PERSISTENCE OF INTERFERENCE FROM L1 ARABIC IN WRITTEN HEBREW

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Abstract

As the official and predominant public language in Israel, Hebrew is taught in Arab minority schools, mostly by L1 Arabic-speaking teachers. Active acquisition of Hebrew accelerates in the immersion conditions of high education. I explore the persistence of very common interference errors in various linguistic domains, as established by teachers' written corrective feedback, and the correlation between persistence, error salience and a general learner effect. From a corpus of 56 Hebrew essays written by 9th graders, 11th graders and undergraduate students in southern Israel, the 14 most frequent interference errors were isolated and incorporated in a compiled test essay, which was then given to 13 L1 Arabic-speaking teachers of Hebrew to correct. The salience of each item was established by the percentage of teachers correcting it; each was also graded for its status as a general learners' error. Statistical analysis showed a significant correlation between each of these two measures and persistence over the time period studied. This corroborates a multiple effect approach to persistence. Localized errors of phonology, orthography, and morphology generally declined faster than syntactic errors, which persisted especially in structures that occur in L1 Hebrew, marked for discourse-pragmatic effects.

Keywords: written interlanguage (learner) corpus; interference (negative transfer); fossilization (stabilization; persistence); perceptual salience; general learner (developmental) effect; written corrective feedback

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1. INTRODUCTION

This study is a first attempt at establishing a gradient of persistence for interference phenomena in the Hebrew of Arabic-speakers in Israel, where Hebrew is the official public space language, and Arabic is a major minority language. I look at the correlation between persistence of 14 interference features and two factors that contribute to this persistence, namely error salience and general developmental effect.

1.1 Concepts

Interlanguage and related concepts. 'Interlanguage', as originally defined by Selinker (1972), refers to the separate linguistic system evidenced when adult second language learners spontaneously express meaning using a language they are in the process of learning (Tarone, 2018). The concept has since been extended to learners of all ages and situations of foreign language teaching (Selinker, 1993; Tarone, 2018). Of the five cognitive factors shaping interlanguage the following will concern us here:

(a) transfer from L1, shown in all 4 modalities—listening, speaking, reading, and writing (Ringbom, 1992). In L2 writing, transfer has been found in all stages of the task (Van Weijen et al., 2009). Our focus will be on negative transfer or interference, as when an L1 English speaker writes 'he took a bath' in Hebrew, leaving native readers wondering where the bath was taken to;

(b) fossilization and stabilization—the tendency of interlanguage to stop developing short of the learner's goal. "It is common in SLA discussion to distinguish theoretically permanent fossilization from temporary stabilization of the IL" (Selinker, 1993, p. 16).

In naturalistic exposure to a second language, fossilization often results in a Basic Variety of the target language, characterized by just the fundamental elements necessary for communication (Ellis N., 2018).

Salience. This is a major concept associated with stabilization, and with language acquisition in general. Salience is defined as:

> the property of a stimulus to stand out from the rest. Salient items or features are attended, are more likely to be perceived, and are more likely to enter into subsequent cognitive processing and learning (Ellis N., 2018, p. 21)

The term has been given both narrow and wide definitions. Cintrón-Valentín & Ellis (2016) distinguish three aspects: the first or narrow concept is 'perceptual', 'intrinsic', 'inner' or 'psychophysical' salience; the other two relate to our knowledge of the world: on the on hand, associations—so a dear person stands out (is salient) in a crowd of people; on the other hand, expectations—so an unexpected event is salient.

Psychophysical salience concerns bottom-up processing and "how easy it is to hear or perceive a given structure" (Goldschneider & DeKeyser, 2005, p. 47) by virtue of physical linguistic properties, such as phonetic substance, stress, syllabicity,

sonority and position in the utterance (DeKeyser et al., 2018; Ellis N., 2018; Gass et al., 2017). Closed class grammatical function words, clitics and morphosyntactic features are non-salient, being short and low in stress to begin with. Given their frequency, they lose their emphasis and tend to become abbreviated and phonologically fused with surrounding material (Ellis N., 2006; 2018). Perceptual salience is higher in open class content lexemes, primarily nouns and verbs, also adverbial markers of temporality—these replace verbal tense inflections in the fossilized Basic Variety of a target language, which is poor in grammatical elements. Moreover, modality was found to influence perceptual salience: grammatical forms are more salient in written L2 input than in spoken language (Cintrón-Valentín & Ellis, 2016).

