.g.,witches). Harris and colleagues (2006) found that children showed greater confidence in believing about scientific entities such as germs more than endorsed things such as Santa Clause. Despite that their understanding of germs is limited, the frequency in which the children were receiving the testimony about germs enabled them to conclude that germs do exist in real life. Yet, children might develop diverse levels of

confidence if they are living in a society where religious beliefs are not limited (Harris & Corriveau, 2014; Leeuwen, 2014).

Nevertheless, past studies indicated that children and adults exhibit more confidence in the presence of scientific entities compared to religious entities. Unlike in the religious domain, in the scientific domain, declarations about nature are tested, and scientists provide a hypothesis to a scientific explanation for natural phenomena. Moreover, the religious domain provides less consensus about the presence of religious entities (God) as opposed to the scientific domain which provides more extensive assents about the presence of imperceptible entities (electrons and viruses) (Davoodi et al., 2019). This suggests that parent's beliefs might differ across those domains and therefore the testimony that children will be exposed to in these domains will differ.

Davoodi et al. (2019) determined Iranian parent's level of confidence in the existence of scientific and religious entities and the parent's attitudes towards the two domains. The authors also assessed five to ten-years-old children about whether or not they believe in the existence of the scientific (e.g., atoms) and religious entities (e.g., souls and heaven). They found that Iranian parents expressed a high level of confidence in the existence of scientific and religious entities. Yet, they were more confident about the existence of scientific entities than religious entities. Further, parents valued both domains in their lives but valued more the science domain than the religious domain in their everyday life. Children, as adults, showed confidence in the existence of scientific and religious entities. However, unlike their parents, children's levels of confidence were the same for both entities. Older children like their parents were more confident about the existence of scientific entities than religious entities. The authors suggested that with age children's exposure to scientific content might

develop more confidence in their beliefs about unobservable entities within the scientific domain as opposed to their beliefs in unobserved religious entities.

Such differences in adult's and children's attitudes and testimony about unobservable entities are different from one culture to another. For instance, unreligious adults show doubts about the existence of unobservable entities, unlike religious adults who show more confidence. Yet, religious people show more confidence in the existence of scientific entities than in religious ones. Studies have suggested that religiosity and societal consent might affect children and adult's beliefs about the existence of unobservable entities in the scientific and religious domains. Clegg, Cui, Harris, & Corriveau (2019) examined the role of religiosity and societal consent on parents' rating level of confidence in the existence of scientific and religious entities in two different cultures: The United States and China. The participants were asked to rate their level of confidence in the existence of scientific and religious entities that has more societal assent such as Heaven and germs, and low societal assent such as aliens and evolution. The findings of the study showed that participants expressed more confidence in the existence of high assent scientific entities than high assent religious entities. Also, the findings revealed that there is no relation between religiosity and parent's judgment of the existence of high-assent scientific entities in both countries. On the other hand, religiosity affect parent's judgment on the existence of high-assent religious entities in both countries. Certainly, adult's testimony about the existence of scientific entities is not affected by religiosity or society agreement in both United States and China. On the other hand, individual's degree of religiosity highly influenced their testimony about the existence of high-assent religious entities in either country.

As we previously mentioned, preschoolers do not merely accept what they are told about. Thus, young children are skeptical; they refuse information that contradicts their previous knowledge, or with their first-hand experience. However, both children and adults believe in scientific entities and scientific phenomena even if it contradicts their intuitive conceptions and prior knowledge. These include souls, germs, bacteria, heaven, God, afterlife, the shape of the earth. Skepticism allows children to avoid inaccurate or wrong information. Thus, being skeptical when learning about intuition that contradicts their first-hand experience can hinder children from learning (Lane & Harris, 2014). People learn about such intuition from the school, our parents, culture, traditions, or from religious beliefs. For instance, people learn about God from other's testimony and from the beliefs they gain from their society, family, friends, and spiritual guide. Children can depend on other's testimony to conclude about the certainty of religious entities (Canfield & Ganea, 2014). For instance, when children hear from their parents that "God knows your dreams", and they hear that their uncle knows his dreams, children might conclude that both human beings and God have the same information. Thus, children form such knowledge because they cannot comprehend the conceits behind other's testimony.

The Linguistic Context in Lebanon

Lebanon, a small country located on the Mediterranean Sea which one can barely see on the world map, provides a rich source for language-based studies because of its distinctive trilingual and multicultural composition. Although the official language in Lebanon is the Modern Standard Arabic, the Lebanese community is characterized by the diversity of the languages used. The other languages that exist are Lebanese Arabic, Armenian, Kurdish, as well as English, and French as foreign languages (Esseili, 2011). The Kurdish and the

Armenian language are only used by its ethnic group, and it does not affect Lebanese language policy. Foreign languages such as English and French are primary languages and are taught in almost all Lebanese schools (Tohme, 2019). This multilinguistic diversity results in the Lebanese being frequent code-switcher and code-mixer between Arabic and English.

This linguistic diversity could emanate from a variety of reasons. One of the reasons is the presence of diverse ethnic groups (Arab, Kurdish, Armenian), migration (Syrian, Palestinian, Armenian), and the presence of different religions (Muslims and Christians). Also, the presence of domestic foreign workers (Ethiopians and Bangladeshis) brings different languages and cultures (Esseili, 2017). In addition, the foundation of foreign schools and universities had a strong impact on spreading the foreign languages among the Lebanese community (Tohme, 2019).

Moreover, during the French mandate, the French language was introduced into the educational sector and became the official language in Lebanon along with the Modern Standard Arabic. The French mandate also affected the Lebanese lifestyle, culture, and identity. French continued to be the foreign language taught in schools and universities but has now been accompanied by the emergence of English as a global language (Esseili, 2017). The shifting from French to the English language will be further discussed in the section below.

Language Allocation Across the Lebanese Curriculum

Although Arabic is the official language in the Arab region, the region is characterized by significant multilingualism. Since the early 20th century, Arab countries were influenced formally and informally by various languages such as English, French,

German, Italian, and many European languages. This linguistic phenomenon could be explained due to the French, Italian, and British colonial mandates that lasted for many decades in various Arab countries. During and after the mandates, those countries that had been colonies introduced the teaching of foreign languages into their educational system (Al-Khatib, 2006).

In various Arab countries, it is not always simply Arabic that is used, even though Arabic is the official language. Even though the Arabic and Tamazight language are the official languages in Morocco, the French language has dominated as a foreign language in the educational system (Jaafari, 2019). From the first primary school years, children begin to learn French as a separate subject up until high school. In addition, Gulf states and Saudi Arabia officially implemented English as a medium of instruction for scientific subjects in schools and universities (Louber & Troudi, 2019). In the case of Lebanon, scientific subjects and mathematics are taught in English or French, while humanities and social sciences are taught in Arabic (Esseili, 2017). This could be traced back to the French mandate in which Arabic and French were established as Lebanon's official languages (Shaaban & Ghaith, 1999). What follows is a concise description of the Lebanese educational context.

What makes Lebanon a distinctive country is its multilingual and multicultural diversity. This is reflected in Lebanon's trilingual educational policy and system. After Lebanese independence, a new national curriculum was developed that contributed to Lebanon's trilingual character. The new curriculum allowed the schools to introduce Arabic and a foreign language (either French or English) in primary school and a third language in the middle school grades (Salloum & Bou Jaoude, 2020). Although Arabic remains the official language, the new curriculum allowed schools at all educational levels to use either

French or English as a medium of instruction (Bacha & Bahous, 2011; Shaaban, 1997). Thus, only social sciences and humanities are taught in the Arabic language, whereas the natural sciences and mathematics are taught in the foreign language (Thonhauser, 2000).

High school students and university students exhibit different attitudes towards learning foreign languages. Shaaban and Ghaith's (2002) study explored Lebanese university students' views about the vitality of Arabic, English, and French languages. The study aimed to examine how Lebanese students perceive the vitality of the three languages in reference to the situation they are used in, social and business domains, culture, and identity. The findings of the study showed that university students perceive Arabic as part of their identity and as a friendly way of communication, French for fun, prestige, and early school years, and English for upper education and for global market and trade. University students find that learning French is easier than learning English. Further, Lebanese individuals prefer to enter English universities as they believe that it opens up more windows for future careers. Moreover, Lebanese individuals exhibited preferences towards writing native versus foreign languages. Thonhauser (2000) examined six multilingual individuals' literacy practices. Participants were interviewed and asked to complete a questionnaire that included questions about literacy practices. When asked about writing in Arabic, French, or English, Lebanese individuals preferred to use English or French instead of Arabic (Thonhauser, 2000).

Moreover, Orr and Annous (2018) explored university student's attitudes towards the language policy used in Lebanon. Student's exhibited positive attitudes towards learning scientific knowledge in English rather than in Arabic. They preferred to learn scientific knowledge in English because they thought that Arabic language could hinder their understanding of the concepts believing that translation is not possible in this case. Further,

they considered the English language to be a global language that could ease the way to immigration. On the other hand, students did not think of the Arabic as a language of power, and many found it difficult to learn. Thus, students did not consider Arabic language to be a global language. Furthermore, students believed that some subjects or university majors cannot be taught in the Arabic language.

In light of the literature reviewed, the context of Lebanon, and Lebanese students' attitudes towards different languages, this study examines trust in testimony in the context of elementary schooling in Lebanon. It was hypothesized that the multilingual context in Lebanon where different languages are allocated to different subjects within the Lebanese curriculum (science and mathematics are taught in a foreign language English or French) and (social studies and humanities are taught in Modern Standard Arabic) will affect elementary school children's trust in testimony. Specifically, the present study examined the effect of language varieties (English, Modern Standard Arabic, Lebanese Dialect), domains (science and social), grade (one and five), and gender (males and females) on trust in testimony and whether there are interactions between those factors.

CHAPTER 3

METHODOLOGY SECTION

Background and Overview

The aim of this study was to examine the effect of language varieties, domains, grade, and gender on trust in testimony and whether or not there are interactions between those factors, in the context of elementary Lebanese schooling. This chapter describes the research design and methods used in this study. It describes the population characteristics, sample and sampling procedure, research process, instruments used for data collection, data collection procedures, data analyses conducted, and validity and reliability.

