

# Heritage English in Israeli Children

A thesis submitted

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## **Abstract**

A heritage speaker (HS) is a type of uneven bilingual who has been exposed to a home language from a young age, but is dominant in the language of the surrounding environment. The language spoken by a HS is called heritage language (HL). Although the last two decades have seen an increase in research on HLs and their defining characteristics, most of this work has been limited to non-English HLs in contexts where English is the dominant language. This thesis turns the tables by looking at Heritage English spoken by Israeli children between the ages of 7 and 13 whose dominant language is Hebrew. In 27 interviews, I gathered production samples through video narrations and oral questionnaires, and tested speakers' grammatical competence and comprehension through two grammaticality judgment tasks and a timed sentence-picturing matching task. The results show that while these speakers of Heritage English display errors found in other HLs, such as the use of resumptive pronouns and reduced or incorrect morphology, their underlying grammatical competence is intact and they can, therefore, be considered high-level HSs, a finding which may reflect the prominence of English in Israel.

# 1 Introduction

Although different linguists have defined heritage language (HL) in various ways, this thesis defines HL as the language spoken by someone who grows up hearing that language in the home but is dominant in the language of the outside environment. An American-born child of Hispanic immigrants to the United States who speaks fluent English and “some” Spanish, for example, would fit this definition. Such a child would likely spend his first several years in a monolingual Spanish environment, but upon establishing sustained social contact outside of the home with speakers of the dominant language (for example, in preschool or kindergarten), might begin responding to his parents in English even when addressed exclusively in Spanish. Upon moving away from home, his access to the primary linguistic input for his home language would diminish significantly, and his proficiency might be affected by attrition.

Since most of the research on HL has taken place in North America, where the number of HSs is high, little research has been conducted on home languages in a context where the dominant language is not English. Polinsky & Kagan (2007) write that “although the original definition [of HL] is English centered, any other dominant language can be substituted for English”; however, this has not been the case in practice. Even though previous studies have examined English as the weaker language in a bilingual situation, they have tended to focus on particular phenomena, such as the acquisition of verbal morphology (e.g. Paradis 2010), and not on overall proficiency. Few studies, if any, have examined English as a HL in a broader sense.

There are several benefits to broadening the scope of inquiry by studying English as a HL. First, studying a home language where English is not the dominant language eliminates the possibility that observed phenomena in that language may be due to the influence of the dominant English. For example, Polinsky & Kagan (2007) note

that the over-regularization in morphology observed in HLs could be due to the fact that English itself, the dominant language in most of these studies, does not have particularly rich morphology. Although this particular concern is allayed by the few existing studies of non-English-dominant HSs that also report over-regularization (e.g. Backus 1999 on Turkish in the Netherlands, or Leisiö 2001 on Finnish Russian), gathering more data will help to rule out other possible influences from English. There is another advantage to studying English as a HL: linguists already know a considerable amount about the English language because much of the linguistic literature has been devoted to it. By examining Heritage English and comparing those results with our existing broad linguistic knowledge of English, linguists can gain a deeper understanding of which particular aspects of English are affected.

However, given the prominence of English as a global language, Heritage English may behave differently from the HLs studied in North America. Furthermore, in Israel, English was the language of the colonial British and has remained a standard component of the national curriculum to this day. The language also enjoys wide use in popular culture and media and can be seen on billboards and storefronts throughout urban areas of the country. English serves as a medium through which Israel participates in global industry, such as finance and business. English-speaking immigrants, who have arrived annually in the thousands for the last four decades, have contributed significantly to the rise of English as a prominent language in contemporary Israeli culture. Usually, language attitudes and pressure to assimilate play a role in determining whether a home language develops into a “weaker language” (Portes & Hao 1998). Given that English is ubiquitous and highly regarded in Israeli society, Heritage English speakers living in Israel may attain a higher level of proficiency than might an American HS of an immigrant language such as Spanish or Korean. Additionally, since English plays a prominent role not only in Israel but across the world, speakers of Heritage English elsewhere may also be expected to have a relatively high

level of proficiency.

English is spoken as a home language wherever there exist expatriate communities; however, Israel in particular stands out for several reasons. Israel's well-established and growing English-speaking population, mentioned above, has settled in clusters across suburban Jerusalem and in the surrounding areas. There are, therefore, thousands of children raised speaking English as a home language and Hebrew outside the house. My connection and familiarity with Israeli Anglo communities facilitated the process of recruiting subjects for interviews, and my Jewish background provided a common ground that helped to establish a comfortable environment and a personal connection with subjects. My ability to speak and understand Hebrew was vital in determining which features of their language might be influenced by Hebrew. Instead of selecting individual English-Hebrew bilinguals, I gathered data on several communities of speakers by working with a network of families, many of whom know each other.

From this network, I interviewed 27 Hebrew-dominant English speakers between the ages of 7 and 13, one or both of whose parents were native English speakers. This particular age range allowed me to document an early stage of HL, when children are still living with their English-speaking parents and less attrition is expected. This contrasts with previous studies that have looked at adult HSs, whose proficiency may be significantly affected by language attrition.

This thesis aims to examine the Heritage English spoken by Israeli Hebrew-English bilinguals and to add heritage English to the scope of HL studies. Chapter 2 of this thesis provides a theoretical background on several areas fundamental to the data presented in Chapters 4 and 5: in particular, it reviews existing research on HL, examines several studies on English as a weaker language in unbalanced bilinguals, and discusses the status of English in Israel. Chapter 3 describes the process of subject selection, the structure of the oral interviews reported on in Chapter 4, and the exper-

imental groupings of speakers based on proficiency predictors expected to correlate with performance in the experiments of Chapter 5. Chapter 4 discusses the results of the interviews aimed at eliciting spontaneous and structured production of English, in which subjects answered questions about themselves and narrated short video clips. Chapter 5 describes the results of three experiments designed to test grammatical competence and comprehension. Chapter 6 summarizes the findings of Chapters 4 and 5, discusses their implications, and suggests further areas of investigation.

## **2 Background**

### **2.1 Introduction**

The purpose of this chapter is to introduce the reader to existing research in the area of heritage linguistics, and to raise several theoretical and practical issues relevant to the data presented in Chapters 4 and 5. In the first section, we will discuss what is known about HLs, as well as review the current state of HL research and its methodologies. In the second section, we will review a number of studies which have examined English as the weaker language in a bilingual context, then discuss the special position of English in Israeli society and its possible implications for Israeli Heritage English.

### **2.2 Heritage Language**

#### **2.2.1 Who is a Heritage Speaker?**

A heritage speaker (HS) is a type of bilingual who has been exposed to a “home language” (minority or immigrant language) from a young age, but also speaks the dominant language of the surrounding environment. The language spoken by a HS bears resemblance to both L1 and L2 in various respects.

Like L1, HL is learned in an immersive environment and not in the classroom, and exposure begins from birth. However, HSs differ from regular L1 speakers because they fail to completely acquire the home language. In this way, a HL has much in common with L2. Both develop under input of varying quality and quantity (Montrul 2012); HSs rarely hear their language outside the home, and many begin responding to their parents from an early age in the language of the outside environment (Polinsky & Kagan 2007). The peculiar combination of early exposure along with insufficient input makes it difficult to neatly fit HL into the category of L1 or L2.

Nor is the group made up by HSs uniform. Just as bilinguals can have a wide

range of proficiency, so do HSs. Polinsky & Kagan (2007) describe the spectrum of HL proficiency as a continuum, parallel to that used to describe the variation in proficiency within a creole-speaking community. At the one end of the spectrum lie basilectals, who exhibit the lowest proficiency. The HSs in this group is known as “overhearers” (Au et al. 2008), a term which describes those who, as children, heard their parents speaking the language and therefore understand it to a certain extent, but have limited speaking ability in the language. At the other end are acrolectal speakers, also known as advanced bilinguals, whose proficiency approaches that of baseline native speakers.

### 2.2.2 What Characterizes Heritage Language?

Although, as stated above, the language skills of HSs differ among individuals, they tend on average to deviate from the baseline. Some deviations can be attributed to interference from the dominant language. This phenomenon, called transfer, can manifest itself in the areas of morphology, syntax, semantics and lexicon.

HLs have been found to feature many examples of transfer, a few of which we will review here. For instance, Albirini et al. (2011) found that HSs of Arabic were influenced by English in a variety of domains including word order, placement of numerals, and use of prepositions. For example, ‘search for’ is realized as *bidawwir li-* (*bidawwir*, ‘to search’; *li-*, ‘for’) whereas a native speaker would say *bidawwir fala*, using an entirely different preposition. Montrul & Ionin (2010) show that HSs of Spanish use English semantics in interpreting the definite article in certain contexts. In another study, Italian bare plurals (which are ungrammatical in both Spanish and Italian) were rated significantly higher by Italian-English bilinguals than by Italian-Spanish bilinguals, since bare plurals are similarly inadmissible in Spanish (Sorace & Serratrice 2009). Other examples include lexical and syntactic transfer in Russian (Polinsky 2006 and Laleko 2010, respectively); calques in Cantonese (Wei and Lee 2010); interpretation of reflexives in Korean (Kim et al. 2010), and English-language

influence in the grammaticality rating of clitic left dislocations and differential object marking in Spanish (Montrul 2010a).

Beyond errors resulting from transfer are a variety of errors that seem to be present in the speech of HSs regardless of the dominant language. While some of these resemble errors found during the course of regular monolingual development, others seem to be particular to HSs. These types of errors, as opposed to those arising from transfer, can be found across heritage languages, and can shed light on the relative ease or difficulty of acquiring certain grammatical structures. This information can be useful in predicting other features of HLs and can provide insight about language acquisition more generally. Furthermore, knowing which areas of language HSs struggle with is important for optimizing the way HSs learn their language in the classroom. Below, I first discuss “developmental” errors, then move to errors that appear to be unique to HL.

The difference between the developmental errors made by monolinguals and those made by HSs is the extent to which they persist in the grammar of HSs. A general example is the phenomenon of over-regularization, that is, extending a regular pattern to an irregular situation—for example, applying the past tense morpheme *-ed* to the irregular verb *go*, resulting in *goed* instead of *went*. Over-regularization is part of the regular linguistic development of monolingual children (Marcus et al. 1992) and is a frequently observed phenomenon in HL (see Benmamoun et al. 2010:44-45 and the studies cited therein). Another example is that the use of the subjunctive mood, which monolingual Spanish speakers do not fully command until age 10, remains difficult for HSs long beyond that age (Montrul 2009). However, because most HL research is done on adult populations, it is difficult to determine the extent to which these errors are a result of incomplete acquisition or attrition. That is, if an adult HS of Spanish has difficulty with the subjunctive, it may be that he never acquired it, but it is also possible that despite successful acquisition, his grasp of the subjunctive

weakened over years of disuse and paucity of Spanish-language input.

Aside from errors with parallels in general linguistic development, there are several unique tendencies that have been observed in HL. One is the simplification of verbal (Anderson 2001; Choi 2003; Sherkina-Lieber 2010) and nominal (Håkansson 1995; Anderson 1999; Bolonyai 2007) morphology and agreement. HSs of Russian have also been shown to modify the gender system (Polinsky 1995; Leisiö 2000; Kagan & Friedman 2004) as well as restructure aspect (Anstatt 2008; Gupol 2009; Laleko 2010). One particularly interesting observation is the loss or decreased use of *pro*-drop and replacement of null elements with overt nominals (Polinsky 1995:96 on Polish, Tamil and Kabardian; de Groot 2005:363 on Hungarian). This is even reported in contexts where the dominant language employs *pro*-drop, such as Heritage Italian in a Spanish-dominant environment (Sorace & Serratrice 2009).

Similarly, resumptive pronouns have been observed in HL (Polinsky 1995:99, 2006:245, 2008c): for example, whereas a native Russian speaker would say *Moi roditeli priglasili...* ('My parents invited'), a HS might say *Moi roditeli oni priglasili*, inserting a resumptive *oni* 'they'. These apparently redundant pronouns may compensate for the morphological reduction mentioned above (Polinsky 2006:239) or reflect HSs' decreased ability to maintain syntactic dependencies (Polinsky & Kagan 2007). The latter explanation may also account for the difficulties that HSs have with embedded passives (Polinsky 2009), relative clauses (O'Grady et al., 2001), and anaphors (Polinsky 2006).

In addition to difficulties with syntactic dependencies, HSs also have difficulty retrieving lexical items; in particular, they have been shown to struggle more in retrieving nouns and adjectives as opposed to verbs of the same frequency (Polinsky & Kagan 2007). In order to compensate for these difficulties, HSs compensate through various strategies, including circumlocution (Isurin & Ivanova-Sullivan 2008). Difficulty in retrieving lexical items has also been observed in the attrition of L1 (Olshtain

& Barzilai 1991) and L2 (Obler 1982).

Of course, despite these errors, it should be noted that HSs are similar to the baseline in many respects: in particular, their speech rate can (in some cases) match the speech rate of native speakers, they tend to have a relatively good command of words and phrases that are frequently used in everyday life (Polinsky & Kagan 2007), and their phonology tends to closely resemble that of native speakers<sup>1</sup>.

### **2.2.3 Factors in Proficiency**

Research on L1 acquisition has shown that the age of first exposure to a language plays a role in later proficiency (O’Grady & Cho 2001). Since HSs are exposed to their HL from birth, they can be expected to have certain advantages over L2 speakers. Indeed, HSs have a particular advantage in phonology (Au et al. 2002; Knightly et al. 2003; Saadah 2011), although this does not seem to extend to morphosyntax (O’Grady et al. 2001). Additionally, older children tend to be more proficient than younger children since they have been hearing the language for longer and thus have received more input (Wei & Lee 2001). However, once they move away from home, which is often their only source of input in that language, this “age advantage” rapidly fades.

Within a family, older siblings have been shown to have an advantage over younger siblings (Wong Fillmore 1991), for several reasons. First of all, parents can fully devote their (linguistic) attention to the firstborn child, whereas the presence of another child means that this attention is necessarily divided (Shin 2002:107). Second of all, parents tend to speak to firstborns in their native tongues, but often switch to speaking the majority language with later-born children (Shin 2002). Finally, the firstborn usually does not learn the language of the outside environment until he begins to attend school, whereas younger children receive exposure to that language even before they start school, since the firstborn child “brings home” the language

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<sup>1</sup>The pronunciation of the subjects in this thesis varies widely in relation to the baseline: some have near-native pronunciation, while others speak with strong Israeli accents.

with him (Shin 2005:104).

As mentioned above, the amount of input received by HSs in their home language plays an important role in their proficiency in that language. Children raised in environments where both parents speak the home language are more likely to grow up to be successful bilinguals (Portes & Hao 1998; de Houwer 2007). The often-limited input received by HSs can, therefore, be pointed to as the culprit (or at least one of the culprits) in their failure to completely acquire the language. The role of input can be seen in the difference between sequential and simultaneous bilinguals. Among HSs of Spanish, sequential bilinguals, who were exposed only to Spanish for the first 3 years of their life, have been shown to be more proficient than simultaneous bilinguals, who have been exposed to both Spanish and English since birth (Montrul 2008:60, 115-116, 144-152).