The two wider aspects include top-down factors, such as frequency, communicative value, and semantic weight (Long, 2003). English articles, for example, are non-salient because their misuse only rarely causes communicational breakdowns; and due to complexity, as their use is determined by both linguistic and pragmatic factors (Sheen, 2007). Long (2003) notes that perhaps non-salient, ambiguous, optional pragmatic rules are items that even good learners are most likely to miss. Salience in this sense is "a property of the stimulus, and of the learner, and of his or her learning history, and of the context" (Ellis N., 2016, p. 344), i.e. emergent properties of the stimulus-learner-context complex. Salience is not inherent in a linguistic property; "something is salient only if it is recognized" (Gass et al., 2017, p. 12). This is the sense I will be using, but I will shift the focus from the learner to the teacher, when correcting errors—to what I shall call 'error salience'.

Error salience. If salience, as demonstrated above, pertains to the learner's perception of input target forms, 'error salience' will be the term I introduce for salience of learners' errors—in our case from the viewpoint of a non-native speaking teacher of the target language. Although not referred to by this term, error salience is used in tasks such as grammaticality judgements. For example, in testing interference of Ll (Polish) and L2 (English) in L3 (French) learners' competence by means of grammaticality tests it was found that lexical errors are often easier to notice than grammatical errors. In our terms, they show higher error salience. In particular, spelling was found to be more salient than morphosyntactic properties and syntactic rules (Włosowicz, 2012). An opposite conclusion seems to arise from judgement tests of syntactic interference from L1 Arabic in Hebrew as compared to lexical interference (Prior et al., 2017). We will go back to this study later.

Notably, the different types of salience need not coincide. For example, the research literature stresses that monosyllabic, unstressed function morphemes, lacking in phonetic and semantic material, syllabicity, sonority, and form-function correspondence, are particularly low in perceptual salience. But, as we shall see, some interference errors involving just such items, namely monosyllabic governed prepositions, showed high error salience in my study.

General learner effect. 'General learner effect' (hence G-effect) is a term I adopt from Roberts et al. (2008) for "developmental cognitive strategies as has been found in first language acquisition" (Dulay & Burt, 1974, p. 129, 131). Errors due to G-effect are also called 'intralingual errors', defined as "errors reflecting general characteristics of the rule learning such as faulty generalization, incomplete application of rules and failure to learn conditions under which rules apply" (Heydari & Bagheri, 2012, p. 1584). An example is 'goed' for English 'went' (Tarone 2018). G-effect is thus distinct from transfer, and the relation between the two with respect to persistence is our major concern.

Multiple effects. Stabilization and fossilization are subject to a 'multiple effects principle' (Selinker, 1993):

> It is a general law in SLA that when two processes work in tandem, there is a greater chance for stabilization of forms leading to possible fossilization (Odlin, 2003, p. 457, citing Selinker, 1992, p. 262)

Transfer has been recognized as a necessary (elsewhere a privileged) co-factor in setting multiple effects promoting stabilization, though not necessarily fossilization:

> stabilization is caused by transfer operating in tandem with one or more additional factors such as typological markedness, perceptual saliency or general cognitive constraints (Long, 2003, p. 514)

An example for multiple effects is negation by means of preverbal 'no', a general interlingual structure that is also the norm in Spanish. So, its stabilization in the English interlanguage of Spanish speakers, short of acquiring the allomorphic variants of English verbal negation ('does not, do not, did not'…) is the combined result of transfer from their L1 and general learner developmental effects or strategies of L2 acquisition (Long, 2003; Tarone, 2018). In an effort to establish features prone to stabilization (though not necessarily fossilization) in a cross-linguistic perspective, Long (2003) summarizes that the recommended strategy for identifying vulnerability to stabilization is to combine linguistic classifications with psycho-linguistically relevant qualities, such as frequency, regularity, semantic transparency, communicative redundancy, and perceptual salience.