This study uses a quantitative research design examining whether the participants' belief in statements will vary by domain (science and social), by language (English, Modern Standard Arabic, Lebanese Arabic), by grade (grade 1 and grade 5) and by gender and the interaction between those variables. The instrument used for data collection is an oral structured interview in which recordings of the same speaker uttering paired statements dealing with scientific and social domains are played to participants who were then asked to decide which of the two statements they believe. Each statement was presented in one of the three different languages/language varieties: English language, Modern Standard Arabic, and Lebanese dialect (Ammiyah). The sample selected children attending a middle SES population (this operationalized as an annual fee of X per child) private school which implemented the Lebanese curriculum in elementary grades. The sample consisted of 44 students, 22 from each of grades one and five.

Selected School

A list of phone numbers of schools in Sidon district that fit the criteria of a school serving a middle SES community, enrolls girls and boys, offers the Lebanese curriculum and teaches science and mathematics in English and social studies in Arabic from grade one was prepared. The researcher contacted the schools via phone and asked if they were interested to participate in the study. A school located in Sidon expressed interest and the researcher contacted the school principal and sent an invitation letter via email asking for permission to conduct the research study at their institution and allow for parents of children in grade one and five to be contacted and asked to give their consent for children to participate.

Participants

The total sample consisted of 44 participating children: twenty-two participants from grade one whose ages ranged between 6 and 7-years-old and twenty-two from grade five whose ages ranged between 10 and 11-years-old. Moving on to gender, participating children were 25 males (56.8%) and 19 girls (43.2%). The Fifth grade cohort was chosen because children at that age have been exposed for some years to instruction in the language varieties allocated across the curriculum, and the grade one cohort was chosen because children at that age have little exposure.

Sampling Procedure

After the approval of the school principal, the researcher distributed the parental invitation letter, demographic questionnaire (Appendix A), and parental permission letter via a school-based administrator who didn't have authority over the students to their parents. Parents who consented that their children participate were asked to contact the researcher on

the contact information presented in the invitation letter. Parents who contacted the researcher were asked to fill the demographic questionnaire and send it with their child in a sealed envelope. The questionnaire included questions about place of birth, parents' nationalities, the language(s) used at home with the participant, the language(s) the participant use with parents/siblings/ friends, first language, frequency of use of different languages, and school information.

Participants who were born in country other than Lebanon or/and had non-Lebanese parents were excluded from the study. Only participants who were born in Lebanon from Lebanese parents were selected. Also, only participants who have spent all their school years since early elementary in the same school were invited to participate.

Participants whose parents indicated that their child " always" or "most frequently" uses Lebanese dialect when speaking with their parents/siblings/peers, and whose parents "always" or "most frequently" use Lebanese dialect with them at home were included in the study.

Methods of Data Collection

Structured Interview

An oral structured interview was used as the primary data collection instrument. A female bilingual speaker recorded six paired trivia statements in science domain and six paired statements in social domain. As previously discussed in Chapter Two, preschool children are capable to recognize casual regularities when clustering knowledge and children at that age can distinguish different domains based on distinct causal relationship

(mechanical versus social\psychological). According to the findings in the literature review, the statements used in this study were designed to reflect two different domains with different type of cause-effect relationship. The statements were formulated in a way that would allow children to distinguish the type of causal relationship involve drawing on their broad understanding of the distinct types of causal relations in different domains. For instance, “scientific statements” included dynamic, energetic, force interactions between objects. On the other hand, “social statements” included causal relations between social events and people’s feelings or reactions.

The statements designed were “trivia” statements in science and social domains that participants were assumed not to have encountered before (Appendix B). The items were designed to allow participants to distinguish the domain (science or social) as explained above but have no prior knowledge about the truth of the statement presented. The statements were paired where the statements in each pair included minor differences which would make a judgment of truth a meaningful task. The statements were designed of to be of intermediate length: not too short to be boring and allow participants to lose concentration or too long making them difficult to understand;effort was put into equating the length and complexity of the statements in each pair.

According to the literature review, speaker’s accent can influence children’s trust in testimony. So, in this study we controlled the factors that could influence children’s choices and thus impact their trust such as speaker’s accent, sound of voice, tone of voice, voice loudness, speaker’s appearance, and gender. For instance, instead of having multiple speakers we had one female bilingual speaker for this study. In this way, we reduced the

chance of participants getting influenced by speaker's accent, voice, or gender. To control the factor related to the speaker's appearance we used a picture of a computer speaker in all the slides. The female bilingual speaker recorded all the paired statements in both domains (science and social) in three language varieties (English- Modern Standard Arabic and Lebanese dialect). The recorded statements along with a picture of computer speakers were combined into a PowerPoint presentation. On each slide, the speaker uttered a paired statement in two different language varieties, and different paired statements were used on each slide.

To introduce the task to children, three paired statements were designed each in a different language: one pair of statements in English, one pair in Modern Standard Arabic, and one pair in the Lebanese dialect. The paired statements designed for the introductory task were trivia statements that we assumed participants have encountered before (Appendix C). Each of the two statements in each introductory pair was presented in the same language so as not to draw attention to language as factor to influence their choice but focus on the content of the statements. We made sure to design statements that participants have encountered before and were pairs with a clear contrast and that the children would be able to confidently judge one to be right and the other to be wrong. The main purpose was for the participants to understood that the task as to judge which of the two statements the participant believed was correct. The same speaker recorded the introductory and the actual study statements. Recorded pairs of statements were embedded in PowerPoint slides, along with two pictures of computer speakers. For each slide presented, the two recordings were played in succession and the child was asked which he/she believed was correct.

Questionnaire

For the purpose of the study, a demographics questionnaire (Appendix A) was used as a sampling instrument. The questionnaire was designed in a way that could help assess a potential participant's language background. The questionnaire involved forced choice items; so that the responses can be systematically used to identify children that fit the criteria. The questionnaire consisted of four sections. The first section included questions about the parents, the second included questions about the student, the third section included questions about the student's linguistic background, the questionnaire ends with a section on the frequency use of languages.

Procedure

Participating children were presented with twelve pairs of statements in the context of a semi-structured interview in which they had to judge which of the two statements they believed to be correct. Six of the pairs were scientific statements and 6 were social statements as described above. Each pair presented included statements recorded in a different language/language variety, for three different comparison pairs: English vs. Modern Standard Arabic, Modern Standard Arabic vs the Lebanese dialect, and English vs. the Lebanese dialect. Each comparison pair appeared twice within each domain. Pairs were counter-balanced across participants for domain, language comparison and order in which a language variety was presented within a pair. That is, the order for the domains was varied across participants (e.g., whether the trials began with science statements or social statements). Second, language comparison pairs were counterbalanced across participants. Finally, the order of presentation of the language/language variety within a pair was varied for each participant and across participants (e.g., English then MSA; or MSA then English

in a trial in which those two languages a presented as a comparison pair). In this way, we minimized any error associated with order effects which could impact the results of this study.

Each participant was interviewed alone in person in a quite private room at school made available to the researcher by the school administrator. The researcher used her personal laptop where all the materials for the study were included. Also, the researcher used an external speaker to ensure that all participants can clearly hear the statements. The children participating in the study were interviewed randomly according to their schedule at school.

The researcher told participants that they were going to listen to two recording of teachers telling you a piece of information and you have to decide which you believe. The researcher started with the introductory trials to make sure that the participant understood the task. The researcher played the PowerPoint presentations on a laptop screen and after each slide the researcher asked the participants to decide whom they believe. After the introductory task, the researcher directly started with the statements prepared for the purpose of this study.

The same procedure was done for each trial in each domain. Participants' responses were written on a separate notebook, and their responses were recorded to double check participants' answers. Each interview took about 10 to 12 minutes. Both age groups understood the task and answered all the introductory trials correctly.

Each participant was interviewed alone in person in a quite separate room given to the researcher by the school administer. The researcher used her personal laptop where all the materials for the study were included. Also, the researcher used a separate speaker to ensure that all participants can clearly hear the statements. The children participating in the study were interviewed randomly according to their schedule at school. The trials created for both domains were counterbalanced across all participants. If the first participant listened to trial 1 (science and social), the next participant listened to trial 2 (science and social).

The researcher told participants that they were going to listen to two teachers, each teacher will tell you an information and you have to decide who you believe. The researcher started with the trial task to make sure that the participant understood well the task. The researcher played the PowerPoint presentations on a laptop screen and after each slide the researcher asked the participants to decide whom they believe. After the trial task, the researcher directly started with the actual statements prepared for the purpose of this study.

The same procedure was done for each trial in each domain. Participants' responses were written on a separate notebook, and their responses were recorded to double check participants' answers. Each interview took about 10 to 12 minutes. Both age groups understood the task and answered all the introductory trials correctly.

Data- Analysis Procedure

Participants' responses were added to Statistical Package for the Social Sciences (SPSS) to compare the children's preferences as a function of language/language variety,

subject domain, grade and gender. For each trial, the data was recorded for each of the following variables: participant, gender (male, female), grade level (grade one or five), domain (science, social), language comparison (E vs SA, MSA vs LD, E vs LD). The fifth variable is language preference with three values (1= English, 2= MSA, 3= LD) and language variety preferences with two values (0= baseline variety, 1= foreign variety). This last variable was included to allow for a Binary Logistic regression analysis (assuming a binary dependent variable) even though there are three different comparison pairs. For each comparison pair we designated a "foreign" variety (for foreign language) and baseline variety (for native language). This was done for the convenience of the analysis. For example, in the case of E vs. MSA, E is labelled the foreign variety and MSA the baseline variety; in the case of MSA vs. LD, MSA is labelled the foreign variety and LD is the baseline variety; in the case of E vs. LD, E is labelled the foreign variety and LD is the baseline variety. It is important to emphasize that this is just a way to standardize the presentation.