Language education has been shown to have varying effects on HS proficiency, depending on the type of instruction, timescale of the education (long-term vs. short-term), and method of assessment. Potowski et al. (2009) show that immediately after receiving explicit language instruction, HSs perform better on tasks assessing production and comprehension, but not on grammaticality judgment tasks. Other studies have shown that HSs can benefit from grammar instruction provided immediately before a test (Montrul & Bowles 2010), but that the effects of this sort of short-term instruction fade over time (Kang 2010). Consistent language education, on the other hand, seems to be more effective: Rothman (2007) found that HSs who had received education in standard Brazilian Portuguese were more native-like in their knowledge of inflected infinitives compared to those who had not received any formal education in Brazilian Portuguese. However, there is evidence that language education only affects HS proficiency during the time that the speaker is still attending classes (Bylund & Díaz 2012).

The attitudes of HSs towards their home language have received much attention

as a possible cause for the large-scale shift towards English in “ethnic minorities” (Wong Fillmore 1991; Tse 2000; Carreira & Kagan 2011). There is a positive correlation between positive language attitudes of HSs and proficiency in their home language (Gibbons & Ramirez 2004). This parallels the role played on a larger scale by communal attitudes in maintaining minority languages (Portes & Hao 1998:28-29; Bradley 2002).

Thus, we have seen that a variety of factors can affect the proficiency of HSs, including age, birth order, sequential versus simultaneous bilingualism, language education, and attitudes toward the home language.

#### **2.2.4 The Study of Heritage Languages**

The concept of a HL has been employed by pedagogues and policy-makers in North America for several decades. In 1977, Canada launched The Heritage Language Program, which provided for language classes for students in their respective mother tongues (Young 1979:16). Language teachers, recognizing that HSs bring certain skills to the classroom but are lacking in others, have engaged in research to determine best pedagogical practices for these speakers (Tse 1997; Valdés 1999; Gibbons & Ramírez 2004; Cummins 2005; Kondo-Brown 2005).

More recently, linguists have engaged in a different sort of study of HLs, aimed at determining the competency of HSs and the underlying characteristics of their grammar. HL, as a case of near-native attainment, is being recognized as a vital source of data on the linguistic capabilities of the human mind. Furthermore, a better understanding of the particular capabilities of HSs can have implications for how languages are taught in HL classrooms.

Linguists have studied many different HLs, including Russian (Kagan & Friedman 2004; Polinsky 2006, 2008; Laleko 2010; Mikhaylova 2012), Spanish (Martínez Mira 2006; Montrul 2002, 2008, 2009; Montrul et al. 2008b), Korean (Choi 2003; Kim et al. 2009, 2010), Mandarin (Chang et al. 2011), Cantonese (Wei & Lee 2001), Finnish

(Halmari 1997), Arabic (Albirini et al. 2011), Hungarian (Fenyvesi 2000; Bolonyai 2007), Armenian (Godson 2003), Inuttitut (Sherkina-Lieber 2010), Dutch (Hulsen 2000) and Portuguese (Rothman 2007).

In most studies of HL that have so far been conducted, the population under study has consisted of college students who are often studying their home language in a classroom setting. This is a natural consequence of the fact that the linguistic investigation of HSs is rooted in earlier pedagogical research of heritage language learners; additionally, researchers of HLs have generally been affiliated with universities, where college students present themselves as a convenient subject pool. Because this research has been focused on college students, the scope of the field has been limited in two ways. First, it is not clear to what extent college-age HSs are representative of HSs in general. This thesis joins the ranks of the few studies (e.g. Bolonyai 2007) that examine child HSs. Second, those who sign up for studies voluntarily may represent a segment of the HS population that is more confident in their abilities, and thus possibly more proficient than the average HS. It is difficult to circumvent this self-selection bias, but its effects may be somewhat mitigated in this thesis since parents volunteered their children for the study instead of the children volunteering themselves.

### **2.2.5 Methodologies**

A variety of methodologies have been used to study HSs, with varying success. These methodologies can be split into two categories: those aimed at eliciting production, and those aimed at determining comprehension.

#### **2.2.5.1 Production**

One method of speech elicitation that has enjoyed widespread use is that of structured narratives, in which the subject is asked to speak on a particular topic or recount a story. Particularly canonical is Mercer Mayer's 1969 children's book *Frog, Where Are You?*, which has been used extensively in studies on L1 (Berman & Slobin 1994), L1

attrition (Berman & Olshtain 1983) and HL (Polinsky 2008c, 2011). Others (Chafe 1980; Nistov 2001) use videos or cartoons, which yield narratives that are “less artificial and more similar to spontaneous narratives” (Pavlenko 2008:312). Apart from structured narration tasks, subjects can also be asked to speak freely on various topics, such as family or everyday life (Wei & Lee 2010; Albirini et al. 2011).

In order to avoid the potential effects caused by the presence of a researcher, Bolonyai (2007) opted for a less intrusive method of recording speech by having parents audio-record their children’s spontaneous speech. A potential disadvantage of this approach is that sets of utterances are less likely to resemble each other compared to utterances from structured narratives.

#### **2.2.5.2 Comprehension**

We will now discuss two methodologies—both of which are employed in this thesis—that have previously been used to investigate HS comprehension. The first is a grammaticality judgment task, and the second is a sentence-picture matching task.

Grammaticality judgment tasks (GJT), in which subjects are asked to rate the linguistic acceptability of a sentence, have been used widely in general linguistic inquiry (Tremblay 2005) and have found their way into the study of HL as well. Rothman (2007) used a GJT to determine whether HSs of Brazilian Portuguese have a native-level grasp of the distribution of inflected infinitives in the language. Other examples include a study on the restructuring of aspect in Heritage Russian (Laleko 2010) and several studies on Heritage Spanish that test knowledge of clitic behavior and differential object marking (Montrul 2010a) as well as morphosyntax (Au et al. 2002 Knightly et al. 2003). Polinsky (2006), however, found GJTs to be nearly impossible with American HSs of Russian, as subjects accepted all stimuli except those with the most serious errors. More recently, Orfitelli & Polinsky (2012) have conducted a study on the effectiveness of GJTs in assessing grammaticality in non-L1 populations, in which they ultimately recommend that GJTs not be used with such

populations, including HSs. We will discuss this issue in depth in Chapter 5.

Sentence-picture matching tasks have also been used to assess HSs' knowledge and comprehension in various areas of language, including sentence-initial object clitics (Montrul 2010b) and possession (Montrul & Ionin 2012) in Spanish, lexical knowledge in Dutch (Hulsen 2000), and relative clauses in Russian (Polinsky 2009). In this type of task, subjects are instructed to choose between two or more pictures in response to an aural stimulus, and the speed and/or accuracy of their responses are recorded. This task is a useful way of determining comprehension of particular syntactic structures (as it is used in this thesis). This differs from other commonly used methods—such as self-paced reading—that assume literacy, and which may, therefore, not be well-suited to HSs, who often have limited literacy skills.

## **2.3 English as a Heritage Language**

### **2.3.1 English as a Weaker Language**

Although English has not been examined generally as a HL, research has been conducted on the English proficiency of bilingual children who are dominant in a language other than English. Below, we discuss a few examples of this research, which examine L2 English attrition in Israeli and Korean children, as well as 2L1 acquisition by French-English bilinguals. These studies provide information on which areas of English are vulnerable under conditions of reduced input, and may, therefore, help us understand why the speakers of Heritage English in this thesis produce the errors that they do.

Attrition of L2 English in Hebrew-speaking children was investigated in a series of studies (Berman & Olshtain 1983; Olshtain 1986, 1989) that examined the English-language skills of Israeli children who had lived in America for 2 years or more, but had since returned to Israel. These studies elicited speech from children between the ages of 5 and 14 in both structured and unstructured settings. Some of the reported errors were similar to the “developmental” errors found in heritage language: irregular

verb forms such as *gave* and *feet*, which the speakers had a strong grasp of when they first returned to Israel, became *gived* and *feets*—examples of over-regularization and overgeneralization, respectively—within a year of return (Olshtain 1989:157).

Other errors in their speech were attributed to transfer, such as the use of the wrong preposition (*in Saturday* instead of *on Saturday*), word order (*I never saw in my life a dinosaur*<sup>2</sup>), and the use of gender where none is required in English (*I want an egg for breakfast, but she must be very scrambled*). Other errors included the mistreatment of particle verbs, where the speaker would either use the wrong particle, omit the particle, or replace the verb-particle combination with a different verb entirely. Speakers also encountered difficulty retrieving lexical items (Olshtain 1989:158-163).

Remarkable were areas where subjects performed at a native level, and, in doing so, distinguished themselves from typical ESL speakers: for example, they were consistently correct in their use of the indefinite article and present copula, neither of which exists in Hebrew. Speakers also employed “formulaic chunks” that are not usually encountered in the classroom, such as *well, I guess* or *know how to* (Berman & Olshtain 1983:226).

Another study of L2 English attrition is Kang (2001), who examined three Korean-born children who had recently returned from two-year stays in America, where they had become English-dominant. In order to determine the extent and nature of attrition that their English underwent in the year or two following their return to Korea, the investigator had participants complete experiments investigating production and comprehension of specific phenomena, particularly their use of definite articles, relative clauses, passive constructions, and irregular past-tense verb formations.

The results generally showed that, after attrition, participants were in many ways similar to young native speakers: they often misinterpreted the subject of the pas-

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<sup>2</sup>Such formulations were also found in the speech of nearly every subject interviewed for this thesis.

sive construction as the agent; in relative clause comprehension tasks, they similarly misinterpreted relative clauses as referring to the agent in cases where they actually referred to an object or some other non-subject type; and they had a tendency to over-regularize irregular verbs, producing forms such as *breaked* or *comed*. However, one clear instance of transfer was the frequent dropping of subjects by one of the participants under the influence of his native Korean, which frequently employs null subjects.

Work on English-speaking bilinguals has underscored the role of input described earlier in this chapter: it has been shown that the size of a French-English bilingual child's lexicon is sensitive to the proportion of input in each language (David & Wei 2008). Paradis (2010) focused on one particular structure—English past-tense verbal morphology—in six-year-old French-English bilinguals who had varying amounts of exposure to English at home, and found that they performed worse than their monolingual English peers on production and grammaticality judgment tasks. Again, performance was correlated with the amount of English exposure received at home.

As we will see in Chapter 4, there are many similarities between the production errors of the speakers in the above studies on attrition and bilingualism and those of the subjects in this thesis, which raises the possibility that HSs, L2 attriters and uneven bilinguals have underlying similarities. At the same time, differences found among these groups can shed light on the ways in which HLs are unique.

### **2.3.2 English in Israel**

The status of English in Israel is particularly noteworthy in comparison to that of minority languages in America. Although the United States has no official language, English is seen as the de facto primary language, and no other language even approaches that status (Portes & Hao 1998:3). English has been an official part of the Israeli linguistic landscape since the time of the 1917 British Mandate for Palestine, when it was declared an official language alongside Arabic and Hebrew (Fisherman

1972, as qtd. in Nadel & Fishman 1977). Although English was removed from the roster of languages when Israel declared independence in 1948, English has persisted as an “unofficial” language used in areas such as currency and courts of law (Spolsky & Shohamy 1999:25), and Spolsky (1999:169) notes that bilingual signs are far more likely to be Hebrew-English than Hebrew-Arabic, even though Arabic is official and English is not. The Israeli government maintains strong diplomatic ties with America (Rebhun & Waxman 2000), and actively works to cultivate and maintain English language proficiency: English is mandatorily studied as an L2 in all Israeli schools starting in the fifth grade (Nadel & Fishman 1977). The 1996 Policy for Language Education in Israel allows schools to begin as early as the third grade (Spolsky & Shohamy 1999:27).

There are approximately 86,000 North American immigrants living in Israel, as well as an additional 61,400 who report being of North American origin (Statistical Abstract of Israel 2010). Although the Jewish Agency for Israel, dedicated to integrating new immigrants into Israeli society, encourages the study of Hebrew in intensive Hebrew language study programs called *ulpanim* (singular *ulpan*), this has not prevented the establishment of English-speaking enclaves, located mainly in central Israel, near or in the Jerusalem area. Such networks enable immigrants to get by using their native language without needing to learn Hebrew (see Bauer et al. 2005 for a study on Spanish-speaking enclaves established by Mexican immigrants). One even hears anecdotes of Israeli-born children—raised by American parents—who speak native English while speaking foreign-accented L2 Hebrew. While these accounts may be exaggerated, it is clear that English enjoys wide use in Israel by L2 learners and native speakers alike. In fact, English is increasingly seen by Israelis as an important medium of communication, due to a variety of factors including tourism, English-language media, travel abroad, and the need to succeed in the professional world (Nadel & Fishman 1977; Olshtain 1989; Reshef 2008). The status of English as

a language with “high prestige and utilitarian value” has been considered an important external factor by researchers seeking to examine English in an Israeli context (Olshtain & Barzilai 1991).

Therefore, we might expect English-speaking immigrants to Israel to feel more strongly about their children being able to speak English than has historically been the case with linguistic minorities living in the United States. Additionally, English-speaking children growing up in Israel can be expected to have a greater interest in maintaining their fluency than children growing up in immigrant homes in the United States. Since, as noted above, attitudes play a role in language proficiency, it is possible that even though Israeli Heritage English may resemble other HLs in some ways, speakers of Israeli Heritage English speakers may be more proficient than than HSs that have been studied thus far.

## **2.4 Conclusion**

The last decade has seen much growth in the amount of linguistic research conducted on HLs. This research has shown that HSs encounter difficulties in various areas of language, and that production errors can be generally categorized into three groups: errors due to transfer, fossilized errors found in general linguistic development, and errors unique to HSs. Additionally, HS populations have been shown to display a wide range of proficiency, determined by a variety of factors, from birth order to language attitudes. The study of HLs has employed a variety of methodologies to test production and comprehension of HSs, some of which have been employed in this thesis, namely elicited narratives, grammaticality judgment tasks and sentence-picture matching tasks.

The prominent status of English in the world in general may explain the lack of research on English as a HL. Nevertheless, several studies of bilingualism with English as the non-dominant language provide helpful context for this thesis by showing what sorts of structures in English are vulnerable throughout the acquisition process, and

by illustrating in what ways the dominant language can influence English. However, because these studies have not studied English as a HL, they also contribute a useful contrast: differences in results can be helpful in determining what sets apart HSs from L2 speakers and balanced bilinguals. Against this background, this thesis will provide data on the production and competence of speakers of Heritage English in Israel.

## 3 Subject Pool & Interview Procedure

### 3.1 Subject Selection

Subjects for this thesis were recruited by circulating an advertisement seeking to interview 7- to 13-year-old Hebrew-dominant children living in Israel who speak English with at least one of their parents. This advertisement was posted on Anglo-Israeli internet-based communities and sent to Israeli acquaintances, who, in turn, reached out to others. In this way, I was able to interview 33 subjects on two separate trips to Israel. Almost all of the subjects were members of Religious Zionist communities in or near Jerusalem, and many knew each other. Six subjects were excluded: one had recently immigrated to Israel from the United States, two had insufficient English input, and three others had exposure to a third language. This left 27 subjects. The parents of each subject received compensation, except in those cases where it was refused.