1.2 Hebrew and Arabic: similarity and differences

These two Semitic languages are genetically and typologically close, sharing basic morphologic structure based on root/pattern word formation, inflection and derivation; verbal patterns; numerous lexical cognates. Their writing system, *abjad*, marks consonants consistently, vowels to a much lesser extent. An optional full pointing system for vowels turning this basically deep consonantal system to a shallow one is used only in special contexts, such as initial acquisition of literacy. However, due to its unique history, Modern Hebrew has diverged typologically from Arabic. The differences underlie interference respectively, which causes difficulties in acquisition and use of either of these languages as L2 to the other as L1. The following selected

differences in linguistic domains of phonology, orthography, grammar and syntax were examined in this study for interference from Arabic in the process of acquiring Modern Hebrew, whereas issues of semantics and lexicon deserve a separate study so will not be treated here.

1.2.1 Phonology and prosody

(i) Three phonemes of Modern Hebrew absent in Arabic are /p/, /v/, and affricate /t͡s/, cognate to Arabic emphatic spirant /ṣ/.
(ii) Modern Hebrew vowels /e/ and /o/ are non-phonemic in Arabic.
(iii) In Modern Hebrew vowel length is not phonemic, whereas stress is, so *náʕal* 'shoe' vs. *naʕál* 'to lock'. In Arabic the opposite is true, with stress depending on vowel length and syllable structure.

1.2.2 Script and orthography

(i) Both have a predominantly consonantal script which, however, is totally different.
(ii) Diacritics in Arabic serve not only for optionally vocalizing the consonantal script, as in Hebrew, but also for (obligatorily) distinguishing many letters: so, word-internal *b, n, t, ṯ, y* all share one grapheme, and are differentiated by one, two, or three diacritics above or below; in Hebrew all diacritics are optional and used only in the initial stage of literacy acquisition, and sometimes in poetry.
(ii) Hebrew has four vowel letters: *ʔ, H, W, Y*, each designating both a consonant *(ʔ, h, v, y*) and two or more vowels. Arabic vowel letters *W, Y* represent both consonants (w, y) and long vowels *ū*, *ī* respectively, whereas the third vowel letter A is just a long vowel *ā*. The use of these vowel letters is obligatory and transparent in Arabic, whereas in Hebrew it is partially optional and rather opaque, not fully standardized.

1.2.3 Morphology

Hebrew and Arabic share a similar root-pattern morphology, with predictable systematic correspondences in both the nominal and verbal systems. But many mismatches render this area prone to interference. For example, Modern Hebrew has lost inflectional categories such as F.PL in the Past form of the verb, whereas many varieties of Arabic have retained this category.

1.2.4 Syntax

Syntactic differences between Hebrew and Arabic are considerable, since this is a relatively dynamic field. The temporal system, for example, is very different and prone to L1 interference**;** also, Hebrew has a unique definite direct object (accusative) marker which is problematic for speakers of all other languages, including Arabic.

1.3 Hebrew and Arabic in Israel

Until recently Arabic was one of Israel's two official languages, but Modern Hebrew was always the primary, hegemonic, dominant language of public space, administration, and professional discourse. Palestinian Arabic, composed of diverse local urban, rural, and Bedouin Arabic dialects, was de facto a minority language spoken by 20% of the population. Its use is limited to Arab locations, where it is the communal language of domestic use and education. Lexical impact of Modern Hebrew on Palestinian Arabic is strong, and intensive codeswitching is extremely prevalent among Arab adults, especially the young generation. This is most prominent in mixed Arab-Jewish urban locations, but also in the southern Negev region, where this study is located and where Negev Arabic is spoken, a Bedouin variety of Palestinian Arabic (Henkin-Roitfarb, 2011).

Hebrew as Second or foreign language. The question of Hebrew as second or foreign language in our Negev setting is complex. If second language, as distinct from foreign language, is defined as the target L2 spoken in the community outside the classroom, then Modern Hebrew, as the national, general public space language, is clearly a second language for immigrants—but not necessarily in the Bedouin Negev Bedouin, where the community language is Negev Arabic. However, in this minority community Hebrew is very much present. Educated adults are functionally bilingual (Nagel et al., 2015) in varying degrees, according to level of education and working places. Most adults codeswitch intensively in their in-group discourse and read Hebrew newspapers; news on TV are often heard in Hebrew, though Arab channels are very popular.