After entering all the data, we analysed the results using descriptive statistics (crosstabulations) to compare the frequencies and percentages of the language preferences for each comparison pair. This initial analysis collapses the data across the variables of grade, domain, and gender. Second, a series of crosstabulations descriptive analyses were conducted to present the language preferences within language comparison pairs by domain, grade and gender. Finally, an overall crosstabulation was conducted to allow for interactions between the different variables to be descriptively examined. Chi-square tests were conducted to examine the association between these categorical variables. In addition, three Binary logistic regression analyses were conducted, one for each language

comparison pair, to identify in each case any statistically significant main effects of domain, grade, or gender and any pairwise interactions.

Validity and Reliability

To ensure internal validity, we counterbalanced the presentation of the paired statements for domain, language variety comparison and order of language within a comparison pair. This minimalized the possible confounds formed by sequence effects. Also, there was no substantive preference for any statement over the other. This was tested on a small group of students who were not participating in the actual study but are the same age as the actual participating students. Children were presented with the actual paired statements in both domains. The paired statements were presented in the same language variety. Children were asked to decide whom they believe. Thus, children's preferences were 50/50. As for the reliability issue, care was taken to use one speaker who would deliver the statements in the same way with the same speed and intonation. Also, care was taken to have the pace of the presentation the same across participants and generally care was taken to standardize the presentation across participants.

CHAPTER 4

RESULTS

This chapter presents the results of this study. The presentation starts by providing an overview of the participants' language preferences when presented with pairs of statements, with each statement articulated orally in one of three language varieties: Lebanese Dialect, Modern Standard Arabic, or English. This initial analysis collapses the data across the variables of grade, domain, and gender. This overview is then followed by a series of more focused analyses examining the effects of the main variables. Chi-square tests were conducted to examine the association between these categorical variables. That is, the second section presents the frequencies results and percentages of the participating children's language preferences for each comparison pair by domain, to see the effect of domain on language preferences. The third section presents the frequencies and percentages of the participating children's language preferences for each comparison pair by grade, to see the effect of grade on language preference. The fourth section presents the frequencies and percentages of the participating children's language preferences for each comparison pair by gender, to see the effect of gender on language preference. The Fifth section presents the interactions between grade, domain, gender, and comparison pair. The final section presents the results of Binary logistic regression analyses to examine whether there are statistically significant main effects of each independent variable (domain, grade, and gender) as well as any significant pairwise interactions.

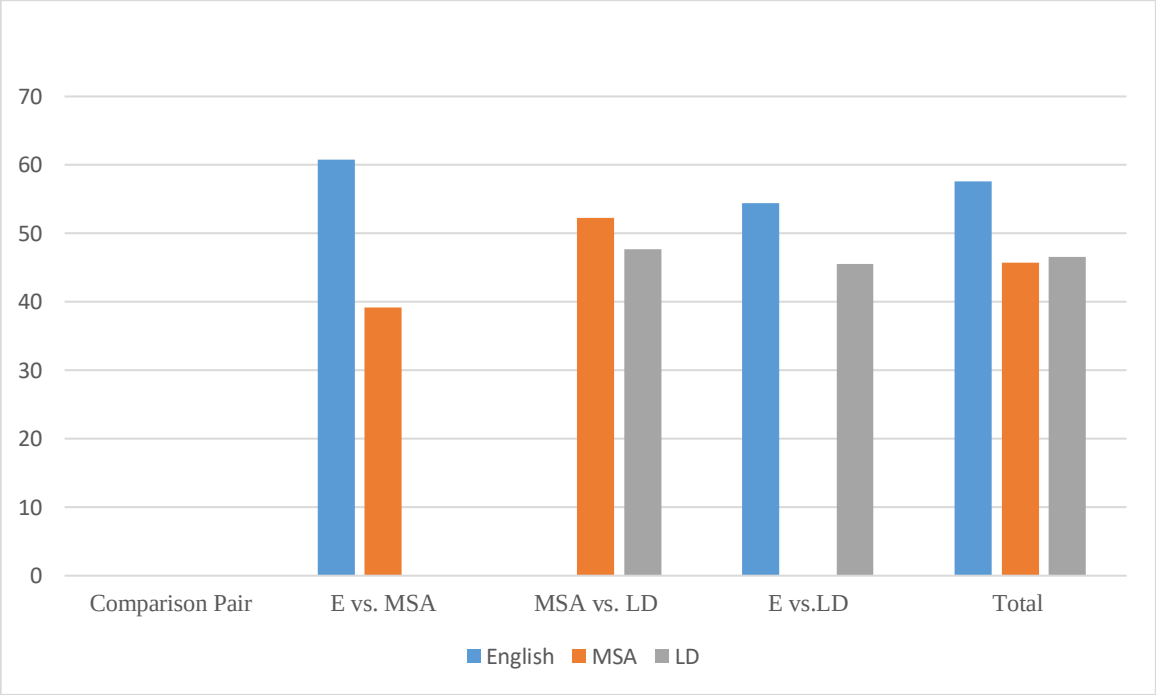
An Overview of Language Preferences

In this section, the participating children's language preferences are presented overall, collapsing across grade, domain and gender. Children were presented with pairs of statements with each statement articulated orally in one of three language varieties: Lebanese Dialect, Modern Standard Arabic and English. That is, children's preferences in each of three language comparison pairs are reported: English versus Modern Standard Arabic; English versus Lebanese Dialect; and Modern Standard Arabic versus Lebanese Dialect. Figure 1 presents the percentages of the language preferences for each comparison pair. Students' preferential trust in statements formulated in particular languages/language variety will be referred to as "preferences" for the ease of the presentation in the rest of the document.

Overall, English is the preferred variety, preferred in 57.6 % of the comparison pairs in which it was an option in comparison to both MSA (45.7%) and LD (46.6%). More specifically, within comparison pairs English (60.8%) is preferred over MSA (39.2%); English (54.5%) is also preferred over LD (45.5%). When comparing Arabic language varieties, there is a marginal preference for MSA (52.7%) over LD (47.3%).

Figure 1.

Percentages of Language Preference Based on Comparison Pair



*English=E; Modern Standard Arabic=MSA; Lebanese Dialect=LD

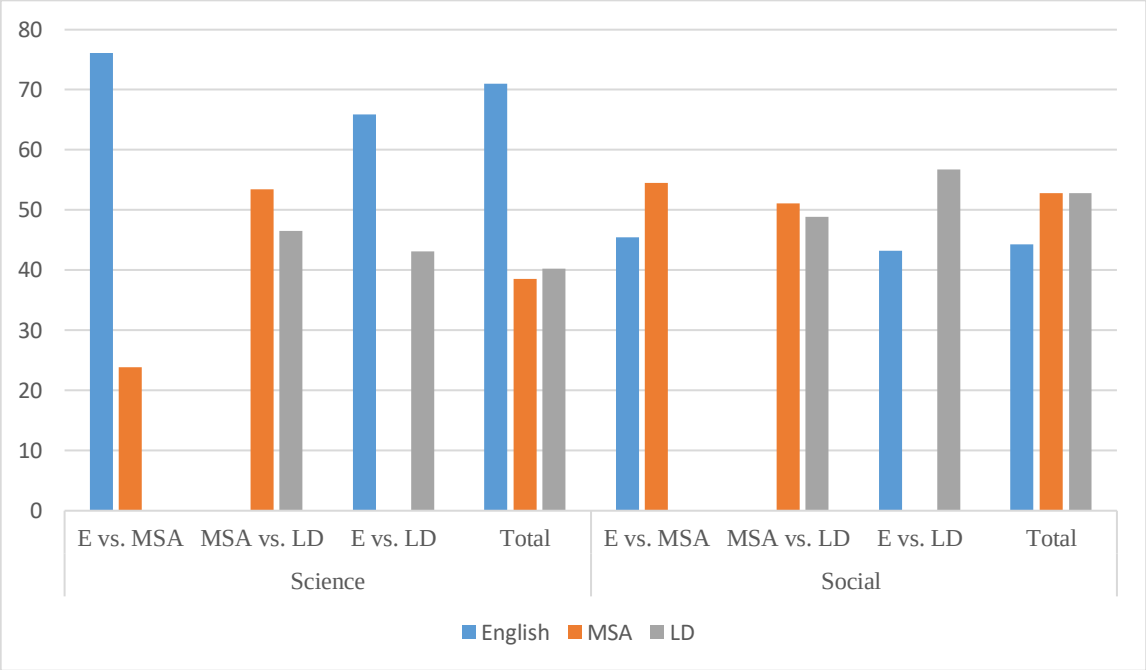
Language Preference within Comparison Pair by Domain

In this section, a closer look at how languages preferences within each comparison pair vary by domain (science versus social). Figure 2 presents the percentages of the participating children's language preference within comparison pair by domain. Overall, English is the preferred variety in the science domain. In the science domain, English was preferred in 71% of the comparison pairs in which it was an option in comparison to both MSA (38.6%) and LD (40.3%). More specifically, within comparison pairs, English (76.1%) is preferred over MSA (23.9%); English (65.9%) is also preferred over LD

(34.1%). When comparing Arabic language varieties, there is a marginal preference for MSA (53.5%) over LD (46.5%). In the social domain, both Modern Standard Arabic and Lebanese Dialect are the equally preferred varieties in the social domain; both preferred in 52.8% of the comparison pairs in which they were an option; English was preferred in 44.3% of the comparison pairs in which it was an option. More specifically, within comparison pairs. MSA (54.5%) is preferred over English (45.5%). LD (56.8%) is preferred over English (43.2%). When comparing Arabic language varieties, there is a marginal preference for MSA (51.1%) over LD (48.9%). Language preference patterns varied significantly as a function of domain, with English preferred over MSA ($\chi 2 = 17.38$, df=1, $p<0.001$) and over LD ($\chi 2 = 9.17$, df=1, $p<0.01$) in the science but not the social domain. Preferences of LD and MSA did not vary significantly by domain.

Figure 2.