The age range of 7-13 years was chosen for two reasons. First, it would allow me to examine an English-speaking HS population that has not been exposed to many years of English-language education, which starts in the 5th grade in Israel<sup>1</sup>. The second advantage of studying children of this age range is that they would all still be living at home, their primary source of English-language input. Because most research has studied adult HSs who no longer live at home, it has been difficult to distinguish incomplete acquisition from later attrition (Sorace 2005; Montrul & Polinsky 2011); the linguistic deficiencies of a HS population that has not yet left the home-language environment are less likely to be due to attrition.

I elicited video narratives from ten age-matched children<sup>2</sup> from New Jersey and

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<sup>1</sup>However, parents of subjects reported that the subjects started attending English classes at an average age of 6 (the youngest age that a child began English classes was 4;6, and the oldest was 8).

<sup>2</sup>Of the original 12, 2 were excluded due to learning disabilities.

Massachusetts, and had these children as well as to two others in Florida complete the experiments<sup>3</sup>; these children served as a control group for the experiments in Chapter 5. Aside from those in Florida, all controls were culturally matched to the HSs as they grew up in a Modern Orthodox Jewish community, which can be considered in many ways to be the American analog of Israeli Religious Zionism.

Audio recordings of these interviews—both with HSs and controls—were transcribed. The HS transcriptions, which comprise a corpus of Israeli Heritage English online<sup>4</sup>, were analyzed for deviations from baseline speech, many of which are outlined in the next chapter. We will now discuss the general structure of these interviews.

### **3.2 Interview Structure and Content**

The interviews—on average 40 minutes in length—were held in domestic settings, mostly removed from activity happening elsewhere in the house in order to minimize interruptions. Interviews were conducted during the course of two trips to Israel, one each in January and May of 2012. Since the main purpose of the January interviews was to gather production samples, subjects interviewed then only performed two tasks: (1) verbally answering questionnaires about their English use, and (2) narrating short video clips. Most of these subjects were interviewed again in May. Interviews conducted in May included two additional components focusing on comprehension: (3) a sentence-picture matching task and (4) a grammaticality judgment task (GJT). The questionnaire doubled as a way to gather HS speech samples as well as to obtain information regarding their linguistic self-perceptions and their attitudes towards English. More information on the picture matching task and GJT, as well as the experimental design, can be found in Chapter 5, but we will take a moment here to discuss the chosen method of narrative elicitation.

Eliciting narratives to study the speech of a population is certainly not a new

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<sup>3</sup>Although the children in Florida completed Experiment 3, their results were excluded since they were not informed that the task was timed.

<sup>4</sup><http://dvn.iq.harvard.edu/dvn/dv/polinsky>

method; however, this thesis differs from most other studies—which use *Frog, Where Are You?* (Mayer 1969) or other picture books—by showing the subjects four animated video clips and instructing them after each one to recount the sequence of events. Of these four clips, one depicted a scene from the popular children’s cartoon *Sylvester & Tweety*, and the three remaining clips were excerpts from a Russian animated series called *Nu, pogodi!* (‘Well, Just You Wait!’). Aside from being almost entirely wordless, these four video clips were expected to be good candidates for narration because they were set in various everyday locations (the supermarket, a backyard, on the street) and included a variety of actions (chasing, flying, jumping, climbing). These clips shared a similar storyline, in which a larger animal tried to capture a smaller animal (Sylvester the Cat and Tweety Bird, and a wolf and a rabbit, respectively).

The advantage of using video clips as opposed to static picture books is that they are more engaging (Hong et al. 2009), and therefore more appropriate for children of this age; additionally, the narratives obtained from using videos clips are more coherent and spontaneous-sounding (Sakel & Everett 2012:134; Pavlenko 2008:312). In this thesis, the exercise of video narration was construed as a memory test so that the subject would provide as much detail (i.e., as much speech) as possible. Although there was a potential drawback to this (and generally to the choice of video clips over picture books), namely, that subjects would have to be able to remember what happened in each video (on this very problem with young children, see Eisenbeiss 2009:7), all the clips were short enough (between 94 and 165 seconds) that the cognitive demands of recalling the storyline were not a concern.

### **3.3 Population-Internal Variables**

As mentioned in Chapter 2, there is significant variation within the HS community, with speakers approaching native proficiency on one end and passive comprehension on the other. This variation arises due to a variety of factors. I tested four of these

factors experimentally by dividing subjects into two groups based on each one, and, therefore, was able to see whether these groupings were correlated with performance in the experiments in Chapter 5. The number of subjects in each group is displayed in Table 3.1.

Firstborn	8	Non-firstborn	16
7-9 years old	9	10-13 years old	15
Sequential	15	Simultaneous	9
>110 words/min	11	≤110 words/min	11

**Table 3.1: Heritage Speaker Population by Variables**

The first factor is whether the subject was a firstborn child, since firstborns are known to be more proficient in the home language than children born later (Wong Fillmore 1991). This is due to a variety of reasons, including the fact that firstborns receive proportionally more input than later-born children, who must share their parents’ attention with their older siblings (Shin 2002).

Age is the second factor that was tested experimentally. As mentioned above, the children in this thesis ranged from 7 to 13 years old. This population was split into a younger (7-9 years) and an older (10-13 years) age group, with the prediction that the older group would perform better on the experiments, for two reasons. First, older children tend to be more linguistically developed than younger children, and this has been shown to be true for heritage speakers as well (Wei & Lee 2001). Second, as Israeli children grow older, they are exposed to more English-language education at school, and consistent education has been shown to have an effect on HL proficiency (Rothman 2007; Bylund & Díaz 2012). Since it is not possible to separate the effects of language education and linguistic maturation (both of which are expected to have a positive effect on proficiency), age grouping was used as a variable with the understanding that any correlations found with these groupings may reflect either independent factor.

A third factor is whether the subject was a sequential or simultaneous bilingual

(Meisel 2007; Paradis 2008; Benmamoun et al. 2010:10). For our purposes, a simultaneous bilingual is one who was exposed to English and Hebrew at birth, because either a parent or another caretaker spoke Hebrew with the subject. I define a sequential bilingual, on the other hand, as a bilingual who was exposed to Hebrew after a period of being exposed only to English. Simultaneous bilinguals have been shown to be less proficient in the home language than sequential bilinguals because they tend to receive less input compared to sequential bilinguals, usually because one parent speaks the dominant language of the outside environment (Montrul 2008).

The fourth factor, namely, proficiency as determined by speech rate, requires some discussion. Speech rate, as measured in words per minute, has been found to be correlated with HSs' control of certain grammatical phenomena (Kagan & Friedman 2004) and seems to be a general indicator of fluency. In order to calculate each subject's speech rate, I divided the total number of complete words (excluding stutters and false starts) produced in the video narratives by the total amount of time that the subject took to complete the narrative. I grouped subjects with speech rates above 110 words per minute as "high-proficiency" and those with speech rates below that as "low-proficiency". The cut-off point of 110 words per minute was chosen because a natural split was observed at that point when the subjects' speech rates were plotted on a scatter graph. I also calculated speech rates for control subjects and found that while the average speech rate for controls was higher than that of HSs (by 32.72ms; see Table 3.2), there was considerable variation within both HSs and controls such that some of the higher speech rates of HSs overlapped with some of the lower speech rates of controls. Although not done in this thesis, it would have been helpful to compare each subject's speech rate in English with their speech rate in Hebrew to ensure that their Hebrew speech rates were normal; if a speaker's speech rate in Hebrew were low as well, then a low speech rate in English would not necessarily reflect anything about that speaker's English proficiency.

	Heritage	Control
Lowest	80.09	121.88
Highest	156.74	175.02
Average	115.81	148.53

**Table 3.2: Speech Rates (in ms)**

### 3.4 Conclusion

The interviews conducted with these 27 Heritage English speakers provided data by which I was able to assess their production in comparison with 10 native control subjects, as well as determine the way that their performance on the experiments correlated with four predictors of HS proficiency: birth order, age, sequential or simultaneous bilingualism, and speech rate. The next chapter discusses the speakers' production errors, and Chapter 5 describes the experiments and correlations found as a result of evaluating the HS population according to the groupings described above, as well as in comparison to the native control group.

## 4 Production

### 4.1 Introduction

This chapter discusses the ways in which the English production of these children differs from that of native monolinguals. These differences include frequent disfluencies, as well as deficits in the lexicon and morphosyntax, including agreement, word order, and tense marking. Some of the phenomena described below are the motivation for the experiments in grammatical competence described in Chapter 5.

### 4.2 Disfluencies and Lexicon

#### 4.2.1 Lexical Access and Sentence Planning

The speech of the subjects features multiple disfluencies, including multiple false starts, retracings, and filler words. Common in HL (Benmamoun et al. 2010:21), such disfluencies take a toll on speech rate, which, as indicated in the previous chapter, is on average lower for the HSs than for the controls. These disfluencies originate mainly in difficulties with lexical access and planning out utterances. Of course, disfluencies are also found in native spontaneous speech; Clark & Wasow (1998) attribute them to a failure to plan utterances ahead of time. What sets apart HSs' disfluencies from those of native speakers is their frequency, which is immediately apparent from (1)<sup>1</sup>.

- (1) and zen eh@fp he break thee # em@fp # [/] ze # [/] thee ## trolley, and # &f [//] and em@fp # [/] and zen honey # i fink eh@fp goes on the floor and then he slips, and runs wif zeee # [/] wif ze um@fp [/] wif ze ## [/] wif ze &ba [//] wif ze trolley, and then he gets # [//] zen he bashes intooo ze #

---

<sup>1</sup>In this example, as in the entire corpus, retracings are marked by “[/]”, retracings with a correction by “[//]”, pauses by “#” (between 1 and 3 “#”s depending on the length of the pause), word fragments by “&”, filled pauses by “@fp”, and inaudible or incomprehensible utterances by “xxx”. Additionally, each subject has been assigned a unique two-letter code (such as CL or NA) by which they are referred to throughout this thesis.

[/] into ze &hip hip-pə-pə-də-mus [//] ze hippo [CL]

This example features three clear attempts at retrieving a lexical item: two for *trolley* and one for *hippo*(*potamus*). In trying to recall *trolley*, the subject engages in several delay strategies until she can come up with the word. These include pausing, using fillers (*em* and *eh*), and elongating words (*theee*). A few moments later, it seems that the speaker has forgotten the word yet again, as she retraces the preceding material (*with the*) 5 (!) times, again using the above strategies, with one addition: right before she hits upon *trolley*, she begins saying some other word but swiftly corrects herself. Towards the end of this example, she clearly has a phonetic representation of the word in her head but is unable to access the word in its entirety, as she first produces a fragment &*hip*, proceeds to sound it out syllable by syllable, and eventually opts for the abbreviated form of the word.

Aside from these disfluencies, there are several other strategies that subjects use when they cannot recall a particular word; they are listed here in order of their frequency in the speech corpus. The most common strategy is that of circumlocution, where the subject describes the inaccessible item in a roundabout fashion. The subjects in (2) are trying to convey the words *weeds* and *clothesline*, respectively:

- (2) a. the mouse was now um@fp cutting his &garde his # [/] his umm@fp #  
 [//] the plants that were drinking his flowers' # umm@fp water [NA]
- b. he finds this uh@fp ## the uh@fp # rope for the &wa # [//] for the  
 uh@fp # clothes after they put them in the washing machine [RI]

Another such strategy is using a term which, although less specific, is nevertheless sufficient to convey the intended meaning (*underspecification*; see Olshtain & Barzilay 1991). In (3), the subject is trying to recall *henhouse*, or perhaps *chicken coop* or *barn*. After a lengthy pause (as indicated by the ###), she opts for a less specific,

more commonly used word:

- (3) then the bird runs in # to ### a house [YV]

Subjects occasionally use the Hebrew word as a part of the retrieval process, to avoid further retrieval frustration, or in hopes that the interviewer will provide them with the word:

- (4) S: eh@fp ## so ## the um@fp ## [/] the cat is like um@fp ## forgot how to say this # a *daxlil*? um@fp ### i forgot how to say this, *daxlil* no um@fp

I: a scarecrow?

S: yeah [BA]

- (5) S: then they need to em@fp ## jump from the plane, to ### [//] what do you call ## em@fp *tznixa xofshit* [% skydiving] xxx

I: um

S: em@fp, so they ## eh@fp # [//] also he [/] he wants to eat the uh@fp # rabbit [...] [DV]

In a few cases, instead of opting for a more general word, the subject chooses a word with a different specific meaning (*overspecification*). This may be because they may fail to realize that the word does not match the object that they are describing, or because they know that they cannot remember the word and therefore actively choose a different one that is semantically similar. In (6), for example, the subject uses the word *elephant* to refer to the hippopotamus. Since he cannot recall *hippopotamus* and since hippopotami and elephants are both massive, grey animals, the subject substitutes in *elephant*:

(6) all the juice came falling out and heee slid like # till the # elephant [EP]

Similarly, some subjects use *fox* instead of *wolf*, or *mouse* instead of *bunny/rabbit*.

So far, I have described problems that reflect lexical access difficulty. However, subjects often face difficulties in planning out sentences as well. For example, in (7), the subject is trying to communicate that she clicked on the mouse by accident, but isn't sure how to say so. She, therefore, starts saying one thing (*it's because I didn't*), changes her mind and opts for a different path (*I tried*), but realizes that that path, too, is not viable for her. After one more try (*I don't*), she settles on *by mistake I did it*. The subject in (8), in explaining the difference between herself and her age-matched peers in America, expresses this frustration explicitly (and note the multiple repetitions and retracing and use of *like* as a delay strategy):

(7) I: You clicked on the button a few times, right?

S: Yeah.

I: Is it cause you didn't hear the sound?

S: ehh@fp &no no, no it's because I &did'n # [//] I emm@fp [/] I tried &t [//] I &don't [% sigh] [//] because emm@fp &bec [//] cuz by mistake I did it [CL]

(8) umm@fp they have like [//] they could [//] they have more like ## [//] when they speak like it's more like, like ## I don't know how to express myself [RE]

Until now, we have discussed general issues of lexicon as they relate to disfluencies and avoidance strategies. Next, we will turn to two particular areas of the lexicon which differ from the baseline: particle verbs and prepositions.

#### 4.2.2 Particle Verbs

Some speakers (n = 14) occasionally produce errors with particle verbs (ParticleVs), that is, verbs with obligatory particles such as *run out* or *bring up*. They occasionally

use the wrong particle (9) or insert an adverbial phrase between the verb and its particle (10):

- (9) a. suddenly came water # down and uh@fp ### like # **blew off** his  
cigarette [OP]
- b. he's about to kick it and then the cops come so he's like [/] he's waiting,  
and then he kicks it [...] when they **pass away** [RI]
- (10) a. I don't know if the cat grabbed him or not but then um@fp he **ran**  
**without Tweety out** [RE]
- b. tweety goes in # to the ## [/] in to the ## chicken home thing, and  
he **goes also in** [DV]
- c. when my mom speaks English so i **speak to her back English** [NI]

There were also some cases where the particle is omitted or added after a pause:

- (11) a. the cat **put**, like, a wig [YL]
- b. they ## have like a lot of money, and # they like **use it # up** [YT]

Although these deviant usages of ParticleVs are not systematic across the population or within the speech of a single HS, they do not seem to be random. Since ParticleVs are unique to English and a few other Germanic languages, they present difficulties for non-native speakers (Dagut & Laufer 1985; Liao & Fukuya 2002; Gilkerson 2006), and errors of particle omission<sup>2</sup> and incorrect particle use have been observed both in cases in L2 acquisition (Gilkerson 2006:93-4) and L2 attrition (Olshtain 1989:159). These types of errors seem to reflect a lack of lexical knowledge, and would, therefore, be consistent with other observed difficulties in lexical access. In other words, they never learned the appropriate particle that accompanies a given ParticleV (or that

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<sup>2</sup>Certain particles are omitted in varieties of English across the globe; one example is the predominance of *pick* over *pick up* in Kenyan English (Schneider 2004:240).

it is a ParticleV to begin with) and, therefore, may use the incorrect one or omit it entirely.