Hebrew is officially taught at Arab schools from 3rd grade, in practice even earlier in many schools, at 3–5 hours/week throughout. The language of instruction at high school Hebrew classes is officially Hebrew, but with frequent lapses to Arabic, the L1 of almost all the teachers. With an average of 35 pupils per class, attention to oral skills as well as written corrective feedback are scant. In many cases essays are returned with no comments, and the following lesson the teacher summarizes the major errors found. The textbooks show a mixture of FonF (focus on form) and FonFs (focus on forms) approaches, with many content-rich texts but no less formal language chapters.

This approach is gradually changing, as the national program for Hebrew in Arab schools (Ministry of Education, 2011) has established a radical reform in curriculum,

textbooks, program and final exams, laying a clear focus on content and communicational skills, both written and oral (Amara, 2007). The latest official textbook, dated 2020, is completely communicational (but has not yet entered the schools involved in this study). Moreover, the official website/portal for Hebrew in the Arab community *Iṣṭaba*, now largely replacing frontal instruction in the Covid 19 era, is extremely rich in materials starting from kindergarten and totally in Hebrew (oral and written), including TV programs, children's storybooks in U-tube, video movies, pop songs, stand-up comedies, and discussion groups.

Outside the language classroom, Hebrew is quite prevalent in the linguistic landscape of the high school: staff-rooms and offices show much official writing in Hebrew, in posters and official correspondence. Textbooks in the hard sciences are often in Hebrew, as is the terminology in these classes. Moreover, a compulsory school subject is community work, which may well be accomplished at a public institution outside the home community, so many high schoolers are exposed to Hebrew in the urban public space.

After high school Hebrew increasingly becomes a second language: active acquisition accelerates in communicative spheres of educational and professional environments. It is acquired in immersion style for communication in the general public space. While the transition from high school to college in terms of SLA seems to be problematic in general (Ortega & Iberri-Shea, 2005), it is acute in the specific case of Arabic-speakers in Israel: as the language of communication and instruction at university, Hebrew is no longer considered an L2, and no adaptation is made for learners; corrective feedback is rare, limited to certain courses at the department of Hebrew Language.

Summarizing the question of second or foreign language, Hebrew seems to proceed from an in-between status to a proper second language of Arabic-speakers at university. In the research literature to which we now turn, some consider it a second language at school (Manor 2016), others consider it a foreign language (Saiegh-Haddad & Jayusy, 2016); and others employ the term 'second language' or L2 in a general, non-differentiating sense, which is what I shall do, in view of its scalar character.

Research on Hebrew interlanguage of Arabs in Israel. Written Hebrew of Arabic-speakers in Israel has been studied at middle and high school (Bassal, 2007; Henkin, 2001), in L2 Hebrew language matriculation exams (Abu Bakr, 2003; 2005; Shehadeh, 1998), in essays of college students (Abu Bakr, 2016; Dana, 1976; Haskel-Shaham et al., 2018; Henkin, 2003; 2004; Manor, 2016; Margolin & Ezer, 2013–2014; Shatil, 2008; Tamir et al., 2016) and in the *Iṣṭaba* website of teachers of Hebrew in Arab schools (Watad, 2014). Most of the earlier works tended to list errors and identify L1 influence in a contrastive error analysis approach that predominated SLA research between the 1950s and the 1970s (Hinkel, 2005). In this vein, Bassal (2007) advocates exploiting the similarities in instruction, while Shehade (1998) states that the extreme closeness may well be detrimental in teaching Hebrew to Arabic-speakers and vice versa.

Relatively little research has tackled discourse patterns and task-related characteristics of the Hebrew interlanguage of Arabic-speakers (Haskel-Shaham et al., 2018; Henkin, 2001, 2003, 2004; Manor, 2016). Like SLA academic writing elsewhere (Hinkel, 2005) this SLA writing differs radically from L1 academic writing (Margolin & Ezer, 2013–2014).