Percentages of Language Preference by Comparison Pair and Domain



*English=E; Modern Standard Arabic=MSA; Lebanese Dialect=LD

Language Preference within Comparison Pair by Grade

This section presents a closer look at how language preferences within each comparison pair vary by grade (grade one versus grade five). Figure 3 presents the percentages of the participating children's language preference within comparison pair by grade. Overall, both English and Lebanese Dialect are the preferred varieties in grade one. There is no noticeable difference in the frequencies and percentages in both varieties as Lebanese Dialect is preferred in 53.9% and English is preferred in 52.8% of the comparison pairs in which they were an option. In contrast, MSA was preferred in 43.2% of the comparison pairs in which they were an option. More specifically, within comparison

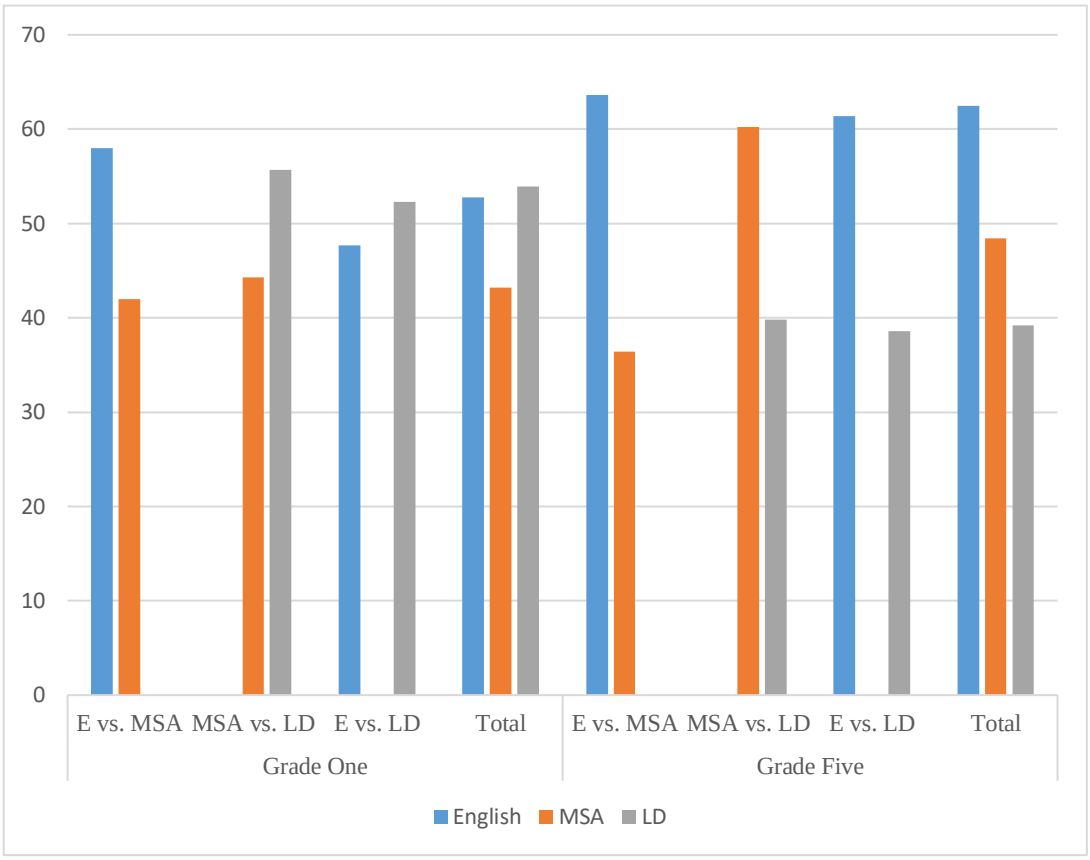
pairs, English (58%) is preferred over MSA (42%); LD (52.3%) is marginally preferred over English (47.7%). When comparing Arabic language varieties, Lebanese Dialect (55.7%) is preferred over MSA (44.3%).

Generally, English is the preferred variety in grade five. English was preferred in 62.5% of the comparison pairs in which it was an option in comparison to both MSA (48.4%) and Lebanese Dialect (39.2%). More specifically, within comparison pairs, English (63.6%) is preferred over MSA (36.4%); English (61.4%) is also preferred over LD (38.6%). When comparing Arabic language varieties, MSA (60.2%) is preferred over LD (39.8%).

Language preference patterns varied significantly as a function of grade, MSA preferred over LD by Grade 5 students but not Grade 1 students ($\chi 2 = 4.46$, df=1, $p<0.05$. The preference for English over each of MSA was found across grades and this preference did not vary significantly by grade. While there was a preference for English over LD in grade 5 but not grade 1, this differing pattern of preferences was not statistically significant.

Figure 3.

Percentages of Language Preference by Comparison Pair and Grade



*English=E; Modern Standard Arabic=MSA; Lebanese Dialect=LD

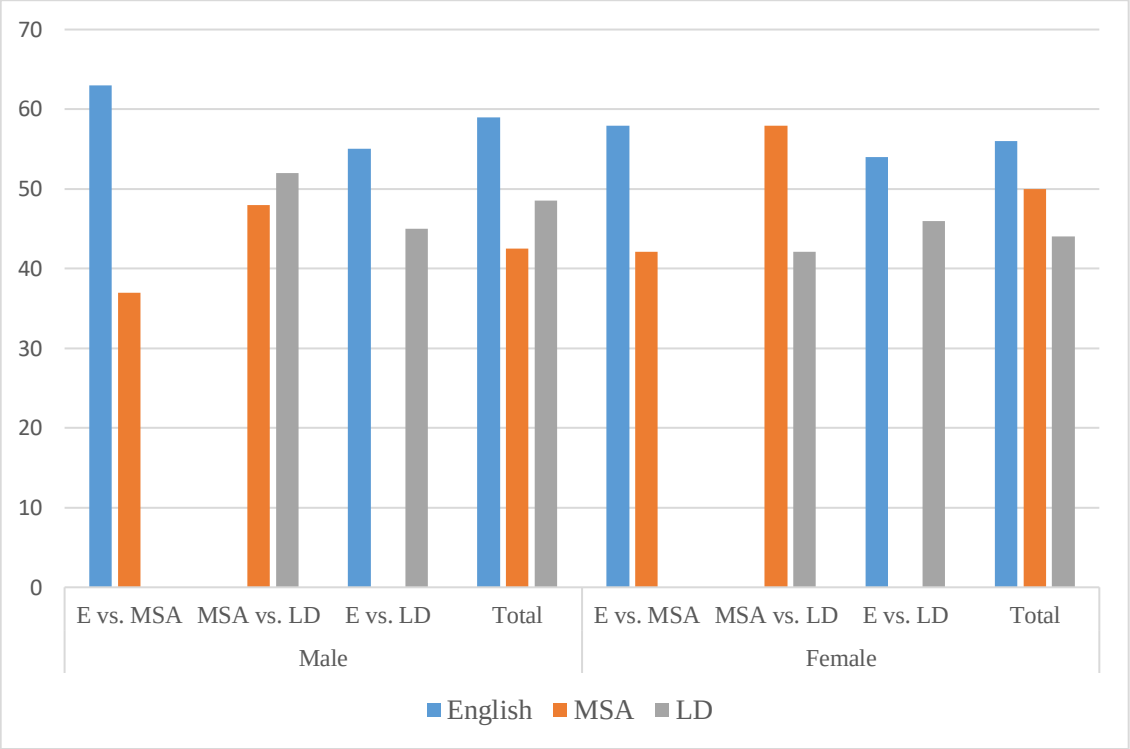
Language Preference within Comparison Pair by Gender

This section provides a closer look at how languages preferences within each comparison pair vary by gender (male versus female). These results are presented in figure 4. Overall, English is the preferred variety in both males and females. In males, English is preferred in 59% of the comparison pairs in which it was an option in comparison to both MSA (42.5%) and LD (48.5%). On the other hand, females preferred English in 56% of the comparison pairs in which it was an option in comparison to both MSA (50%) and LD

(44%). More specifically, within comparison pairs, males preferred English (63%) over MSA (37%). Also, females preferred English (57.9%) over MSA (42.1%). Both males and females preferred English over LD. Males preferred English (55%) over LD (45%), while females preferred English (54%) over LD (46%). When comparing Arabic language varieties, males marginally preferred LD (52%) over MSA (48%), while females more clearly preferred MSA (57.9%) over LD (42.1%). Chi square tests confirm that preference for English over each of MSA and LD does not vary significantly with gender. Moreover, while there was a tendency for MSA to be preferred over LD by girls but not boys, this tendency was not statistically significant.

Figure 4.

Percentages of Language Preference by Comparison Pair and Gender



*English=E; Modern Standard Arabic=MSA; Lebanese Dialect=LD

Interaction Between Grade, Domain, Gender, Variety Preference, And Comparison Pair

This section will provide a more detailed picture of how language preferences within each comparison pair vary by grade (one and five), domain (science and social), and gender (males and female). The combined results are presented in figures 5 and 6. For ease of presentation of the results from the different comparison pairs, the more generic the labels “baseline variety” and “foreign variety” are used. What is considered a “foreign” variety is for foreign language and what is considered a “baseline” variety is for native

language. This was done for the convenience of the analysis. Therefore, in the case of E vs. MSA, E is labelled the foreign variety and MSA the baseline variety; in the case of MSA vs. LD, MSA is labelled the foreign variety and LD is the baseline variety; in the case of E vs. LD, E is labelled the foreign variety and LD is the baseline variety. It is important to emphasize that this is just a way to standardize the presentation.

I highlight here some of the main patterns reflected in figure 5, beginning with preferences in the science domain. English is the preferred variety when it was an option in comparison to MSA in both males and females in both grades (one and five). In both grades, females showed a greater preference for English than males. When comparing Arabic language varieties, LD is the preferred variety in grade one males, while grade five males preferred both MSA and LD equally. On the other hand, both grade one and grade five females preferred MSA over LD. In the case of E vs. LD, grade one males preferred both varieties equally, while grade one and grade five females preferred English over LD.