That being said, the examples in (10) do seem to target a particular type of ParticleV. Linguists draw a distinction between *compositional* or *transparent ParticleVs* on one hand and *idiomatic ParticleVs* on the other (Ramchand & Svenonius 2002; Gilkerson 2006). In the former, the meaning and function of the particle are clear, such as *climb up* or *go out*, where *up* denotes movement an upward direction and *out* denotes moving outside. In the latter, the meaning of the individual particle does not have any predictable connection with its meaning in the context of the ParticleV. *Write down* and *wake up* are examples of idiomatic ParticleVs, where the writing is not being done in a downward manner, nor is the waking being done in an upward manner.

Given this information, it is interesting to note that all examples of “interrupted” particles involve intransitive, transparent ParticleVs, where the particle could understandably be misinterpreted as an independent, optional adverb. This possibility is supported by one speaker’s use of *out* as meaning ‘outside’ (12)—a use which, in other situations, is found in baseline English as well (13)—in which case (10-a) may be understood as *He ran outside without Tweety*. At that point, the apparent “interruption” of the verb from its particle simply becomes a question of switching two AdPs. Furthermore, many particles find homophonous counterparts in prepositions (such as *out*), and English allows the insertion of AdPs between a verb and its PP-complement (Downing & Locke 2002:335<sup>3</sup>), demonstrated in (14):

(12) [...] a lot of places, and we sleep out, and it’s fun [NI]

(13) She’s out right now.

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<sup>3</sup>In their terminology, such verbs are called *particle verbs*, whereas the “uninterruptible” verbs are called *phrasal verbs*.

(14) They ran quickly out of the burning building.

Additionally, the “interruption” of ParticleVs is possible in native English, not with AdPs but with direct objects, as evidenced by the sentence pair *She gave back the book* and *She gave the book back*. All of this may signal to the HS that particles in ParticleVs are really just adverbs (as argued by Sawyer [1999], who maintains that this particle-adverb acts as a predicate and takes as its subject the surface object in the sentence) or prepositions (an understanding which Olshtain [1989:159] attributes to her L2 attriters) that can be preceded by other adverbial material, which would also explain errors such as (10-b). One could argue the same for (10-c), since *back* by itself carries the meaning of ‘returning’:

(15) She made everything **back** green [RI]

(16) Slim Shady’s **back** in town.

### 4.2.3 Prepositions

Just as speakers occasionally use the wrong particle in ParticleVs, so too do they (n = 21) make occasional errors in prepositions under Hebrew influence:

(17) a. **in** Sukkot<sup>4</sup> [DN]

b. write **in** both hands [MA]

c. **in** dinner [YT]

(18) a. movies, I watch **at** English [NI]

b. **at** Nickelodeon [DV]

(19) a. rehearsals **to** the play [BA]

b. listen **for** music [NI]

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<sup>4</sup>The Jewish festival of Tabernacles. The correct preposition would be *on*.

- (20) a. the top **from** the parachute [EL]  
 b. afraid **from** him [NI]

Although Hebrew and English both have prepositions, the systems do not correspond directly to each other. In (17), subjects use the preposition *in* as a translation of the Hebrew *bə-*, which can variably mean ‘on’, ‘with’ (in the instrumental sense), and ‘at’, among others. Similarly, in (18), subjects generalize the preposition *at* (again, from Hebrew *bə-*) instead of using the respective prepositions *in* and *on*. In (19), the Hebrew pronoun *lə-* corresponds to both *to* and *for*, and in (20), instead of using *of*, subjects are translating Hebrew *mi-* into *for*.

In idioms, where Hebrew and English often require prepositions that differ significantly from each other in their semantics and their general usage, subjects also occasionally choose the preposition that corresponds roughly to the Hebrew, instead of the appropriately idiomatic English preposition (for a similar phenomenon in Heritage Arabic, see Albirini et al. 2011:292). The Hebrew equivalent of ‘except for’ is *xuts mi-*, which is realized by some of these speakers as *except of* (21), and the subject in (22) is influenced by the Hebrew *xoshev al*, literally ‘think on’, instead of the normal English *think of*:

- (21) except **of** Shabbat [AR]  
 (22) when I think **on** an idea [NI]

### 4.3 Agreement and Morphological Change

As mentioned in Chapter 2, the system of agreement morphology for nouns and verbs is affected in HL. The speakers in this thesis display, albeit inconsistently, simplified or incorrect agreement morphology, only a small portion of which are attributable to Hebrew influence. These includes the use of plural for singular and vice versa, the omission of the third-person *-s* inflection in the present tense, the use of participles

instead of inflected verbs, and fossilized over-regularized and over-generalized verbal forms.

### 4.3.1 Number Agreement

Speakers (n = 13) occasionally produce utterances in which nouns did not agree in number with verbs or quantifiers. Many instances—as in (23)—have no obvious explanation, and may reflect processing difficulties.

- (23) a. lots of **language** [MA]  
 b. I # say like sentences that **doesn't** # make sense [YT]  
 c. the kids **is** a little bit, like, not being nice to me [YL]

However, there are two types of agreement errors which do have an explanation. The first type consists of errors stemming from a misinterpretation of certain quantifiers and mass nouns in English:

- (24) a. **are** there going to be um@fp more wrong stuff? [RA]  
 b. she gives us **those kinds** of stuff, and she grades them [TM]  
 c. everyone **were** going shopping [EL]

In the above examples, subjects seem to be misinterpreting certain quantifiers and mass nouns. In (24-a), the speaker likely interprets *stuff* as plural and, therefore, inflects the verb to match that interpretation. (24-b) features a similar misinterpretation of *stuff*. This can be explained by the fact that the Hebrew equivalent of *stuff* is *dvarim*, the plural form of a noun meaning ‘thing’:

- (25) *dvarim ka-ele*  
 thing.PL like-that.PL  
 ‘things like that, those kinds of things, that kind of stuff’

A similar misunderstanding is likely in (24-c), where *kulam*—the Hebrew analog of *everyone*—is also plural (26):

- (26) *kulam halxu*  
 everyone go.PAST.PL  
 ‘Everyone went.’

The second type of error is probably motivated by the principle of closest conjunct agreement (CCA: Lorimor 2007; Benmamoun et al. 2009):

- (27) a. me and [name] ## **likes** to see [LI]  
 b. one of them **were** the cat [RE]  
 c. the people in my eh@fp class **doesn’t** # like the uh@fp [/] the # teacher  
 [LI]

CCA describes a system of agreement where a verb, acting as the predicate of some compound subject, agrees with the element of the compound (or *conjunct*) that is closest to it. For example, in (27-a), the conjunct is *me and [name]*, and *[name]* is closest to the verb, so the speaker marks it as singular *likes* instead of *like*. CCA is a common-enough feature of natural languages (although not in English or Modern Hebrew) and may help to explain the source of utterances like (27-a). One might speculate that, although there is only one subject in (27-b) and (27-c)—*one* and *people*, respectively—an HS having limited access to the internal structure of complex NPs might, as in CCA, make the verb agree with the NP that is closest to it, respectively *them* and *class*.

As with many other phenomena reported here, however, more data is necessary to determine whether these utterances—those involving quantifiers, those possibly attributable to CCA, and those which don’t seem to have any particular motivation—are isolated “accidents”.

### 4.3.2 Loss of Present Third-Person Singular Inflection

Many speakers (n = 17) fail to consistently produce fully inflected verbs, instead sometimes using what appears to be the uninflected verbal stem. In the following sentences, all main-clause verbs are in boldface, and the use of stem is indicated by an underline:

- (28) a. he **lies** down next to a picnic, then a fly **comes**, and take that out, then a bee **comes**, and, he **smokes** on the bee and then the bee # run after him, then he **runs** and then he see a # plane, and he see ## [/] and he **sees** three ## [/] three animals [BA]
- b. he first **saw** a &s # scarrow, he **saw** something in the garden and he &f **didn't know** what it is, and then he jump from him and then he ## [/] he **sent** him out of the cave, so he ## **was looking around** and he **sawr** a cow and he **sawr** a &sh # he **saw** all kind of animals and then he come # [/] he **came** to him [MA]
- c. the second time, he # almost **catched** &it # [/] **catched** him, in this, he **done** like he's # eh@fp # [/] his # [/] him a goat, and then, he **took** off the [...] costume # of the goat, and then the # [/] and then he run after him [LI]
- d. he **saw** # [/] em@fp &s # water fell on him, and then # he **thought** [...] it's &chick [/] food, and # [/] so he # um@fp # **took** the [...] string, and then **put** it up and the cat # run away, and then he climb ## on, then ## [/] then # the rabbit who's planting the # plants, so he **cut** the string and he **fell** down [DN]

Looking at (28-a), it seems that this is a case of paradigm leveling. Present-tense inflectional morphology in English is already quite meager, namely, nothing beyond the present third-person singular -s. Perhaps it is the case that the speaker over-

regularizes and assumes that verbs inflect the same for all persons including the third person, leading to the loss of the *-s*. Looking at (28-b)–(28-d), though, it seems that it may not be so simple. This is because the speaker occasionally uses the verbal stem even when narrating a story in the past tense. If the loss of *-s* were simply a case of leveling the verbal present-tense paradigm, one would not expect the past tense (where there is no agreement morphology) to be affected. This may not be a valid objection, however, since even control subjects often switch tenses in narration—from present to past, or from past to present—sometimes more than once within the same passage. However, there is another reason why this may not be paradigm leveling, namely, because it does not occur consistently, even within the speech of a single subject. A true leveling of the paradigm would involve the total loss of *-s*.

There remain two possibilities regarding the use of the unmarked stem: either it is the result of paradigm leveling due to over-regularization, or it is a complete failure to mark the verb, due perhaps to the processing strain involved in marking agreement. This second explanation receives support from research on monolingual acquisition: it has been shown that very young children go through a stage in language development where they optionally use the infinitival form<sup>5</sup> of the verb (Wexler 1994). In language-impaired populations such as children with SLI (Rice et al. 1995) or autism spectrum disorder (Roberts et al. 2002), this phenomenon persists to older ages as well. A variety of accounts have been proposed for this phenomenon (for an overview, see Avram 2002). Although Wexler (1994) suggests that this use arises from a lack of knowledge of grammatical Tense, Phillips (1995) convincingly argues that it is not a lack of knowledge that motivates the use of the infinitive, but rather the processing difficulty associated with *accessing* that knowledge.

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<sup>5</sup>If one were only to look at English, there would be no way to determine that this is, in fact, the infinitive (as opposed to paradigm leveling), since English does not distinguish on the surface between infinitives and verb stems. However, Wexler bring cross-linguistic data that show that it is indeed the infinitive that is used.

It is, therefore, possible that the subjects are encountering such a difficulty, where the process of accessing morphology is not as automatic as it is for native speakers. The processing cost of accessing this information may lead the subjects to opt for the unmarked, structurally simpler infinitive instead. Future research can determine whether this is indeed the case: if processing difficulties motivate this phenomenon, then past-tense verbal forms, which require the accessing of inflectional morphology as well, should also be occasionally realized as unmarked verbal stems. If, however, the cause for the omission of *-s* is a leveling of the present-tense paradigm, past-tense forms should not be affected, as described above. Regardless of the explanation, the low phonological salience of *-s* may contribute to its occasional omission.

### 4.3.3 Use of Present Participle

Other subjects (n = 10) sometimes use the present participle in lieu of a person-inflected form:

- (29) a. and then ### he **saw** this # rope with clothes on so he **took** the rope,  
and uh@fp ## like **trowin'** it up # that # building [OP]
- b. he **saw** the three people going to the um@fp # airplane so he **went** in  
too, and then the middle of that like a red light **lighting** [YE]
- c. weee reading a book now called Waiting for Anya [TM]

This may be the result of transfer from Hebrew, where the present tense is identical with the present participle (Shlonsky 1997:§2.3-2.4). Thus, these speakers may be using the present participle in English since this is what they would naturally do in Hebrew<sup>6</sup>:

- (30) a. *hu holex habayta*  
he walk.M.SG.PTCP homewards

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<sup>6</sup>Although Hebrew sentences and/or translations in (30), (25)–(26), (34)–(39), (52), (56)–(57), (67), and (44-b)–(44-d) are my own, I consulted with a native Hebrew speaker who confirmed that these are the natural, unmarked option.

‘He **is walking** home’ *or* ‘He walks home’

- b. *ha-ish ha-holex*  
the-man the-walk.M.SG.PTCP  
‘the **walking** man’

However, in cases where the subject of the sentence is not singular, Hebrew would include a plural marker, which the speaker in (29-c) does not do. It is therefore possible that the use of the present participle, like the use of the unmarked verbal stem, may constitute an avoidance strategy with regard to agreement. That is, rather than expending cognitive effort retrieving the correct agreement morphology, these speakers may opt for the easy way out by using the present participle, which does not inflect for person or number.

#### 4.3.4 Regularization of Irregular Verbal Forms

Some subjects ( $n = 7$ , from both the older and younger groups) occasionally apply regular rules of past-tense formation to irregular verbs. Such forms are a normal part of the general linguistic development of monolingual English-speaking children (Marcus et al. 1992; Rice & Wexler 2001): native English-speaking children tend to reach 80% mastery of irregular past-tense forms between the ages of 3 and 8, depending on the verb in question (Shipley et al. 1991). Adults, too, are liable to occasionally produce such over-regularized forms. Although the amount of speech collected from control subjects was significantly smaller than that collected from the HSs, no instances of such over-regularization was found. The 7 HSs, on the other hand, produce (albeit sporadically) incorrect forms such as *flied*, *throwed* and *drived*; for comparison, native children are reported to have a strong grasp of these verb forms by age 6 (Shipley et al. 1991).

Also worth mentioning are the following isolated cases involving over-regularization of plurals and irregular third-person present forms:

- (31) a. he sits in # break time and just **do’s** homework for his friends in English

[YT]

- b. he **say's** ello [//] hello # to all of the animals [YV]
- (32) a. a couple of # like # **leafs** that will make taste [DV]
- b. a fox is walking, then he sees # two **mouses** [YV]

Since the age range during which the baseline is mastering irregular past-tense forms<sup>7</sup> (3-8 years, according to Shipley et al. 1991) intersects with the period during which the HSs enter school and become Hebrew-dominant, it is difficult to determine the reason for the presence of such over-regularized forms in the HSs. It may be that some subjects never completely learned the forms, or that they learned them and subsequently forgot them, or a combination of the two, namely, that the proportion of English input dropped while they were in the process of learning the irregular forms, interrupting their acquisition in the process. A larger, and perhaps longitudinal, sample is necessary to determine the frequency of these incorrect forms and, ultimately, whether they are due to incomplete acquisition, attrition, or both.