Recent experimental work on different-script and domain differential language interference monitoring (Prior et al., 2017) focuses on the Hebrew of Arabic-speaking university students, whose proficiency in Hebrew was assessed by standard entrance exams. Activation and inhibition of L1 interference in this interlanguage and its correlation with proficiency were tested by lexical and grammatical judgement tasks which, in our terminology, measure error salience. The syntactic task was judgement of correctness on a wide range of syntactic structures that differ in Modern Hebrew and Arabic. Salience, which was later found to be influential in acquisition of Hebrew by adult Russian-speaking immigrants (DeKeyser et al., 2018) was considered in selecting items for testing in this study, for the first time in research on Hebrew interlanguage of Arabic-speakers in Israel, since "less salient structures might be more sensitive to interference from the L1, especially in proficient bilinguals" (Prior et al., 2017, p. 11). Unfortunately, we do not know how salience was established; moreover, many of the grammatical Hebrew-Arabic correspondences were flawed. A conclusion drawn in that study that is most relevant to the present study is that grammatical interference, but not lexical interference, was reduced with rising L2 proficiency. This is all the more interesting in view of findings that lexical errors are easier to detect than grammatical ones, reported in the L1 (Polish), L2 (English) and L3 (French) study mentioned above. Likewise, Haskel-Shaham et al. (2018) find grammatical errors to be more persistent than discourse flaws in academic writing of Palestinian Arabic-speaking teachers of Hebrew in East Jerusalem, with lexical issues occupying a middle position between these two poles. They conclude that grammatical issues often constitute a 'vulnerable state', where L1 and L2 are expected to be similar, but are not. The two Arabic-Hebrew studies, however, differ radically in methodology: the first is cross-sectional and quantitative, using judgement tests; the second is longitudinal and qualitative, studying academic writing. The present study focuses on phonological, orthographic, morphological and (morpho)syntactic interference in L2 Hebrew academic writing over time, leaving lexicon and discourse for future study.

1.4 Aims and research questions

My aim is to establish a hierarchy of persistence of interference phenomena in written Hebrew of Negev Arabic-speaking high schoolers and undergraduate students, as related to salience and G-effect. I use the term 'persistence' rather than 'fossilization' or 'stabilization' as I intend to show a general drop in most errors, so 'fossilization' seems unduly pessimistic, while stabilization seems to carry positive connotations, associated with a welcome process. With regard to interference errors in

Arabic-speakers' Hebrew writing at high school and university, my research questions are:

RQ1 Is there a general decrease in these errors over time?
RQ2 Which are more error salient than others?
RQ3 Which persist longest?
RQ4 What is the relation between error salience, G-effect, and persistence?

RQ1 concerns the relation between length of acquisition period and a general decline in errors, at least one component of which is interference; it also relates to the effectiveness of instruction in this setting. RQ2 attempts to establish a gradient for my concept of error salience (as distinct from perceptual salience). RQ3 relates to literature on items prone to stabilization (e.g. Long, 2003 and Tarone, 2018); and, specifically, to the debate in applied linguistics as to differential effectiveness of written corrective feedback in various linguistic domains. RQ4 ties together RQ2 and RQ3 with the factor of G-effect in an effort to establish the connection between these factors vis-à-vis persistence.

2. METHODOLOGY

According to Hyland's (2016) classification of methods and methodologies in L2 writing, the research method applied in this study is analysis of text data in a written interlanguage corpus, within the field of learner corpus research (Granger, 2015; McEnery & Xiao, 2011; Myles, 2005) or L2 text analysis, which has to date focused more on adult language learners than on schoolchildren (Hinkel, 2005). The cross-sectional study tests different participants at 3 time-points (9th grade, 11th grade, undergraduate studies) for linguistic interference phenomena found in their written texts. These are graded for error salience, established by a specially compiled salience test; and also for G-effect; subsequently, the correlation between error salience, G-effect and actual persistence of the items is established statistically in an effort to detect a causal effect.

I limit the scope of the present study to form, or grammar in the wide sense, namely orthography (mainly reflecting phonology), morphology, morphosyntax, and syntax. Semantic and lexical relations, focusing on meaning, I leave to future study. Another issue left for future study is variation, as I accept as target language any elements that occur in any variety, register or style of Hebrew, including slang.

2.1 Participants and corpus

The 56 participants are all native speakers of Negev Arabic. The 11th graders and half of the 9th graders attend the High School for Science (hence HSS), and the other 9th graders attend a regular Negev secondary school (R). All have 5 hours per week of

Hebrew language and literature, considered one subject. The 13 undergraduate students are in their 2nd or 3rd year at the department of Hebrew language at Ben-Gurion University of the Negev.