Moving on to the social domain which is presented in figure 6 grade one and grade five males preferred English over LD. While grade one and grade five females preferred LD over English. When comparing Arabic language varieties, both males and females in grade one preferred LD over MSA. On the other hand, both males and females in grade five preferred MSA over LD. In the case of E vs. LD, both males and females in grade one preferred LD over English. On the other hand, grade five males preferred English over LD. While grade five females preferred LD over English.

Among these trends a number of significant associations between these different variables were identified through Chi Square analyses. Domain and grade interact in their effect on the relative preference for English and MSA ($\chi 2 = 15.91$, df=1, $p<0.001$) with English increasingly preferred over MSA in science and MSA increasingly preferred over English in the social domain. Domain and gender interact in their effect on the relative preference for English and MSA ($\chi 2 = 21.59$, df=1, $p<0.001$) with MSA preferred among girls in social domain, where both prefer English over MSA in the science domain. Domain and grade interact in their effect on the relative preference for English and LD ($\chi 2 = 4.79$, df=1, $p<0.05$) where LD is preferred over English in the social domain in grade one, but that preference disappears in grade five, while English is preferred over LD in science across both grade levels. Moreover, domain and gender interact in their effect on the relative preference of English and LD ($\chi 2 = 6.41$, df=1, $p<0.05$), where girls show a greater preference for LD over English in the social domain, whereas both girls and both prefer English over LD in the science domain. Finally, grade and gender interact in their effect on the relative preference of English and LD ($\chi 2 = 7.05$, df=1, $p<0.01$), where boys increasingly prefer English over LD increases in the higher grade whereas girls increasingly prefer LD over English in the higher grade.

Figure 5.

Percentages of the Interaction Between Grade, Domain (Science), Gender, Variety Preference, and Comparison pair

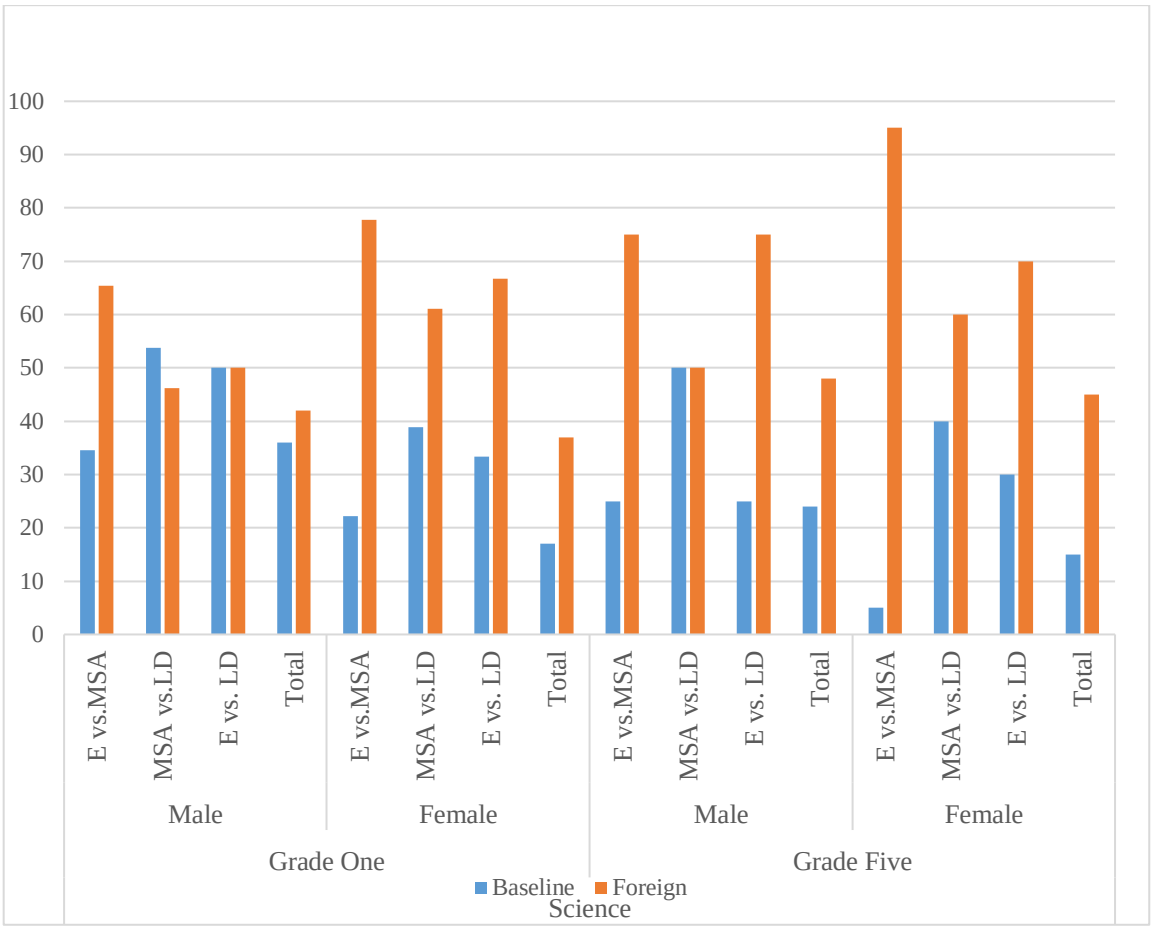
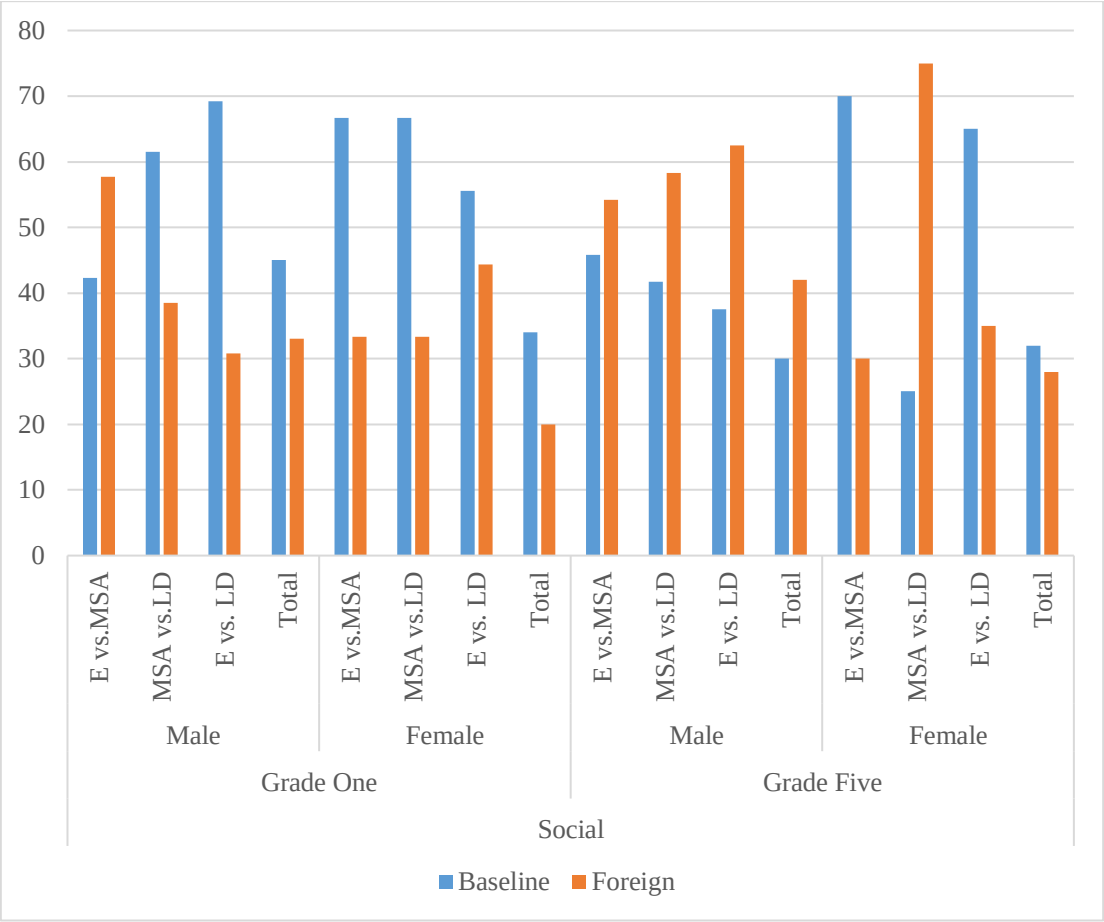


Figure 6.

Percentages of the Interaction Between Grade, Domain (Social), Gender, Variety Preference, and Comparison pair



*English=E; Modern Standard Arabic=MSA; Lebanese Dialect=LD

*In the case of E vs. MSA: E = Foreign variety; MSA= Baseline variety

In the case of MSA vs. LD: MSA= Foreign variety; LD= Baseline variety

In the case of E vs. LD: E= Foreign variety; LD= Baseline variety

Binary Logistic Regression Results

In this section, a series of Binary Logistic Regression analyses are presented to test whether any variation in the participating children's judgements as a function of the variables explored are statistically significant. The analyses are presented for each language comparison pair separately. In each case a Binary Logistic Regression analysis is conducted to examine whether there are any significant main effects of domain, grade or gender and whether there are any significant pairwise interactions between these variables. Table 1 presents the results of the binary logistic regression for the case where the comparison pair was English versus Modern Standard Arabic. The results of the main effects of each independent variable (domain, grade, and gender) as well as pairwise interactions are reported. The results show a significant main effect of domain. It shows that overall English is much more likely to be preferred over Modern Standard Arabic across all comparison pairs in the science domain. Moreover, there is a significant interaction between gender and domain indicating that while both males and females are more likely to prefer English over Modern Standard Arabic in the science domain, females are much more likely to prefer Modern Standard Arabic in the social domain, whereas boys continue to prefer English.

Table 1.