#### 4.3.5 Overmarking

Also part of normal monolingual development is the overmarking of past-tense forms, that is, adding a marker of past-tense to a verbal form which is already in the past, such as *wented*. Two subjects produce such forms<sup>8</sup>:

- (33) a. when he **camed** # to kill &h # the mom [LI]
- b. a book that is **wroten** # in English [NI]

Like over-regularization, it is unclear whether these forms, which appear in the speech of children acquiring their first language, are due to attrition, or whether these are fossilized remnants of child speech. However, these errors are attested in attrited L2

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<sup>7</sup>During this time correct and incorrect forms can exist side by side: *Daddy **comed** and said "hey, what are you doing laying down?" And then a doctor **came**.* (Marcus et al. 1992:27)

<sup>8</sup>While NI does not produce any other such forms, LI produces 3: *wroted, borned and maded*.

English in Israeli children (*stoled* in Berman & Olshtain 1983:224,4(c) and *wented* in Olshtain 1986:193), which suggests that attrition may be part of the explanation.

## 4.4 Syntax

This section discusses several syntactic phenomena, some of which are a direct result of Hebrew influence. These phenomena include placement of adverbial phrases, the use of *so* to connect an antecedent with its consequent (or a topic with its comment), and omission of the present-tense copula. This section also discusses errors of *wh*-movement, which are due to Hebrew influence and an over-generalization of the rules of inversion. Much of this section is devoted to the phenomenon of resumptive pronouns, particularly because their origin is unclear. Although the use of resumptive pronouns may derive from a left-dislocation construction often used in Hebrew, it may also serve as a way to relieve the strain on working memory imposed by weighty constituents, as discussed below.

### 4.4.1 Placement of Adverbial Phrases

Almost every subject ( $n = 26$ ) frequently violates English word order by placing an adverbial phrase (AdP) or prepositional phrase (PP) in various ungrammatical positions, such as between the verb and the direct object, such as the (a) sentences in (34)–(36), or between the copula and its complement, as in (37)–(38). These are the grammatical and accepted word orders in Hebrew (Glinert 2004:§:21,37), as indicated in the (b) sentences:

(34) a. He saw also a rabbit. [AR]

b. *hu raa gam arnevet*  
 he see.PAST.M.3SG also rabbit  
 ‘He also saw a rabbit.’

(35) a. I’ll write for you a question. [NA]

b. *ani yixtov/extov la-xa shæela*  
 I write.FUT.1SG for-you question

'I'll write<sup>9</sup> a question for you.'

- (36) a. Do you want to say to me 'hi'? [RI]  
b. *ata rotse ləhagid li shalom*  
you want say.INF to.me hello  
'Do you want to say 'hi' to me?'
- (37) a. He was one year in America. [NI]  
b. *hu haya shana bə-artsot habit*  
he be.PAST.M.3SG year in-United States  
'He was in the United States for a year.'
- (38) a. I'm too much on the computer [AR]  
b. *ani yoter miday al ha-maxshev*  
I more too on the-computer  
'I'm on the computer too much.'

Another violation of word order is the left-dislocation of an AdP for added emphasis or focus. This strategy is common in spoken Hebrew (Glinert 2004:415); although it is occasionally used in English in focus constructions, its use requires *do*-support. In (39), the subject places the AdP at the head of the sentence in order to dispel the interviewer's notion that the two subjects are studied separately even in younger grades:

- (39) a. Only from 7th grade you learn chemics and biology separate. [AM]  
b. *rak mi-kita zayin lomdim ximiya və-biyologya*  
only from-grade seven study.M.PL.PTCP chemistry and-biology  
*bənifrad*  
separately

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<sup>9</sup>Although *yixtov* is traditionally only for the third person (the first-person form is prescriptively *extov*), it is used colloquially for the first person as well (Michael Becker, p.c.).

#### 4.4.2 ‘So...’

Many subjects (n = 15) occasionally include *so* in positions where they are unnecessary in English:

- (40) a. when the helicopter was high from ground, **so** the people jumped [DN]  
b. if you’re gonna play with me **so** i will play [NA]  
c. there’s like teachers that just like cuz I’m American, **so** they speak with me in English [YT]
- (41) a. every drum he saw, **so** he like kicked it [EL]  
b. in your last grade in school, **so** you // sometimes people stay til six in the evening [MA]

Hebrew has a particle *az* (meaning ‘so’ or ‘then’) which, among its many functions in native discourse<sup>10</sup>, is used in resultative clauses (Yatsiv & Livnat 2006), as in (40). It is likely that such constructions are borrowed directly from Hebrew<sup>11</sup>.

The constructions in (41), although attested neither in Jewish English nor in the speech of control subjects, are used in modern Hebrew discourse, as in (42), to connect a topic with a subsequent comment. Thus, although both the constructions in (40) and (41) seem ultimately to come from Hebrew, it is unlikely that the latter were already present in their input (= their parents’ speech).

- (42) a. *axar kax eh **axot sheli**, eh hi gdola mimeni bishmone shanim, **az hi**  
hevia et ha rokenrol habayta kailu* (Livnat p.c.)

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<sup>10</sup>I did not find instances “so” serving the other functions of the Hebrew *az*.

<sup>11</sup>Orthodox Jewish English is known to feature the use of ‘so’ similar to that seen in (40), and seems to have the same Hebrew influence:

i. Since we don’t have a Temple nowadays, so we don’t do that. (Benor 2012:101)

Although the speakers studied by Benor differ both from the controls and HSs under study in this thesis (the speakers in this thesis are Modern/Zionist Orthodox, whereas Benor’s are rightwing “black-hat” Orthodox), these various speech communities exist on a continuum (Benor p.c.). It is therefore possible that these phenomena are related.

‘After that, uh, **my sister**, uh she is 8 years older than me, **so she** brought the rock-and-roll home’

- b. *xaver sheli she-hu mənahel diksi, az hu omer* (Livnat p.c.)

‘**A friend of mine** who is the manager of Dixie [restaurant], **so he** says...’

- c. *naxon habaxur haze she-ba etmol? az hu xazar lə-artsot habit* (Halevy-Nemirovsky p.c.)

‘You know **that guy** who came yesterday? **So he** went back to America.’

- d. *aba sheli, az hu haya mazkir artsi bə-vaad hapoel* (Borochovsky Bar-Aba p.c.)

‘**My father**, **so he** was national secretary of the executive committee.’

#### 4.4.3 Copula Omission

Another apparently Hebrew-influenced error is the tendency for some speakers (n = 7) to occasionally omit the present copula:

- (43) a. it just ## too much to # count [LI]  
 b. some of them not in English speakers now [MA]

This likely derives from the fact that the Hebrew copula is defective in the present tense (44-b), although a pronoun agreeing in number and gender with the subject may optionally take its place (44-a). Past and future copulas are robust (44-c)–(44-d):

- (44) a. *Daniela (hi) manhigat ha-kita.*  
 Daniela she lead.PTCP.F.SG the-class  
 ‘Daniela is the leader of the class.’ (Shlonsky 1997:88)  
 b. *\*Daniela hova manhigat ha-kita.*

Daniela be.PTCP.F.SG lead.PTCP.F.SG the-class

‘Daniela is the leader of the class.’

c. *Daniela hayta manhigat ha-kita.*

Daniela be.PAST.F.3SG lead.PTCP.F.SG the-class

‘Daniela was the leader of the class.’

d. *Daniela tihye manhigat ha-kita.*

Daniela be.FUT.F.3SG lead.PTCP.F.SG the-class

‘Daniela will be the leader of the class.’

#### 4.4.4 *Wh*-Movement

Some subjects ( $n = 10$ ) occasionally fail to invert the word-order in unembedded *wh*-sentences (45)–(46), or unnecessarily invert the word-order in embedded *wh*-sentences (47):

(45) a. Wait, what it was that...? [CL]

b. How it’s called? [AR]

(46) a. How you say it? [YT]

b. What I need to do exactly? [MO]

(47) a. I don’t know what’s it called [BA]

b. You know who’s Justin Bieber? [YL]

These errors do not seem to be motivated by a single rule: in fact, no subject’s speech contains errors of both the type in (45)–(46) and the type in (47). With regard to (45)–(46), Hebrew does not feature the type of inversion that *wh*-words necessitate in English (Glinert 2004:270,277), neither in main clauses (48) nor in subordinate clauses (49), which suggests that transfer from Hebrew may motivate these errors. The errors in (47), on the other hand, seem to be an overgeneralization of these rules

in English: the speaker knows that questions often feature inversion, but erroneously applies this principle to embedded questions instead of only to main-clause questions.

(48) *mi haya ha-nasi?*  
 who be.PAST.M.3SG the-president  
 ‘Who was the president?’

(49) *ata yodea mi haya ha-nasi*  
 you know.M.SG.PTCP who be.PAST.M.3SG the-president  
 ‘You know who the president was.’

#### 4.4.5 Resumptive Pronouns

Many subjects (n = 16) produce occasional resumptive pronouns (RPs), both in relative clauses (50) or following hanging topics (51), both in subject (a) and oblique (b) positions:

- (50) a. I have a friend that **she** wants me to speak with her English [MA]  
 b. I have like two of them like that I really speak with **them**. [RE]
- (51) a. He took the string, and then put it up and the cat # run away, and then he climb ## on, then ## [/] then # the rabbit who’s planting the # plants, so **he** cut the string and he fell down<sup>12</sup> [DN]  
 b. Well kids who live in my neighborhood, I know **them** from school. [NT]

As noted in Chapter 2, resumption is common in HLs (Polinsky 1995:99, 2006, 2008c). However, for a variety of reasons, it is not clear that RPs found in other HLs and the RPs produced by these speakers are related phenomena. First of all, Hebrew has several constructions where RPs are permissible, or, in some cases, required. In order to offset the topic, a native Hebrew speaker can dislocate an NP to the left edge of the utterance and retain a copy of the pronoun in the original position. The

<sup>12</sup>I have included the full context to show that the pause and RP are not likely to be the result of a topicalization.

intonational pause, indicated below by the comma, is obligatory:

- (52) a. Ronnie, I don't want to play with him. (Berman 1985:257)  
 b. *roni, ani lo rotse ləsaʔek ito*  
 Ronnie I NEG want.M.SG.PTCP play.INF with.him
- (53) a. *Pnina, hi hayta nora xamuda.*  
 pnina, she be.PAST.3.F.SG awfully cute.F  
 'Pnina, she was awfully cute.' (Falk 2004:229)
- b. \**Pnina hi hayta nora xamuda*  
 pnina she be.PAST.3.F.SG awfully cute.F  
 'Pnina was awfully cute.' (Falk 2004:229)

RPs are also used in relative clauses when the referent is oblique:

- (54) *raiti et ha-yeled she-rina xashva alav*  
 see.PAST.1.SG ACC the-boy that-Rina think.PAST.F.3SG about.him  
 'I saw the boy that Rina thought about' (Borer 1984:220)

Transfer from Hebrew can thus be suggested in the case of utterances such as (50-b), where the fronted topic is the direct object, and (51), where there is an audible pause. However, RPs are generally not permissible for matrix subjects with relative clauses<sup>13</sup>:

- (55) *ha-ish she-(\*hu) ohev et rina*  
 the.man that-(\*he) loves OBJ Rina  
 'the man that loves Rina' (Shlonsky, 1992:445)

<sup>13</sup>There are a limited number of situations where the use of an RP is acceptable, namely, if one adds constituents immediately before or after the complementizer. However, this does not describe any of the subject RPs produced by the subjects:

*ha-ish she-al politika hu lo ohev lədaʔber*

the-man that-about politics he not likes to.talk

'the man that doesn't like to talk about politics' (Shlonsky 1992:449)

*shne yeladim nora məatsbenim she (hem) kol ha-zman məkatrim*

two children very annoying that (they) all the-time complain

'Two very annoying children that complain all the time.' (Michael Becker, p.c.)

Although they are ungrammatical in Hebrew, such use of RPs as seen in (55) and (53-b) has been observed in early child language in Hebrew (Berman 1985:306):

- (56) *ha-isha she-hi raata naxash*  
 the-woman that-she see.PAST.F.3SG snake  
 ‘the woman that saw a snake’ (Berman 1985:306)
- (57) *ha-yeled hu mesaxek im ha-galgal*  
 the-boy he play.M.SG.PTCP with the-wheel  
 ‘The boy is playing with the wheel.’ (Berman 1985:306)

However, since this phenomenon is described as particular to early child language in Hebrew, there is no reason to draw a connection between that and the use of RPs in English by the subjects who are between the ages of 7 and 12.

Another possibility is that the use of RPs in constructions like (51) are, in fact, a native English phenomenon: after all, baseline English can use left-dislocation with a RP, in both subject and object position, in order to “orien[t] the discourse topics in relation to which the content of the ensuing clause is to be interpreted” (Dik 1978, 1998 as quoted in Hidalgo 2000):

- (58) Ingeborg, she’s doing nineteenth century. (LLC 14 50 7550 as quoted in Hidalgo 2000)
- (59) Old Sandy Patterson, ooh I want to see him now, I wonder if he’s in today. (Lund 16 11 5105 as quoted in Hidalgo 2000)

However, there is not a single instance of RPs among subjects in the control group, which suggests that the numerous instances of RPs produced by the HSs are a deviation from the baseline.

We are thus presented with a somewhat puzzling picture. Although Hebrew employs RPs in certain situations, it is clear that the subjects are extending their use

to ungrammatical environments. But why? Given the difficulties that the subjects have with planning constituents (mentioned in the first section of this chapter; see also Polinsky 1995:119), it is possible that the use of RPs serves a way to break larger constituents into smaller, more manageable chunks. This is similar to one of uses of RPs found in baseline English (Polinsky et al. in press). Let us take (51-a) as an example. The subject wishes to convey that the rabbit planting the plants cuts the string. For a native speaker, the most economical (and correct) way to say this would be:

(60) then the rabbit who was planting the plants cut the string

However, because the heavy constituent *the rabbit who was planting the plants* puts a strain on the subject's working memory, it is much easier to first introduce that as a topic, and after that, to produce the rest of the sentence with an RP, which is structurally far simpler than *the rabbit who was planting the plants*. In other words, left-dislocation of the subject and insertion of an RP may amount to a delay strategy, allowing the speaker time to plan the upcoming constituents, similar to the disfluencies mentioned above. Berman (1985:307) suggests a similar explanation for the use of a RP in Hebrew child language Hebrew in sentences such as (57). Polinsky (1995:101), in explaining the observed use of RPs in HL, cites a similar strategy on the part of HSs, namely, first establishing an NP as the topic, then using an RP to signal that NP's function in the following utterance.

## 4.5 Tense

### 4.5.1 Tense Confusion

In Hebrew, the simple past, past continuous, and present perfect are usually expressed by a single form, namely, the simple past<sup>14</sup> (Glinert 2004:125-6). Therefore, speakers

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<sup>14</sup>If the speaker wishes to emphasize that it is past continuous or present perfect, there are ways to distinguish between those and the simple past. However, the most common form is that of the simple past.