Each of the participants wrote an expository essay. This yielded the 6,000-word corpus (2,000 words at each level). The HSS participants wrote argumentative essays, presenting positions for and against women going out to work, currently a disputed issue in Negev society. The other 9th graders wrote personal profile essays about themselves. These high school essays were all hand-written during the lesson with no preparation or online assistance. The undergraduates' essays were mid-term or final papers in the Year 2–3 seminar 'Acquisition of Hebrew as L2 to Arabic' at the Department of Hebrew Language, where focused attention to Hebrew language is expected; the papers were submitted in digital form and with no time pressure, so under optimal circumstances for controlled, careful writing, reflecting L2-competence. Table 1 shows the corpus components.

Table 1. Written corpus

LEVEL	TOPIC	*N*=56
Grade 9 (R)	Personal profile	14
Grade 9 (HSS)	Women going out to work: for and against	14
Grade 11 (HSS)	Women going out to work: for and against	15
Undergraduate	Acquisition of Hebrew as L2 to Arabic	13

2.2 Assessment tools

Once the corpus was compiled and analyzed, I extracted 14 high frequency interference errors and integrated them into one of the 9th Grade essays. The resulting text of 80 words contained at least one instance of each error. This became the Teachers' Salience Test for assessing salience from the point of view of a teacher, when correcting written essays. The test was presented to 13 native Arabic-speaking teachers of Hebrew, of which 6 teach at HSS, so have taught these participants at some stage. The rest teach at another Negev Bedouin high school. They were assembled in their respective staff rooms at break-time, the task was explained and demonstrated in printed examples showing 3 items and their respective target corrections: each error in the demo page was circled and the correct version was written above, or supplied by an arrow if word order was the issue. No metalinguistic data were given**.** The teachers were told in advance that they were to correct the essay in 3 minutes. The rationale for this time limit was knowledge that this was the case in practice: in classes averaging 35–40 pupils, a teacher usually spends no more than several minutes on such a sample of 80 words. Importantly, knowing that teachers tend to be lenient so as not to discourage the writer by filling an essay with corrections (Lee, 2013), they were explicitly instructed to be strict, to correct everything they consider

wrong, as this was strictly experimental, with no repercussions for anyone. The Teachers' Test Salience (TTS) grade for each error was established according to the number of teachers correcting it:

salience degree	TTS	correction rate
high	1	above 75%
medium	2	50%–74%
low	3	below 50%

In addition to this test, I applied a G-effect measure to each of the 14 items. according to my judgement based on SLA research literature: [G0] for no effect; [G1] for a G-effect; a single case judged [G0.5] is explained below.

3. ANALYSES

Following the teachers' corrections in the Teachers' Salience Test, the 14 targeted items were graded on the TTS scale (1–3) and also on a G-effect scale (0–1). In this section I present these rankings and explain the background and rationale for each placement. The items are presented in rising order of linguistic level, phonological, morphological, morphosyntactic and syntactic and, in each domain, in rising TTS scores.

3.1 Phonology and orthography

At the phonological level, as reflected in orthography, salient errors characterize several 'problematic' consonants. Spelling mistakes related to vowels are less salient, simply because vowels are rather inconsistently represented in Hebrew orthography.

3.1.1 Problematic consonants

The Modern Hebrew phonemes /p/ and /v/ are absent in Arabic, so prone to substitution in Hebrew writing of Arabic-speakers by *b* and *f* respectively. Moreover, since unpointed Hebrew script does not differentiate *b* from *v* and *p* from *f*, a general confusion arises within this 4-consonant group, in both speech and writing of Arabic-speakers. In fact, (a) in Table 2 has been assessed as the "most distinctive marker of the average Arabic-speaker" (Shehadeh, 1998, p. 170; also, Abu Bakr, 2016; Bassal, 2007; Shatil, 2008 among others). Table 2 shows these spelling mistakes ranking at

maximal TTS1, with 100% of the teachers correcting the error; [G0] designates no G-effect:[1]

Table 2. Interference in perception of Modern Hebrew /b, p, v, f/

	error	target form	deviant form	gloss	TTS(%)	G
a	*p>b*	*paʕam*	*baʕam*	once	1(100)	0
b	*v>f*	*ʕavoda*	*ʕafoda*	work	1(100)	0

Next, the Modern Hebrew affricate *t͡s* in Table 3 is problematic for speakers of numerous languages such as English and Arabic, that do not have this phoneme. They find its relation to the Modern Hebrew spirant /s/ confusing.