Results of the Binary Logistic Regression Analysis for English Vs Standard Arabic as the Dependent Variable and Domain, Grade and Gender as Independent Variables

Variables in the Equation									
		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1a	Domain(1)	-3.229	.745	18.813	1	<.001	.040	.009	.170
	Grade(1)	-1.075	.755	2.029	1	.154	.341	.078	1.498
	Gender(1)	-1.285	.746	2.972	1	.085	.277	.064	1.192
	Grade(1) by Domain(1)	.978	.705	1.925	1	.165	2.659	.668	10.582
	Gender(1) by Domain(1)	2.094	.745	7.904	1	.005	8.115	1.885	34.927
	Gender(1) by Grade(1)	.408	.725	.317	1	.573	1.504	.363	6.226
	Constant	2.502	.701	12.737	1	<.001	12.204		

* Nagelkerke R^2 = .0218 indicating that the model explains 21.8% of the variance; Hosmer and Lemeshow Test is not significant ($\chi 2$=0.606; df=6;p=0.996)

Table 2 presents the results of the binary logistic regression for the case where the comparison pair was Modern Standard Arabic versus Lebanese Dialect. The results of the main effects of each independent variable (domain, grade, and gender) as well as pairwise interactions are reported. The results show no significant effects. There is one result that approaches significant, namely the interaction between grade and domain. This suggests that there is a tendency for MSA to be preferred in the social domain in grade five.

Table 2.

Results of the Binary Logistic Regression Analysis for Standard Arabic Vs Lebanese Dialect as the Dependent Variable and Domain, Grade and Gender as Independent Variables

Variables in the Equation									
		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	Domain(1)	.347	.572	.368	1	.544	1.415	.461	4.340
	Grade(1)	-.281	.565	.247	1	.619	.755	.249	2.286
	Gender(1)	-.686	.539	1.619	1	.203	.503	.175	1.449
	Grade(1) by Domain(1)	-1.141	.622	3.369	1	.066	.319	.094	1.080
	Gender(1) by Domain(1)	.242	.630	.147	1	.701	1.274	.370	4.380
	Gender(1) by Grade(1)	.365	.630	.336	1	.562	1.441	.419	4.951
	Constant	.563	.432	1.695	1	.193	1.755		

* Nagelkerke R^2 = .073 indicating that the model explains 7.3% of the variance; Hosmer and Lemeshow Test is not significant ($\chi 2$=0.874; df=6;p=0.990).

Table 3 presents the results of the binary logistic regression for the case where the comparison pair was English versus Lebanese Dialect. The results of the main effects of each independent variable (domain, grade, and gender) as well as pairwise interactions are reported. There is a significant main effect of domain. This reflects the greater preference for English (over LD) in the science domain. There is also a significant interaction between

gender and grade. This reflects the greater likelihood of males to prefer English over Lebanese in grade five.

Table 3.

Results of the Binary Logistic Regression Analysis for English Vs Lebanese Dialect as the Dependent Variable and Domain, Grade and Gender as Independent Variables

Variables in the Equation									
		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	Domain(1)	-1.258	.570	4.865	1	.027	.284	.093	.869
	Grade(1)	.072	.588	.015	1	.902	1.075	.339	3.405
	Gender(1)	.465	.579	.647	1	.421	1.592	.512	4.950
	Grade(1) by Domain(1)	.118	.642	.034	1	.854	1.125	.320	3.959
	Gender(1) by Domain(1)	.483	.646	.558	1	.455	1.620	.457	5.747
	Gender(1) by Grade(1)	-1.348	.645	4.365	1	.037	.260	.073	.920
	Constant	.739	.444	2.769	1	.096	2.094		

*Nagelkerke R^2 = .127 indicating that the model explains 12.7% of the variance; Hosmer and Lemeshow Test is not significant ($\chi 2$=0359; df=6;p=0.999).

CHAPTER 5

DISCUSSION

This discussion chapter is organized as follows. I begin with a discussion of the main findings in relation to the literature. The practical implications of the results of this study are then discussed followed by a discussed of the limitations of the study. This chapter then presents recommendations for future research before concluding.

Discussion of the Main findings

This section provides an overview of the answers to the research questions and discusses the key findings of this study. The study was guided by the following research questions:

1- Does elementary Lebanese students' trust in testimony vary as a function of language (English as foreign language, Modern Standard Arabic as formal local language of literacy and spoken Lebanese dialect)?

2- Do the factors of domain, grade and gender interact with language in influencing trust in testimony in elementary school children in Lebanon?

First, with regard to the first question, our results show that language variety affects Lebanese elementary students' preferential trust in testimony in both domains (science and social). Generally, English language was the preferred variety across grades and domains when it was in comparison to both MSA and LD. It was expected that English will be the preferred language across all grades and domains. On the other hand, there is a marginal

preferential trust (although not significant) when comparing Arabic language varieties. These findings are consistent with the findings obtained in studies conducted to examine how language and accent affect children's trust in testimony. From an early age, children develop a sensitivity to accent as a social indicator and use an informant's language as a guiding cue in their selective learning (Kinzler, Corriveau, & Harris, 2011). Nevertheless, the findings of this study contrast with the specific influence of language/language varieties reported in the literature. Previous studies have found that children prefer to learn from a native speaker compared to a non-native speaker (Kinzler et al., 2011; Kinzler et al., 2009; Akhtar et al., 2012). In the context of the present study, although the MSA is the official language in Lebanon (Shaaban, 1997) and the language of instruction of social studies and humanities, children's first language is the LD that parents use at home, and English is a widely used foreign language, and a language of instruction for mathematics and science (Esseili, 2017). Ignoring context and the status of languages in society, prior studies would have predicted a preference from an early age for the Lebanese dialect. However, our findings show that already by grade one and increasingly in grade five students showed greater trust for the information that was presented in the English language in both domains (science and social).

These findings could be as a result of the policy of the new curriculum that was developed after Lebanese independence (1943) which allowed foreign languages (English and French) to be used as a medium of instruction (Shaaban, 1997). Also, it could be due to the distribution of languages across scientific subjects and social subjects in the Lebanese curriculum. In other words, the learning of scientific subjects consists of more hours per week than the learning of social subjects, which can imply to learners that these subjects, and the

languages in which they are taught, are more valued than other subjects and languages (Bacha, Bahous, & Nabhani, 2011).

Moreover, the results might reflect children's sensitivity to the status of English in Lebanese society from an early age. Shaaban and Ghaith (2002) studied university Lebanese students' perceptions of linguistic vitality in Arabic and foreign languages (English and French). The findings of the study showed that Lebanese students consider the Arabic language as a representation of their identity and as a tool they use in everyday conversations and religious activities. The English language was valued as the most important language because they viewed it as a globalized language needed in the global market and diverse domains and industries. However, some Lebanese students considered French as an essential language for self-representation and cultural event. Therefore, children's greater trust in the information that was given in English language in both domains (science and social) compared to Arabic varieties could reflect children's early sensitivity to the status of English identified in studies with older populations. The high status and value of English language is also dominant worldwide. In a study that was done in Thailand where English language proficiency is considered low and where English is taught as a foreign language as a subject within the curriculum, Manachon and Eamoraphan (2017) examined Thai students' perceptions and attitudes towards English as a foreign language learning. The findings of the study showed that Thai upper secondary students in Science-Mathematics and Arts-Language program exhibited positive attitudes towards English as a foreign language learning because they consider it a language that is necessary to get a job in business organizations. Also, they consider English as an important language to get updated with the development of internet,

business, and science. Thus, international students also acknowledge the importance of English in learning and in the global market and international business.

In the case of the second research question, the results are consistent with what was hypothesized. Results show that there is an interaction between domain and language. Students trusted the testimony dealing with scientific domain more when presented in English language and trusted the testimony in the social domain more when formulated in both Arabic varieties. It is worth to mentioning that both Modern Standard Arabic and Lebanese Dialect were equally preferred varieties over English in the social domain. On the other hand, the results didn't show a statistically significant difference between MSA and LD. The results were different than what we hypothesized. Our hypothesis was that students' trust in testimony dealing with social and scientific content will be higher in MSA than in the LD. However, the findings of this study showed that there is a marginal preferential trust for MSA over LD. This might explain that younger children trust their first spoken language as well as MSA during their first elementary grades.

In other words, our results show that from an early age, children prefer to learn scientific knowledge in English more than both Arabic varieties. The result of our study supports other studies results that showed students' preferences for English language as they consider it as a universal language, power language, and a language that open doors for upper education and global market (Orr and Annous, 2018; Shaaban and Ghaith, 2002). Moreover, our results show that younger children trust both MSA and LD when learning about scientific and social domains. This shows that younger students are more influenced with Arabic language varieties than university students as it was mentioned in Shaaban and Ghaith (2002) study. Lebanese university students consider the Arabic language for identity and everyday

conversations, English for global market and trade, and French for self-representation and cultural events. This could explain our findings, students' trusted information dealing with scientific domain more when they were given in English because they might believe that English language is more associated with science and technology as they have been exposed to in the Lebanese curriculum and in real-life. On the other hand, students' trusted information dealing with social domain more in Arabic varieties than English because they might associate Arabic language varieties with everyday communication and social events where people tend to speak about emotions and feelings.

The use of foreign languages (English and French) as a medium of instruction in science education is widely dominant in the Arab region as a result of the colonial history (Amin, 2009). This dominance especially the dominance of English language in the domains of science and technology is associated with a kind of prominence to prepare students for future market, international trades, and scientific progress. Thus, it is likely to have similar language preferences and language/domain interactions in other contexts in the Arabic region as well.

Even though this study was conducted with young children, the results reflect how the allocation of languages across school subjects might be already affecting children's trust in what they hear as a function of the language in which it is expressed. Young children in grades one or five may not still acknowledge the importance of English language as a universal language and as a language of science and technology, but they trust it more in the scientific content as they are exposed to English in all scientific subjects in the curriculum. Similarly, when presented with statements in the social domain, young children trusted both Arabic varieties but with a marginal (nonsignificance) preferential trust for MSA over LD.