(n = 9) sometimes use the simple past for more complex tenses and vice versa. In (61), the speaker clearly means to say that he has never been to America, and in (62), even when asked a question using the past continuous, the speaker uses the simple past:

(61) because I never was in America [AM]

(62) I: what were you doing before I came?

S: I played [YV]

Similarly, the present tense in Hebrew has a multitude of uses, including habitual present and present continuous, leading some speakers (n = 7) to confuse the various forms at times. In (63), the speakers use the present continuous instead of the simple present in order to express the present habitual: MA's father is a salesman, and NA enjoys reading. In (64), AV is trying to communicate that the mouse is not moving despite his vigorous attempts:

(63) a. I: and what does your, what do they do, uh, your mother has a [...]

S: and my father # think he &ha # [//] &h he's doing selling [MA]

b. I: when you read for fun? not for school

S: um@fp ## it's not always just for fun, but like # i'm having fun reading [NA]

(64) it doesn't move [AV]

#### 4.5.2 Sequence of Tenses

In English, when a matrix clause is in the past tense, the subordinate clause is usually required to be in the past tense as well, even if its interpretation is in the present. This is called *backshifting* (Comrie 1985:107; Chalker & Weiner 1994). Thus, if one were to embed the phrase *You are standing outside* into a matrix clause that is in

the past tense, one would be obligated to change the tense of the subordinate clause as well:

- (65) a. I saw that you were standing outside.  
 b. ?\*I saw that you are standing outside.

Speakers (n = 13) occasionally ignore this requirement and produce utterances such as the following:

- (66) a. he didn't understand what's like going to happen [OP]  
 b. he saw that he's uh@fp # close to a lake [TV]

This is entirely compatible with rules of tense sequence in Modern Hebrew, where it is “the vantage point of the most direct contemplator” that determines the tense of the subordinate clause (Glinert 2004:132). Thus, if the direct contemplator thinks to himself ‘She will fall’, then the tense of the surrounding material is irrelevant:

- (67) a. *hi tipol*  
 she fall.FUT.F.3.SG  
 ‘She will fall.’  
 b. *xashavti she-hi tipol*  
 think.PAST.1.SG that.she fall.FUT.F.3.SG  
 ‘I thought that she would fall.’ (Glinert 2004:132)

## 4.6 Conclusion

As we have seen, Hebrew affects the English of the subjects in a variety of ways, including their choice of prepositions, placement of adverbials, and usage of English tenses. There are also numerous features in their speech which seem to be wholly independent of Hebrew. Some of these, such as the misuse of particle verbs, or the persistence of over-regularization and over-generalization of verbal forms typical of child language, suggest that the speakers have not completely learned certain aspects

of English grammar, and may require significantly more input to correct. Others, such as the inconsistent marking of inflectional morphology and the use of subject RPs, point to processing difficulties. The most obvious deviation from the baseline, however, is the numerous disfluencies which arise from difficulties with lexical access and sentence planning.

In order to determine the extent to which the Hebrew-independent phenomena can be considered part of the “heritage grammar”, and not just due to production pressures, the grammatical competence of these speakers must be investigated. This is the purpose of Chapter 5, the experiments in which focus on two particular errors—RPs and misuse of particle verbs—as well as the processing difficulties suggested by the use of RPs and the inconsistent marking of morphology.

## 5 Comprehension Experiments

### 5.1 Introduction

Now that we have seen the errors commonly produced by the speakers, we turn to the experiments undertaken to determine whether some of these errors arise from a deficit in grammatical competence. Experiment 1 and Experiment 2 are grammaticality judgment tasks that test two areas where the subjects' production deviated from the baseline, namely, resumptive pronouns and "interrupted" particle verbs. Experiment 3 uses a sentence-picture matching task to determine whether the subjects experience processing difficulties when interpreting relative clauses.

### 5.2 Exp. 1: Grammaticality Judgment Task for Resumptive Pronouns

#### 5.2.1 Motivation & Design

In the first experiment, subjects were instructed to rate sentences, some of which contained resumptive pronouns (RPs). There were two main reasons for performing this experiment. First, resumptive pronouns have been observed in other HLs where they are not found in the baseline language (Polinsky 2006). Second, as noted in Chapter 4, many of the subjects produce RPs in their natural speech. I, therefore, used a grammaticality judgment task (GJT) to determine whether speakers would rate relative clauses with and without RPs differently.

The subjects ( $n = 24^1$ ) were auditorily presented with 48 sentences and instructed to rate them on a scale from 1 ('bad') to 7 ('good'). An age-matched control group ( $n = 12$ ) also completed the task. Response time was not measured. Each of the 48 sentences had the same surface structure, such that both filler and stimulus sentences

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<sup>1</sup>Originally, 27 subjects were tested, but three were excluded due to technical difficulties or ineligibility.

consisted of [*independent clause*] + *that* + [*dependent clause*]. 24 of these sentences were test items, with two experimental manipulations: the presence or absence of an RP, and the type of relative clause (subject vs. object relative). I distinguished between subject and object positions because HSs may give higher ratings to object RPs, for two reasons. First of all, whereas subject RPs are generally not permitted, Hebrew allows (and in some cases, requires) object RPs. Second of all, if the speakers' use of RPs constitutes an attempt to establish a syntactic relation between the subject of a matrix clause and its embedded trace, it may be expected that object RPs would be rated higher than subject RPs. This is because an embedded object trace is further from the co-indexed matrix-clause subject than an embedded subject trace, and the further a trace is from its co-indexed NP, the harder it is to maintain a syntactic relation with it. Thus, there were 6 sentences containing subject relatives without an RP (1-a), and 6 containing subject relatives with an RP (2-a); similarly, there were 6 sentences containing object relatives without an RP (1-b), and 6 containing object relatives with an RP (2-b):

- (1) a. This is the soldier that the policeman stopped at the checkpoint.
- b. We saw the boy that my parents met at school last week.
- (2) a. I saw a kid that *he* was carrying a big box of candy.
- b. My uncle has a neighbor that my cousin helps *her* on weekends.

Of the remaining 24 sentences, 12 were grammatical fillers and 12 were used as test items for Experiment 2. My predictions were the following:

1. If the subjects' production of RPs is due purely to production pressures—whether the RPs are used as a sentence-planning strategy or as a way to strengthen syntactic dependencies—then they should rate sentences with RPs significantly lower than sentences without RPs, and their ratings should resemble those made by native

controls.

2. If, on the other hand, RPs are a part of their grammars, subjects should not rate sentences with RPs any lower than sentences without RPs, and should generally rate RPs higher than the control subjects.

3. Additionally, if RPs are part of the heritage grammar, high-proficiency HSs should rate sentences with RPs lower than sentences without RPs. Therefore, first-born children, sequential bilinguals, older children (10-13 years), and speakers with high speech rates ( $>110$  words/min) should rate sentences with RPs lower than sentences without RPs, and their ratings of ungrammatical sentences should be lower than ratings made by low-proficiency HSs.

4. Finally, whether the RPs in the speech of the subjects arise either under the influence of the acceptability of object (but not subject) RPs in Hebrew, or from a need to signal the syntactic relation between the matrix subject and the embedded trace (see above), they should rate object RPs higher than subject RPs.

### 5.2.2 Results

Using R (2.15.0 GUI 1.51 Leopard-build 64-bit (6148)), I ran a linear mixed-effects model with fixed effects to analyze the ratings from the GJT. Overall, I found that the HSs rated sentences with RPs significantly lower than sentences without RPs ( $-0.8415$  points,  $p = .0001$ ). Subjects from the low-proficiency group (speech rate  $<110$ wpm) rated sentences with RPs higher ( $0.9994$  points,  $p = .0016$ ; see Figure 5.1-c) than did subjects from the high-proficiency group, and did not rate sentences with RPs significantly lower than sentences without RPs. Simultaneous bilinguals tended to rate sentences with RPs lower than did sequential bilinguals (see Figure 5.1-d;  $-0.66282$  points,  $p = .0378$ ).

The subjects in the younger age group (aged 7-9) rated sentences with RPs higher than did subjects in the older age group (aged 10-13) ( $1.0245$  points,  $p = .0016$ ), and did not rate them significantly lower than sentences without RPs. In the control

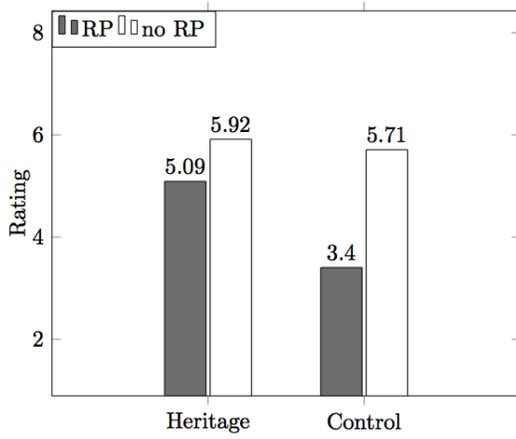
group, too, the younger age group rated these sentences higher than did the older children (.9848 points,  $p = .0092$ ). Younger controls, however, rated sentences with RPs significantly lower than sentences without RPs (-2.061 points,  $p = .0001$ ), and these ratings were significantly lower than those of younger HSs (-1.8357 points,  $p = .0001$ ). See Figure 5.1-b for a comparison of ratings between age groups and between HSs and controls.

In general, the control group, like the HSs, rated sentences with RPs significantly lower than sentences without RPs (-2.5530 points,  $p = .0001$ ). However, the HSs' ratings were consistently higher: compared with the controls, HSs rated sentences with RPs significantly higher (1.7120 points,  $p = .0001$ ). The mean ratings in Figure 5.1-a show the difference between the absolute ratings of RPs made by HSs and controls on one hand, and the relative difference in ratings within each group between sentences with and without RPs on the other.

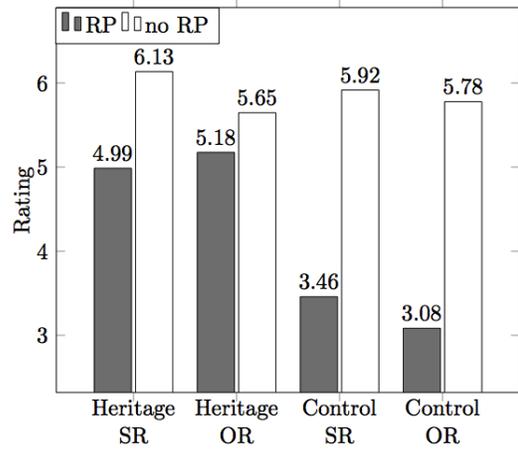
### 5.2.3 Discussion

The purpose of this experiment was to determine whether these speakers would distinguish in their ratings between sentences with and without RPs in the speech of others. These results show that they did, in fact, rate sentences with RPs lower than sentences without RPs, partially confirming Prediction #1 (and disproving Prediction #2). Although their ratings of sentences with RPs were higher compared to those of the monolingual controls, this difference may simply be due to HSs' general unwillingness to reject ungrammatical sentences on a GJT (Orfitelli & Polinsky 2012). We will discuss this issue in detail below.

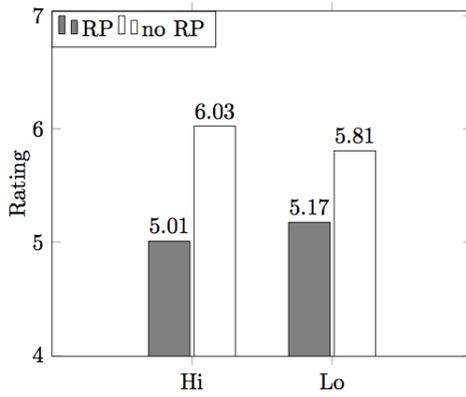
Prediction #3 was partially borne out in three correlations. The first was that subjects from the low-proficiency group rated sentences with RPs higher than sentences without RPs, and that their ratings of sentences with RPs were higher than the ratings of subjects from the high-proficiency group. This finding suggests that high-proficiency subjects bear greater similarity to the baseline than their low-proficiency



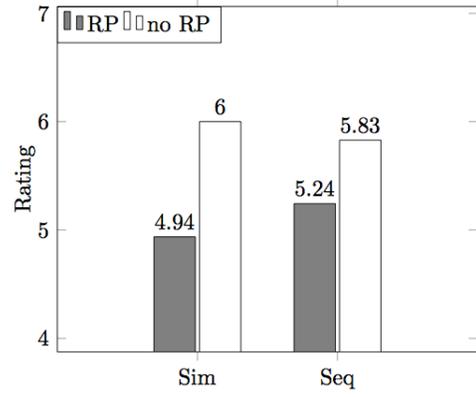
(a) OVERALL



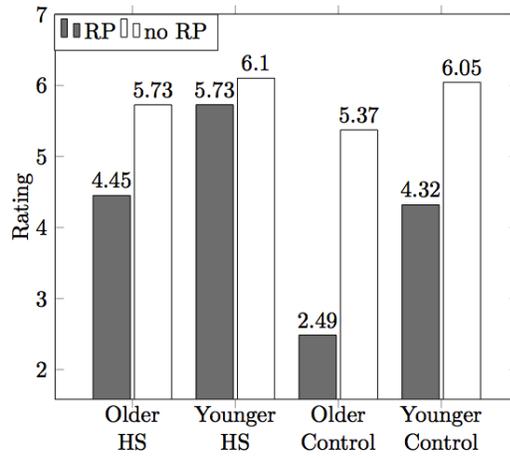
(b) SR vs. OR



(c) HIGH- vs. LOW-PROFICIENCY (Heritage)



(d) SIMULTANEOUS vs. SEQUENTIAL (Heritage)



(e) OLDER vs. YOUNGER

Figure 5.1: Rating of RPs

counterparts. Although the failure on the part of low-proficiency subjects to distinguish between sentences with and without RPs would suggest that RPs are part of their grammar, these ratings may, again, reflect a tendency to systematically rate ungrammatical sentences higher.

The second correlation, running counter to Prediction # 3, was that simultaneous bilinguals rated sentences with RPs lower than did sequential bilinguals. Since sequential bilinguals (who spent the first few years of their lives with significant exposure to English but not Hebrew) are expected to be more proficient than simultaneous bilinguals (Montrul 2008), the opposite results would have been expected. Further research should determine whether this finding is reproducible, and if so, what its cause may be.

The third correlation bearing on Prediction #3 was that the younger HSs, in addition to rating RPs significantly higher than older HSs, did not show any significant difference in their ratings of sentences with and without RPs. Since the older age group is both more linguistically mature and has, on average, had more exposure to English-language education, it is not surprising to find a strong inverse correlation between age and ratings of RPs. However, a similar difference in age groups obtains in the control group as well, although the younger controls did rate sentences with RPs significantly lower than sentences without RPs. This may suggest that younger children generally rate RPs higher. Indeed, in McKee & McDaniel's (2001) study, native English-speaking children (age 3-8) rated RPs in extractable sites higher than did adults, despite the fact that both groups were found to produce RPs at the same rate. The authors of that study suggest that the reason for this difference may be that, in certain cases, children only keep one phrase at a time in working memory, such that by the time they reach the subordinate clause, they have forgotten the co-referenced antecedent such that the RP sounds better. In short, it appears to be a processing issue rather than one of a divergent child grammar.