These findings might result from the fact that only social sciences and humanities are taught in the Arabic language in the new curriculum, whereas the natural sciences and mathematics are taught in the foreign language either, English or French (Thonhauser, 2000). In addition, Arabic language is used in children's everyday lives dominated by social themes; this includes both use of MSA in the news broadcasts, and political programs in the media and use of LD in all everyday social contexts, and they use it to communicate with parents, family, friends, and peers about their social events, feelings, and emotional reactions. In contrast, English is also used in children's everyday lives dominated by scientific/technological themes: this includes the use of English language in scientific textbooks, social media, iPads, and mobile phones. Therefore, the educational sector, society, and the demands of the 21century play a crucial role in children's language preferences.

The results of this study are consistent with results of other studies conducted on the developmental changes in children's learning from testimony (Clement, Koenig, & Harris, 2004; Harris, Corriveau, Pasquini, Koenig, Fusaro, &Clement, 2012). Yet, to our knowledge, there are no studies examining how the influence of languages and domains on children's learning from testimony changes with age. The results of this study reveal that language and domain impact children's trust in testimony differentially as a function of grade during the elementary years. Contrary to what was hypothesized, both English and Lebanese Dialect are the preferred varieties in grade one. It was expected that LD would be the most preferred variety since it is the first language that children are exposed to even before they get to kindergarten. However, the results reveal the dominance of English even in the early elementary schooling. As expected, English is the more trusted language variety overall and the preferential trust for MSA over LD is well established by grade five.

In sum, the preference for English and MSA increased while the preference for LD decreased from grade one to grade five.

This indicates that as students' progress through the elementary years their preferences for English and MSA increase. This might be due to getting more exposure to English and MSA in the school years in ways that increase their status and as a result they develop more positive attitudes towards these languages. These results go by the literature review, Four and five-year-old children can disregard the information if it conflicts with their first-hand experience. However, three years old children display less selectivity when choosing a reliable speaker (Clement, Koenig, & Harris, 2004). In addition, between age three and five children develop a conceptual change in their understanding of a false belief. Further, as children get older, they became more flexible in their understanding of the consistency of the informant, in which they are more aware that sometimes the informants might be accurate and sometimes inaccurate (Harris, Corriveau, Pasquini, Koenig, Fusaro, &Clement, 2012). Moreover, these results go by literature review on children's understanding of domain of knowledge. Although this field of research is new, it was shown that children exhibit developmental changes in learning from the testimony of domains. It was found that by age 4, children have the ability to ascribe distinctive sorts of information to recognizable experts in different domains (e.g., surgeon and engineer) and to novel experts (e.g., dog expert and motorcycle expert). To decide which speaker can give an accurate information in a specific domain, children use their understanding of the domain of knowledge (Lutz & Keil, 2002). By age 4, children develop some skills to be able to use clues to conclude expertise to decide whether the speaker is giving the necessary information related to creating an appropriate claim. With age, children become better at

distinguishing distinctive kinds of expertise, and they use their understanding when deciding whom to trust (Danovitch & Keil, 2004). Moreover, children at ages 5, 7, 9 and 11 become able to cluster knowledge in relation to coherent patterns in the domain of physics and social psychology.

Finally, this study found that children's trust in testimony as a function of language varied according to gender. While English was the more trusted language variety in both males and females. In addition, when comparing Arabic language varieties, males preferred LD over MSA while females preferred MSA over LD. Our results show that in the science domain females have stronger preferences towards English than males. To our knowledge, there are no studies that examines how gender differences are affected by different languages. Thus, these results might indicate that females are more influenced with English language than males in the science domain. While males are more influenced than females in the spoken language (Lebanese Dialect) compared with MSA. On the other hand, Females are more influenced than males in the MSA language compared to LD. This might indicate that females develop more trust than males in the languages that they have been exposed to during their academic learning (English and MSA).

Implications for Practice

This section will address implications of the study for practice. The results of this study have an impact on academic and non-academic learning. This means that results of this study are not only limited to the academic learning at schools or universities but has wider implications. The results of this study raise questions about the possibility that graduates from Lebanese schools have patterns of trust in the languages in which testimony is provided. Also, it raises concerns about how students might interact with information in

real life. Let's imagine a scenario where a university student is reading a scientific magazine, or a newspaper and s/he comes across information about a new scientific invention dealing with self-driving cars that was written in MSA. Will the student have the same trust for this piece of information compared to if it was written in English? Moreover, what if a science program is presented in Arabic on TV, will the student trust the information presented in it to the same extent as if it was presented in English?

According to the results of our study, the student might not trust the information nor the science TV program in Arabic as confidently compared to their trust in the information conveyed in English. Thus, this attitude affects the credibility of the information even if it may be valid in some instance and it could diminish the possibility of transferring knowledge among students as the information provided could be easily ignored due to the language. So, the result of this study has implications for those interested in developing scientific literacy in society through various popular publications (e.g., newspapers, magazines). Moreover, limiting our trust in our native language in certain content areas might influence the credibility of our language. Thus, it will affect our use of our native language for communicating and sharing experiences among ourselves. This means that this could have a serious impact on our identity since language is considered an indicator for national identity (Alsohaibani, 2016).

It is worth to mention that private schools in Lebanon are not limited to elite as it was before. During the French mandate, French suggested to build private schools in Lebanon to teach elite people the French language (as mentioned in Orr and Annous, 2018). Nowadays, private schools are not limited to elite as we can see middle-income people attend private schools.

Taking into account Lebanese university students' language preferences as mentioned in Orr and Annous (2018) study. Where students preferred to learn scientific knowledge in English because they considered that the Arabic language could hinder their understanding of scientific concepts as well as the difficulty in translating the latter.

The results of this study have implications for language-in-education policy in Lebanon. The wider societal implications discussed above mean that alternative policies might need to be considered. Mastering MSA in all content areas particularly in scientific domains might help limit the problems mentioned above and will make it easier for students to learn and search for scientific information in Arabic. It is important to note that while Arabic will not help students who want to immigrate to find opportunities in foreign countries, it is a powerful tool for reinforcing their identity and their sense of belonging.

A variety of language allocation approaches within the Lebanese curriculum could be considered. Both Arabic and English could be used to teach all subjects in the curriculum (although this could come with resource and logistical challenges). For example, rather than allocating the languages by content, distributing languages by time, place, person can be considered as has been done in other contexts around the world (Amin, 2009). In other words, the curriculum could be taught in Arabic on one day and in the English language on another day. Alternatively, the curriculum could be taught in both languages equally during the same day.

There is also an approach that aims on separating languages according to place/location. For instance, educators might consider separate rooms to teach the curriculum in the desired language as mentioned earlier. In consequence, students could spend an equal amount of time during the day to learn both languages in two distinct locations, respectively.

In an effort to maintain the boundaries between both languages, another approach could be used by alternating between teachers teaching in different languages.

The results of this study also have implications for policy makers in the Golf region, specifically, where English is increasingly being considered as a medium of instruction for science and mathematics. Belhiah and Elhami (2017) examined teachers' and students' perception about the use of English as a medium of instruction language in the Gulf region. The study found that both teachers and students are aware that Arabic is the language that represents their identity and it's the language of Quran. However, they viewed English as a language that will prepare them for globalized market and business. Therefore, the authors suggested that a bilingual curriculum that uses both English and Arabic language should be used in the Gulf region which might enhance students' understanding of core content in Arabic. The findings of the study reported here suggest that policy makers in the Gulf region might be wise to consider language allocation approaches other than the ones that are typically used and is currently being used in Lebanon.

But, of course, since this field of research is new in Lebanon, we need more studies on how language policy in Lebanese education is affecting Lebanese students' trust in testimony before we can suggest an extensive revision of the language in education policy in Lebanon. More studies are needed to examine the effect of language allocation on trust in testimony in different domains, grades, and languages. Also, studies on the challenges that might face policymakers, curriculum designers, and teachers while of reconsidering the language allocation within the Lebanese curriculum are needed. One of the challenges might be the need for various resources and equipment that can help in advocating the implementation of tall the subjects in the Lebanese curriculum in two different languages. In

addition, there might be a need for bilingual teachers who can master both languages equally for teaching academic content. Nonetheless, an important challenge might reside in designing the curriculum and distributing the languages across all subjects starting from early elementary school until high school.

Limitations

The first limitation for this study is generalizability. This study was conducted in a single private school. Therefore, generalizing to the public educational sector or indeed to other private schools should be done with caution. However, about two thirds of children attend private schools in Lebanon. The selected school agreed to participate is in the Sidon district and serves a middle SES population and it implements the Lebanese curriculum in elementary grades. However, the approach to language allocation in these private schools of which this school is representative is similar to most public schools as well. Generalizing these findings might also be limited (and this is of course related to differences across schools) because we must take into account other factors that play a role in students' trust in languages such as students' language proficiency and students' language background. The second aspect is that the proposed study selected school from only one specific district in Lebanon; results might differ from one region of the country to another.

The second limitation is the insufficient demographic information about the participating children. For instance, the information about their preferred language in speaking and their proficiency in both English and Arabic language varieties. This is a limitation because their preference to speak in a certain language might affect their preferential trust for languages. Their language skills might also have an effect. For example, if the participant has good writing or speaking skills in a certain language this

might affect his/her preferential trust for other languages. Moreover, there is an insufficient demographic information about the participants parents' preferred language when speaking with their child. This is a limitation because if parents prefer to use a particular language, children might develop more trust in this particular language than other languages. Thus, this might influence children's preferential trust in languages. Another limitation is the lack of direct information from parents about their scio-economic status and the level of education attained which might affect their children language proficiency and thus affect their trust.

Also, there is a limitation regarding the use of "true/false" approach when presenting the introductory pairs to participating children which was different than the actual test task. This is a limitation because when children were presented with the introductory pairs which clearly had the contrast that children will know if the statement is true or false, this could influence the way they approached the actual test pairs later in the actual test. Participants might have linked the approach used in the introductory pairs with the actual pairs by thinking that the actual pairs presented later were also "true/false" statements and putting all their focus to find the "true" statement instead of focusing on the language factor and hence this could affect their judgments.

Future Research

To my knowledge, there are no studies on the effect of language variety on trust in testimony across the social and science domain in Lebanon or elsewhere. So, this study will open doors to future studies in this topic. Future research could focus on studying the effect of language on Lebanese students' trust in other subjects. Future research could also repeat this study with a bigger sample size of Lebanese students from different regions in Lebanon.

This could help us generalize the results of this study more confidently and possibly compare different influences of language on trust in different communities within Lebanon. Also, it would be interesting to see if there are similar language/domain/gender interactions in other Arab countries where foreign languages (English and French) are used as a medium of instruction.

Future research could focus on higher grades in order to examine further developmental changes in the effect of language on trust in testimony. Future studies could provide broader documentation of the developmental progression in how children use language as a cue in choosing whom to trust and how the interaction with domain changes.

Further research is also needed to study the effect of gender on students' trust in languages. As this study has shown, the effect of language on children's trust in testimony did vary by gender. It would be interesting for future studies to examine the underlying reasons behind these differences. Moreover, future research could study if these differences affect students' choice of study in the university and if it affects their academic performance.

Studying the effect of French language on Lebanese students' trust in testimony in the context of elementary schooling is also recommended. Since Lebanon is a multilingual country where different languages are spoken and allocated to different subjects within the Lebanese curriculum. It would be interesting to examine the effect of French language, subject matter, and grade on Lebanese students' trust in testimony and whether there are interactions between them. Also, it could be interesting to compare the effect of both English and French languages on students' trust.

Conclusion

This study found that language variety influences elementary school children's trust in testimony, which also interacted with domain and grade. The discussion suggested that the diversity of languages used in the Lebanese society and how the allocation of languages across subjects is affecting Lebanese elementary students trust in testimony. The study provides a glimpse of the consequences of language-in-education policy decisions and language allocation across the curriculum. Specifically, the findings show that elementary Lebanese students trust the English language the most across grades and domains. Although elementary Lebanese students might not yet recognize the importance of English language as a universal language in the global market and trade, language practices in the community and at school still lead them to prefer English over MSA and LD. This is not a trivial issue. These practices are affecting how students evaluate the information they are exposed to. Policy makers and curriculum designers need to consider the allocation of languages in the Lebanese curriculum carefully; adjustments might be appropriate but future research is needed to explore the implications of different language allocation policies and how this might differ across different communities.

APPENDIX A

DEMOGRAPHIC QUESTIONNAIRE

(This questionnaire is to be filled by participants' parents. The information gathered from this questionnaire will be kept confidential).

Student's name: _____

Grade level: _____

Age: _____

Gender: M_____ F_____

I. Parent's Information

1. What is the nationality of each parent?

   Father: _____ Mother: _____

2. What language do you mostly speak with your child at home?

   Arabic English Mixed Other

II. Student's Information

1. Was your child born in Lebanon?

   Yes No

2. Has your child spent all his/her academic years in the same school elementary?

   Yes No

III. Student's Linguistic Background

1. What is the first language your child learned to speak?

   Arabic English Other

2. What is the second language your child learned to speak?

   Arabic English Other

3. What language does your child use with you at home?

   Arabic English Mixed Other

4. What language does your child use when talking with his/her siblings or family members?

   Arabic English Mixed Other

5. What language does your child use when talking with his/her peers?

   Arabic English Mixed Other

6. In general, what is the language your child prefers to speak with?

   Arabic English Other

IV. Frequency of Language Use

1. How often do you speak with your child Arabic at home?

   Always Often Seldom Never

2. How often do you speak with your child English at home?

   Always Often Seldom Never

3. How often does your child speak in Arabic with you at home?

   Always Often Seldom Never

4. How often does your child speak in English with you at home?

   Always Often Seldom Neve

APPENDIX B

SCIENCE-RELATED STATEMENTS

Statement one

English:

A motorcycle will not work if the valve isn't working.

A motorcycle will not work if the piston isn't working.

Standard Arabic:

3) الدراجة النارية لن تعمل اذا كان الصمام لا يعمل.

4) الدراجة النارية لن تعمل اذا كان المكبس لا يعمل.

Lebanese dialect:

5) الموتوسيكل ما بيشتغل ازا الصمام ما بيشتغل.

6) الموتوسيكل ما بيشتغل ازا المكبس ما بيشتغل.

Statement two:

English:

1) Ping-Pong balls bounce higher in cold weather.
2) Ping-Pong balls bounce higher in hot weather.

Standard Arabic:

3) كرات البينغ بونغ ترتد اعلى في الطقس البارد.

4) كرات البينغ بونغ ترتد اعلى في الطقس الحار.

Lebanese dialect:

5) طابات البينغ بونغ بتطج اعلى بالجو البارد.

6) طابات البينغ بونغ بتطج اعلى بالجو الشوب.

Statement three:

English:

1) A parachute will not open if the bridle breaks.

2) A parachute will not open if the seam breaks.

Standard Arabic:

3) مظلة الهبوط لن تفتح اذا انكسر الحد.

4) مظلة الهبوط لن تفتح اذا انكسرخط الالتحام.

Lebanese dialect:

5) الباراشوت ما بتفتح ازا انقطع الحبل.

6) الباراشوت ما بتفتح ازا انقطعت الوصلة.

Statement four:

English:

1) An airplane will not fly if the rudder breaks.

2) An airplane will not fly if the flaps break.

Standard Arabic:

(3 الطائرة لن تحلق اذا انكسر الموجه.

(4 الطائرة لن تحلق اذا انكسرت القلابات.

Lebanese dialect

(5 الطيارة ما حتطير ازا انقطع المتحكم.

(6 الطيارة ما حتيطر ازا انقطعت الرفرفات.

Statement five:

English:

1) A rocket can rise when it releases gas out of its chamber.

2) A rocket can rise when it releases gas out of its nozzle.

Standard Arabic:

(3 يمكن للصاروخ ان يرتفع عندما يطلق الغاز من غرفة الاحتراق

(4 يمكن للصاروخ ان يرتفع عندما يطلق الغاز من الفوهة

Lebanese dialect:

(5 الصاروخ بيطلع لما الغاز بيطلع من اوضة الاشتعال.

(6 الصاروخ بيطلع لما الغاز بيطلع من الفجوة.

Statement six:

English:

1) A fan will not spin if the fan spindle needs fixing.
2) A fan will not spin if the fan hub needs fixing.

Standard Arabic:

3) لن تدور المروحة اذا كان مغزل المروحة يحتاج الى اصلاح.

4) لن تدور المروحة اذا كان محور المروحة يحتاج الى اصلاح.

Lebanese dialect:

5) ما حتلف المروحة ازا عمود دوران المروحة بدو تظبيط.

6) ما حتلف المروحة ازا مركز المروحة بدو تظبيط.

Social related Statements

Statement one:

English:

1) People fight more when they are angry.

2) People fight more when they are annoyed.

Standard Arabic:

3) الناس يتشاجرون اكثر عندما يكونوا غاضبين.

4) الناس يتشاجرون اكثر عندما يكونوا منزعجين.

Lebanese dialect:

5) الناس بيتخانقوا اكتر بس يكونو معصبين.

6) الناس بيتخانقوا اكتر بس يكونوا متضايقين.

Statement two:

English:

1) People who walk on the beach feel more relaxed.

2) People who walk on the beach feel more energetic.

Standard Arabic:

3) الناس الذين يسيرون على الشاطىء يشعرون ب استرخاء اكتر.

4) الناس الذين يسيرون على الشاطئ يشعرون ب نشاط اكتر.

Lebanese dialect:

5) العالم يلي بيمشو عالشط بيحسوا براحة اكتر.

6) الناس يلي بيمشو عالشط بيحسوا بنشاط اكتر.

Statement three:

English:

1) People who have pets are usually kind.
2) People who have pets are usually friendly.

Standard Arabic:

3) الناس الذين لديهم الحيوانات الاليفة عادة ما تكون لطيفة.

4) الناس الذين لديهم الحيوانات الاليفة عادة ما تكون ودية.

Lebanese dialect:

5) العالم يلي عندن حيوانات بالبيت دايما بيكونوا طيبين.

6) العالم يلي عندن حيوانات بالبيت دايما بيكونوا محبين.

Statement four:

English:

1) People usually speak more when they are happy.
2) People usually speak more when they are emotional.

Standard Arabic:

3) الناس عادةً يتحدثون اكثر عندما يكونون سعداء.

4)الناس عادةً يتحدثون اكثر عندما يكونون عاطفيين.

Lebanese dialect:

5) العالم دايماً بتحكي اكتر بس يكونوا مبسوطين.

6) العالم دايماً بتحكي اكتر دايماً بس يكونوا متأثرين.

Statement five:

English:

1) People work better when they are energetic.
2) People work better when they are excited.

Standard Arabic:

3) الناس يعملون بشكل أفضل عندما يكونوا نشيطين.

4) الناس يعملون بشكل أفضل عندما يكونوا متشوقين.

Lebanese dialect:

5) العالم بتشتغل احسن بس يكونوا متنشطين.

6) العالم بتشتغل احسن بس يكونوا متحمسين.

Statement six:

English:

1) People who usually travel feel more active.

2) People who usually travel feel more productive.

Standard Arabic:

3) الناس اللذين عادة يسافرون يشعرون بأنهم أكثر نشاطا

4) الناس اللذين عادة يسافرون يشعرون بأنهم أكثر انتاجية

Lebanese dialect:

5) العالم يلي بتسافر عادة بحسوا انن نشطين اكتر

6) العالم يلي بتسافر عادة بحسوا انن بيعطوا اكتر

APPENDIX C

INTRODUCTORY TRIAL STATEMENTS

To introduce the task, each participant listened to the three paired statements below:

1) Cars have 4 wheels

   Cars have 3 wheels

2) تحتاج الطائرة إلى جناحين للطيران

تحتاج الطائرة إلى جناح واحد للطيران

3) البسكليت الو دولاب واحد

البسكليت الو دولابين

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