Aside from the particular issue of RPs, it is possible that GJTs are not the most effective way of determining grammatical competence in children. Although many researchers (Hoff 2011; McDaniel & Cairns 1998 and the sources cited therein) have reported success in using GJTs with children as young as 3 or 4 years old, Sutter & Johnson (1990) found that younger children are less willing or able to identify grammatical errors than are older children. Additionally, children attempting to make metalinguistic judgments on GJTs often base their decisions on something other than their grammatical knowledge, such as the meaning of the utterance (Hirsh-Pasek et al. 1978; Lust 2006:131). Indeed, there were a few instances where subjects wanted to rate a sentence based on whether the content of that sentence was plausible or agreeable:

(3) (audio) i have a friend that he likes to eat sweet cereal for dinner

S: eh@fp, i think 2 because eh@fp cereal you don't usually eat for dinner [RE]

This all suggests that GJTs may not be the best method of determining grammatical competence in child populations.

Within HS populations, too, the GJT seems not to be the most effective tool for assessing underlying competence. Orfitelli & Polinsky's (2012) study on methods of assessing grammatical competence in adult L2 and HS populations showed that although HSs seem to perform like native speakers in their acceptance of grammatical sentences, they deviate from native speakers in that they often appear reluctant to reject ungrammatical ones. The authors attribute this to the highly metalinguistic nature of the task, namely, that GJTs require an ability to think abstractly about language, familiarity with formal testing environments, and willingness to evaluate the speech of someone else. These demands seem to be inappropriate for HSs, who often lack the metalinguistic awareness and confidence in their own linguistic abilities that is necessary to complete the task. For these reasons, HSs have a tendency to

accept ungrammatical sentences on a GJT.

This lack of metalinguistic awareness and linguistic self-confidence may also underlie the difference in ratings between the high- and low-proficiency HSs. Low-proficiency speakers, who speak more slowly and haltingly, may be less secure in their English knowledge and ability, and, therefore, more willing to accept ungrammatical utterances—or, perhaps more accurately, less willing to reject them.

Finally, Prediction #4 stated that subjects should rate object RPs higher than subject RPs, due to processing considerations and the rules governing the use of RPs in Hebrew; however, both statistical tests and mean ratings (Figure 5.1-e) show no significant difference in ratings between subject and object RPs. This suggests that the subjects find objects RPs to be just as unacceptable as subject RPs.

### **5.3 Exp. 2: Grammaticality Judgment Task for Particle Verbs**

#### **5.3.1 Motivation & Design**

As discussed in Chapter 4, particle verbs (ParticleVs) pose difficulties for L2 learners. These HSs, too, produced errors with ParticleVs, either by omitting the particle, using the wrong particle, or “interrupting” the verb (placing an AdP between the verb and its particle). I decided to test the speakers’ competence with ParticleVs with regard to errors of “interruption”, namely, to what extent they would accept constructions using ParticleVs with an AdP separating the verb from the particle.

As described above, the stimuli in this experiment doubled as some of the fillers for Experiment 1. The subjects ( $n = 24$ ) completed a GJT presented auditorily, as did an age-matched control group ( $n = 12$ ). The stimuli consisted of 12 sentences, each with two variables. Sentences varied in two ways: one, whether an object appeared immediately after the ParticleV and before the particle (4), and two, whether an adverbial phrase (AdP) was placed immediately before the particle (5):

- (4) We're embarrassed that you made the whole story up and didn't tell the truth.
- (5) I don't think that he will show tomorrow up, even though he said he would.

I presented sentences with and without internal direct objects because, as mentioned in the discussion in Chapter 4, direct objects of transitive ParticleVs can alternatively be placed before or after the particle:

- (6) a. She gave back the book.  
b. She gave the book back.

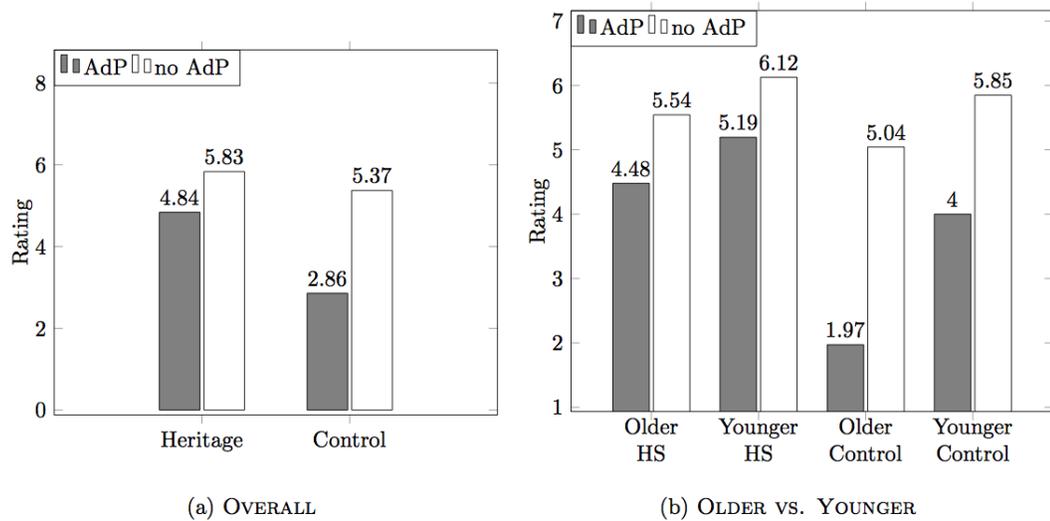
This alternation may serve as an indication to the speakers that ParticleVs are simply a combination of a verb and an adverb denoting manner or direction that can be separated by intervening material, whether it is an object (grammatical) or an AdP (ungrammatical).

My predictions for this experiment were as follows:

1. If subjects allow the insertion of an AdP between a verb and its particle, they should not distinguish between correct usages and incorrect "interrupted" usages of ParticleV constructions on the rating task, and their ratings of incorrect ParticleV constructions should be higher than that of native controls.
2. If subjects allow the insertion of an AdP between a verb and its particle, then the population variables should correlate with these ratings as well, with firstborns, older children, etc. more closely resembling native controls in their ratings.
3. If the errors instead involve incomplete learning of particular ParticleVs, subjects should generally reject "interrupted" ParticleVs in the GJT.

### 5.3.2 Results

In general, the HSs assigned lower ratings to sentences containing V-AdP-Part combinations (-1.1686 points,  $p = .0010$ ). Within the HSs, high-proficiency subjects rated such ungrammatical sentences significantly lower than did their low-proficiency



**Figure 5.2: Rating of ParticleVs**

counterparts (-1.1871 points,  $p = .0062$ ). The controls also gave lower ratings to ungrammatical sentences (-3.3472 points,  $p = .0046$ ). However, controls gave significantly lower ratings to ungrammatical sentences than did HSs (-2.1785,  $p = 0.0001$ ). Within the control group, the younger subjects' ratings of ungrammatical tokens were significantly higher than those of the older subjects (1.4722 points,  $p = .0001$ ); although this correlation did not reach significance in the HSs, there is a clear trend (see Figure 5.2-a).

### 5.3.3 Discussion

To the extent to which the results presented here can be judged, it seems that HSs do not accept the separation of a verb from its particle in any configuration of a ParticleV, suggesting that the ParticleV errors described in Chapter 4 are not systematic and should be attributed either to incomplete learning of those particular verbs (as per Prediction #3) or to processing difficulties. However, HSs rate ungrammatical tokens significantly higher than do controls. This is similar to the results of Experiment 1 and suggests that although the HSs may, on the whole, be aware that placing the

AdP between the verb and its particle is not allowed in English, they may be less willing to reject them in the GJT. See the discussion section of Experiment 1 for a detailed discussion of GJTs and the challenges of their use with this population.

Again, as in Experiment 1, high-proficiency HSs gave lower ratings to of these ungrammatical constructions than did low-proficiency HSs; as discussed above, this could reflect the fact that higher-proficiency HSs better understand the rules governing particle verbs and AdP placement.

When this experiment was designed, there were a limited number of instances of particle verbs that were “interrupted”. However, because the phenomenon was so salient and unnatural, I chose to test it. As more data were collected, it became clear that most (if not all) of these instances involved a particular type of ParticleV whose particle is semantically transparent and has a homophonous adverb (see discussion in Chapter 4). Because this understanding was reached after the experiment had been designed and administered, the experiment did not specifically test transparent ParticleVs (only two tokens used this type of ParticleV). An experiment using only transparent ParticleVs as stimuli may prove more informative regarding the extent to which they can be “interrupted”; namely, subjects would be expected to give higher ratings to “interrupted” transparent ParticleVs (such as *run out*) than to “interrupted” opaque ParticleVs (such as *show up*).

## **5.4 Experiment 3: Relative Clause Sentence-Picture Matching Task**

### **5.4.1 Motivation & Design**

In many previous studies, it has been found that subject relatives (SRs) are cross-linguistically easier to process and comprehend than object relatives (ORs) (King & Just, 1991; Levy et al. 2007; Kwon et al. 2010), possibly due to limitations on working memory under processing. Research has shown that in addition to processing SRs more quickly and accurately than ORs, adult HSs have a tendency to mistake

ORs for SRs (O’Grady et al. 2001, Polinsky 2011). In Polinsky’s (2011) study, adult HSs contrasted sharply with child HSs, who, like child and adult monolinguals, performed at ceiling level on a sentence-picture matching task employing SR and OR prompts. These errors of reversal, where ORs are misinterpreted as SRs, have been attributed mainly to attrition in the domain of inflectional morphology and a resulting dependence on English word order<sup>2</sup> (Kim 2005; Polinsky 2011).

In light of these studies, I administered a sentence-picture matching task (based on that in Polinsky 2011) to the subjects ( $n = 21^3$ ). Each subject who completed the task was shown forty different image pairs. 16 of these sentences were experimental stimuli while the remaining 24 were fillers. I designed the stimuli such that half contained animate participants and half contained inanimate participants, since animacy has been shown to play a role in processing relative clauses, depending on the head. Mak et al. (2002), for example, showed that the difference in processing difficulty between subject and object relative clauses is eliminated when the object of the relative clause is inanimate, which suggests that the semantic information encoded in animacy plays an important role in relative clause processing.

Each stimulus consisted of an image pair presenting a reversible action, that is, an action performed by one participant on the other and vice versa (Figure 5.3). I matched the pair of participants with each action such that it would not be more plausible for the action to occur in one direction or another: for example, if the two participants were a dog and a cat, or a train and a car, then neither participant would be more likely to be chasing the other or passing the other in a race, respectively.

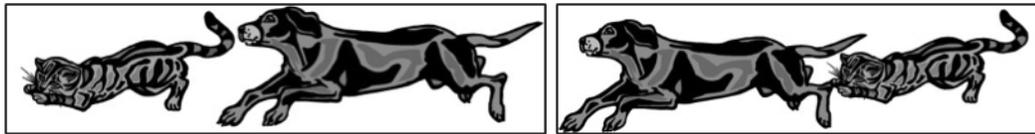
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<sup>2</sup>A major difference between these studies and the experiment below is that English does not use case markers to distinguish between SRs and ORs, but rather solely uses word order to indicate the syntactic relation between two NPs.

<sup>3</sup>Due to technical difficulties that hampered the automatic logging of response times, 3 participants were excluded from the original 24. All trials with a response time above 10,000 milliseconds were also discounted. Similarly, all trials where the sound button was clicked more than twice were discounted. Additionally, since the experiment was hosted online and dependent, therefore, on internet access, occasional interruptions to the connection may have caused the mis-recording of some response times. The data were reviewed to identify these cases, which were excluded from the final analysis.

However, if the two participants were a mother and a child, then it would be much more likely that the mother would act upon the child than the other way around.

In each round of the experiment, a pair of images appeared on the screen and the subject was prompted auditorily by an audio-recorded sentence instructing them to click on one of the images. Each prompt could contain either a subject or object relative, and could instruct the participant to click one image or the other. Thus, there were four possible prompts that the subject could hear. However, each iteration of the task was randomized such that half of the stimuli involved a subject relative and half used an object relative. For example, if the image pair was of a cat chasing a dog and a dog chasing a cat (Illustration 1), the subject heard either a subject relative sentence (7) or an object relative sentence (8):



**Figure 5.3: Reversible Actions**

- (7) a. Choose the cat that is chasing the dog in the drawings.  
b. Click on the dog that is chasing the cat on the screen.
- (8) a. Pick the cat that the dog is chasing in the pictures.  
b. Find the dog that the cat is chasing in these pictures.

Each subject's accuracy and response time<sup>4</sup> were analyzed for correlations with the various factors mentioned in the previous experiments: birth order, simultaneous or sequential exposure to Hebrew, age group, and proficiency.

My predictions were the following:

1. Given the nearly universal processing preference for SRs over ORs, HSs should

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<sup>4</sup>In this section, mean response times are given in milliseconds; for correlations, however, I used the log of response time in order to smooth out the data points.

respond more quickly to SRs than to ORs.

2. If the processing difficulties faced by the subjects (see Chapter 4) are the result of *production* pressures, then the subjects should perform comparably to monolingual controls in a task measuring *comprehension* of relative clauses, structures which require language processing.

3. If, on the other hand, the subjects have deficits in grammatical competence, they should perform less accurately than controls on a task which tests comprehension of complex structures.

4. Additionally, if the subjects have deficits in grammatical competence, then performance on this task should correlate with the HS-population-internal variables.

#### 5.4.2 Results

HSs responded more quickly to SR prompts than to OR prompts (-585.8ms/-0.14844ms,  $p = .0001$ ). Although controls had a similar tendency, the correlation did not reach significance; one can see in Figure 5.4-b that the difference between SR and OR for controls is not nearly as great. Nevertheless, HSs had a faster response time to SRs than did the controls (493.4ms/0.1135ms,  $p = 0.0120$ ; see Figure 5.4-b).

Whereas a correlation was found for HSs between longer response times and correct answers (Figure 5.4-c; 580.4ms/0.18009ms,  $p = 0.0001$ ), controls were found to be quicker in responding correctly than were HSs (-876.0ms/-.26426ms,  $p = .0028$ ). Animate scenarios elicited a much faster response time both for HSs (280.0ms/0.08875ms,  $p = 0.0334$ ) and controls (304.6ms/.0906ms,  $p = .0284$ ).

The younger subjects, both HSs (865.87ms/0.21997ms,  $p = 0.0138$ ) and controls (1209.7ms/0.28665ms,  $p = 0.0040$ ), showed a strong preference for animate SRs over inanimate ones. No other correlations were found with the predictors of proficiency discussed in Chapter 3.

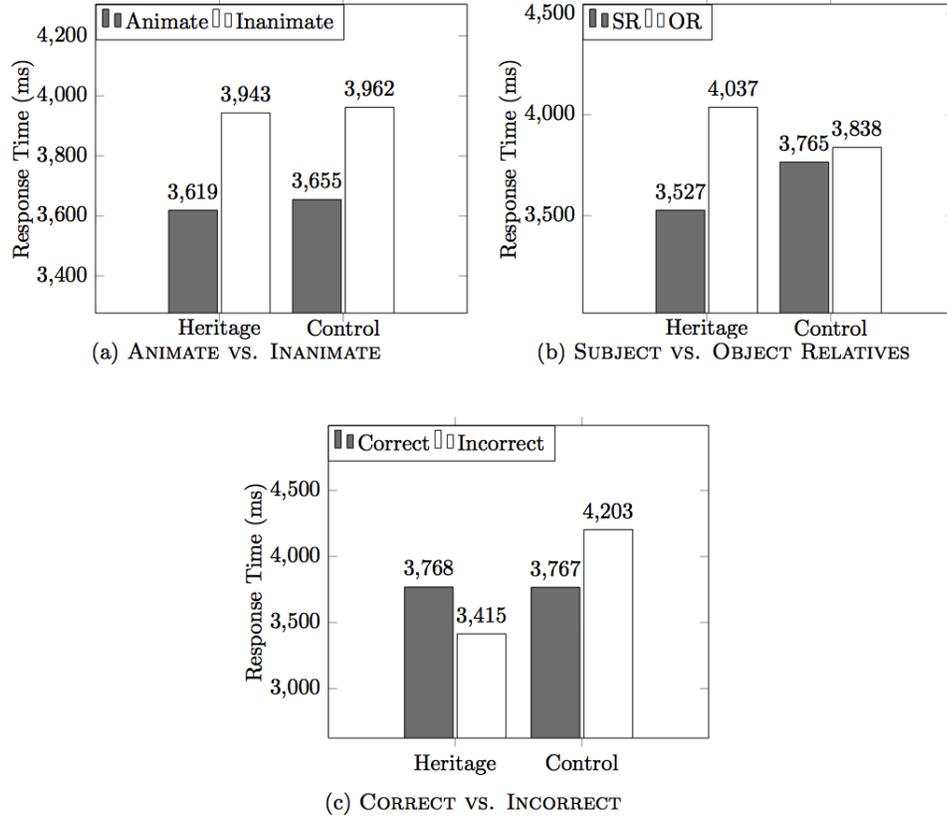


Figure 5.4: Response Times, Heritage vs. Control

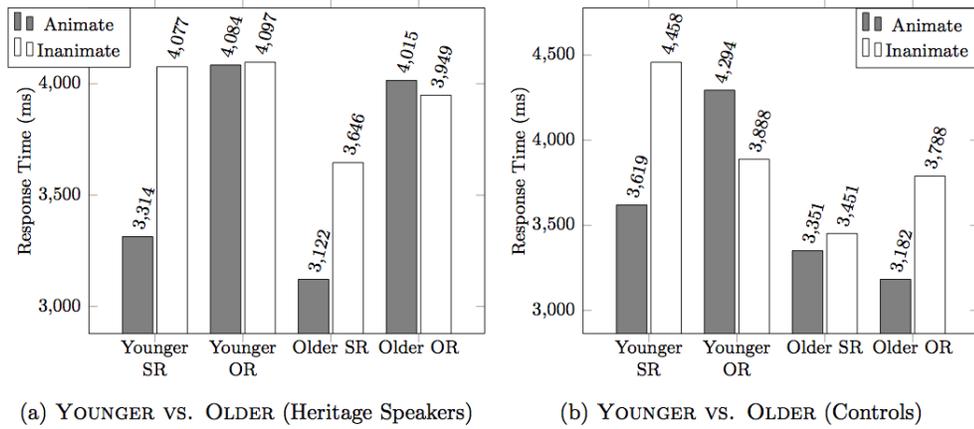


Figure 5.5: Category vs. Animacy

### 5.4.3 Discussion

These data do not inform us with regard to variation *within* the HS population, since no correlations were found with population-internal variables (WPM, birth order, etc.). From the correlations that were found, however, it is clear that the HSs differ from the native baseline (as per Prediction #3); this variation is due to the factors involved in the sentence-picture matching tasks, namely, animacy and the type of relative clause.

The first significant difference between the HS and control population is that HSs are significantly faster with SRs than are the controls, whereas Figure 5.4-b shows that the opposite is the case for ORs. There is no reason to expect HSs to be able to process SRs faster, but ORs slower, compared to the native baseline. Instead, given that SRs are easier to process than ORs, and given that HSs have been shown to have processing difficulties, it is possible that the HSs are employing strategic processing, by which they consistently prefer SRs over ORs; they are “primed”, so to speak, for an SR interpretation. This would explain why, in the case of a prompt that contains an SR, they respond more quickly than the controls. When HSs encounter an OR prompt, however, their heuristic is no longer helpful and they must process the construction fully, which appears to take longer than it does for native controls. Again, this is in line with the understanding that HSs have processing difficulties. Controls, on the other hand, do not employ any sort of “strategic” processing and equally consider the possibility that the prompt will contain either an SR or OR; nevertheless, consistent with Prediction #1, they process SRs faster than ORs.

Finally, there is the matter of animacy. Although Figure 5.4-a shows that, overall, both HSs and controls have a preference for animates over inanimates, a look at Figure 5.5 reveals a more complicated picture. These mean response times reflect a preference for animate (as opposed to inanimate) SRs in particular, a correlation found for younger HSs and younger controls. Although a similar trend is visible for

the older HSs and older controls, no significant correlation was found. As mentioned above, semantic information can affect the speed at which a relative clause is processed; in particular, ORs tend to be processed faster when the referent is inanimate (Mak et al. 2002). The results of this experiment show something similar: younger children, both among HSs and control subjects, process SRs more quickly when they are animate (and, therefore, more likely to be the agent of a sentence), and younger control subjects process ORs more quickly when they are inanimate (and, therefore, more likely to be the object; see discussion in Lin & Garnsey 2011:264). The likelihood of the referent based on animacy thus plays an important role in processing the relative clause.

It is worth noting that the use of a mouse instead of a keyboard in this experiment may have introduced some error into the data. A mouse has several flaws: the device has a limited range of movement and is restricted to the mousepad; the speed of the on-screen cursor does not always correspond to the speed at which the device itself is moved; the selection of an image at the far left of the screen will be slower if the cursor is at the far right of the screen; and many other issues. Since measuring reaction times was vital to the experiment, it would have been preferable for subjects to make selections with a keyboard, which is more accurate and reliable.

## **5.5 Conclusion**

The main goal of these experiments was to determine whether the errors that speakers make with RPs and ParticleVs are due to production pressures or whether they stem from deficits in grammatical competence. The results of the first experiment, namely, that HSs rate sentences with RPs significantly lower than sentences without RPs, indicate that the RPs observed in their speech may be due to production pressures, rather than differences in competence between the HSs and controls. The second experiment shows that speakers' grammatical competence regarding the rules that govern particle verbs are generally robust, and suggests that the "interrupted"

ParticleVs seen in Chapter 4 are likely the result of incomplete learning. The third and final experiment suggests that HSs likely do have processing difficulties, given that they process ORs slower than do the controls; their heavy reliance on SRs and animacy support the conclusion that they do not handle complex structures such as relative clauses as well as their native counterparts. All of these experiments indicate that the subjects do not have a divergent grammar of English, and that the particular errors described here are due rather to incomplete learning and processing difficulties.

Although it was expected that the population-internal variables (birth order, age, speech rate, and simultaneous vs. sequential bilingualism) would correlate with performance on these experiments, only Experiment 1 showed such correlations, and even then, only for age and speech rate. However, since GJTs have been shown not to be the most effective method of assessing grammatical competence in children or HSs, these correlations may simply indicate that older children and higher-proficiency speakers are more willing to reject sentences on a GJT. In any case, they underscore the idea that HL populations are by no means homogeneous (Polinsky & Kagan 2007).

Finally, the first two experiments lend support to Orfitelli & Polinsky's (2012) recommendation against using GJTs with heritage populations. Although the rating tasks show that HSs generally reject RPs and "interrupted" ParticleVs, their tendency to rate these constructions higher than native controls casts some doubt on these results. Therefore, as Orfitelli & Polinsky suggest, researchers looking to assess grammatical competence in HS populations should consider employing a medium that does not require explicit metalinguistic judgments.

## 6 Conclusions

This thesis has presented data on the production and competence of Israeli child speakers of Heritage English, which is characterized by errors and deviations from the baseline in several areas. These data are reviewed here in the order that they were presented in the thesis: first, we will review production errors, then we will discuss the experiments that measured the competence and comprehension of the speakers.

The production samples of the speakers were collected through a recorded oral interview, which included a video narration task. This task proved engaging for the subjects, and provided similarly structured narratives which were transcribed and analyzed to calculate speech rates and determine speech errors. These speech errors include transfer from the dominant language, incorrect or reduced verbal morphology, resumptive pronouns, and misuse of particle verbs.

Transfer, which is commonly found in HLs (Kim et al. 2010; Laleko 2010; Albirini et al. 2011), is found in the English of the speakers in a variety of areas. The influence of Hebrew is especially prominent in word order and tense distinctions, where subjects frequently employ the appropriate Hebrew rules. Subjects' occasional incorrect use of various prepositions also shows Hebrew influence.

The speakers also produce various errors in verbal morphology (also found in other HLs: Anderson 2001; Choi 2003; Benmamoun et al. 2010), although these have a variety of motivations. Some types of errors, such as the presence of over-regularized and over-generalized forms (such as *taked* and *spoked*, respectively) found in child language, suggest that some of the speakers have failed to master the rules governing the past-tense formation of irregular verbs. Other errors, such as the inconsistent marking of personal agreement morphology, require further investigation; in particular, more research is needed to determine whether the occasional omission of the

third-person singular *-s* reflects processing difficulties, or morphological leveling due to reanalysis in HL.

Another possible source for these errors in morphology is attrition, evidence of which has been found in other HLs (Sorace 2005; Montrul & Polinsky 2011). I chose to study a child population for this thesis to minimize the possibility of attrition; however, it is still possible that the presence of regularized irregular past-tense verbal forms is due not to incomplete learning, but rather to the attrition of these forms after the speakers became Hebrew-dominant. In order to determine whether attrition is involved, longitudinal studies examining HSs from childhood through adulthood should be conducted.

The speakers' production of resumptive pronouns (RPs), common in other HLs (Polinsky 1995:99, 2006:245, 2008c), does not have a clear explanation. However, it is possible that RPs serve as a planning strategy and allow the speaker to minimize the domain of a clause by dislocating the subject NP as a left-edge topic, or by making embedded traces explicit. In general, the speakers use a variety of strategies to mitigate the difficulties they have in planning utterances and recalling particular words. These strategies, which include pauses, filler words, and re-tracing, contribute to the large number of disfluencies found in the speech of the Heritage English speakers.

One error which has not been observed in other HLs is the incorrect treatment of particle verbs, mainly because this is the first time that a language that has such constructions in the baseline is being studied as an HL. This incorrect treatment involves the placement of an adverbial phrase in between the verb and its particle. This type of error appears to be limited to transparent particle verbs, where the particle can function as an adverb in other contexts (such as *in*, *out* or *back*). It seems that the speakers who produce this error reanalyze transparent particles as free-standing adverbs. This is consistent with the cross-linguistic tendency of HSs to have a weak grasp of functional elements (Polinsky 1995; O'Grady et al. 2011:229-

30), which include not only verb particles but also inflectional morphology, as seen above.

The competence of the speakers was investigated through three experiments—two grammaticality judgment tasks and one sentence-picture matching task—which seem to suggest that some of the errors produced by the speakers are the result of incomplete learning and processing difficulties, and not to any clear deficit in grammatical competence. The results of Experiment 1 suggest that the RPs produced by the speakers arise due to difficulties in planning sentences. Although it was expected that performance on all three experiments would be correlated with four predictors of HS proficiency (birth order, simultaneous vs. sequential bilingualism, age group, and speech rate), only the latter two were correlated as expected, and only in this experiment. The correlation with speech rate may further support the notion that speech rate is a reliable predictor of HS proficiency (Polinsky & Kagan 2007). The correlation between performance and age, too, is consistent with previous research showing that, within child populations, older HSs tend to be more proficient than younger HSs (Wei & Lee 2001).

The results of Experiment 2 demonstrate that HSs generally understand the rules of word order with regard to particle verbs. Although, as has been suggested above, their occasional “interruption” of particle verbs with adverbial phrases is likely the result of reanalysis of transparent particles as free-standing adverbs, the stimuli used in the experiment almost exclusively featured opaque particle verbs, in which there is no clear semantic connection between the particle and the overall meaning of the particle verb. Future studies should determine the extent to which transparent particle verbs in particular are vulnerable to misinterpretation and misuse by speakers of Heritage English.

The grammaticality judgment task (GJT) proved problematic in these first two experiments. A GJT requires, among other things, an ability to think about language

abstractly and assess the correctness of someone else's speech, and therefore may not be appropriate for "non-native" populations, such as HSs and L2 learners, who may lack the necessary metalinguistic knowledge and linguistic self-confidence to do these things in a controlled testing environment (Orfitelli & Polinsky 2012). This may explain the observed tendency for younger HSs and lower-proficiency HSs to accept ungrammatical forms on a GJT, since the lack of metalinguistic knowledge and linguistic self-confidence may be magnified in these segments of the HS population. As Orfitelli & Polinsky suggest, future studies on HSs should avoid GJTs and opt for alternative ways to measure comprehension and grammatical competence.

Experiment 3, a sentence-picture matching task, was found to be appropriate for the speakers and effective in determining their comprehension of relative clauses. The results lend support to the notion that the speakers experience processing difficulties, which lead them to process ORs slower than the native controls. These processing difficulties also seem to motivate the speakers' heavy reliance on subject relatives and animacy to interpret relative clauses.

It was discussed in Chapter 2 that the prominent role played by the English language in Israeli society might affect the proficiency of the HSs studied in this thesis in comparison with other HSs that have been studied. Despite the position of English in Israel, the speakers in this thesis have not completely acquired the language; indeed, the speech errors discussed above resemble findings from other HLs. However, whereas past findings on HL point to a divergent "heritage grammar" (Polinsky 1995; Laleko 2010), the experiments in this thesis did not find speakers to have any deficit in grammatical competence. It seems, then, that these speakers are, on average, closer to the high-proficiency acrolectal end of the HS proficiency continuum (Polinsky & Kagan 2007); this is confirmed by the fact that the speech rates of some HSs rival the speech rates of some native monolingual controls.

Heritage English speakers are a valuable source of data to linguists studying HLs.

As discussed in Chapter 1, the sheer amount of data on the English language makes it a compelling research topic: English has been the subject of much linguistic study, which has led to a strong linguistic understanding of its syntax and morphology, as well as the relative ease of acquisition of various syntactic and morphological features. A thorough understanding of the baseline language is vital for the HL researcher, who seeks to determine whether various syntactical and morphological errors observed in a HL might stem from processing difficulties, reanalysis, attrition, or elsewhere. Furthermore, Heritage English is valuable insofar as it is a HL with a non-English dominant language. Although some studies have been conducted on HLs with dominant languages other than English (Backus 1999; Leisiö 2001), more are needed to determine whether some of the phenomena observed in HL are truly “universal” features of HL, or whether they develop under the influence of English. In working towards a clearer understanding of HL phenomena and their motivations, linguists will find Heritage English to be a worthy subject of research.

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