Table 3. Interference in perception of Modern Hebrew /s-t͡s/ relations

	error	target form	deviant form	gloss	TTS(%)	G
a	*s > t͡s*	*laʕasot*	*laʕat͡sot*	to do	1(100)	0
b	*t͡s> ts~tt͡s*	*carix*	*tsarix ~ tt͡sarix*	need$_{M.SG}$	1(89)	1

(a) shows target *s* replaced with *t͡s* in the vicinity of ʕ. This reflects interference from dialectal Arabic phonology: the 'backed' articulation or velarization of pharyngeal /ʕ/ tends to spread to neighboring phonemes. So, in written Hebrew of Arabic-speakers, *ʕs* or *sʕ* sequences may be conceived as velarized, and written with *t͡s,* which is the Modern Hebrew cognate of Arabic velarized /ṣ/. This spelling error is common in my corpus (cp. also Bassal, 2007). It is apparently very salient to teachers of Hebrew, reaching maximal TTS of 100%.

The drop in salience to TSS1(89%) in (b) may be due to a G-effect—the natural inclination to perceive the affricate */t͡s/* as two distinct consonants, so written with two letters.

3.1.2 Vowels

Throughout its history, Hebrew has been rather inconsistent in written representation of vowels. In Modern Hebrew, standardization efforts for non-vocalized script have brought about some reforms by the Academy of Hebrew language, the intricate details of which are not clear to the public. In view of this opacity, native speakers may produce written forms that contradict prescriptive norms, but are nonetheless

[1] *Another pair of Modern Hebrew consonants found to be problematic in the corpus but not tested here is k/g. Standard Arabic has no /g/, but its /q/, cognate to Modern Hebrew /k/, is pronounced [g] in Negev Arabic. So, for example, Modern Hebrew* kedey *'so as to' was sometimes written* gedey *(GDY).*

acceptable to other native speakers. L2 learners, in contrast, may produce forms that are clearly errant to native speakers. The three main trends typical of the Arabic-speakers in our corpus are shown in Table 4.

Table 4. Interference in vowel orthography: addition, omission, interchange

	target forms	deviant forms	gloss	TTS(%)	G
a	*késef*	*kéysef*	money	1(83)	0
b	*yitronót*	*yitrnót*	advantages	3(21)	0
c	*ḥašuv*	*ḥašov*	important	3(0)	0

(a) Addition. Arabic script consistently designates long vowels by vowel letters. In Modern Hebrew, which has no phonemically long vowels, stressed vowels tend to be perceived as long by L1-Arabic-speakers, and consequently written with vowel letters according to L1 phonology and orthography: Modern Hebrew *késef* 'money' is erroneously written KYSF, with a superfluous Y, representing the stressed *é* vowel, perceived as long. Such errors are documented in writing of 9th–10th graders (Bassal, 2007), undergraduates (Abu Bakr, 2016) and Arabic-speaking teachers of Hebrew (Watad, 2014, where it is explained erroneously as centralization of vowels). These deviant forms fall short of maximal TTS because of the opacity and perceived flexibility of vowel letter rules. But still they rank at a high TTS1(83%), probably since they violate conventional graphic forms of standard Hebrew patterns, such as the very common 3-lettered noun pattern CéCeC. No G-effect seems to be at play here.

(b) Omission. Dialectal Arabic prosody disfavors long unstressed vowels and often shortens them. So, when writing Modern Hebrew words with several vowel letters, only one of which carries stress, L1-Arabic-speakers may well omit unstressed vowel letters, as in Table 4b. The very low TTS3, 21%, seems to reflect the general opacity in the use of vowel letters in Hebrew, and the generally lower visual salience of missing elements in relation to added elements. Here too, no G-effect seems to be at play.

(c) Differentiation. An additional problem with Hebrew vowels for L1-Arabic-speakers, amply documented in the research literature (e.g. Bassal, 2007), is lack of differentiation between Hebrew /u/ and /o/ which share the vowel letter W; the same is true for Hebrew /i/ and /e(y)/, sharing the vowel letter Y. Both problems are due to the absence of /o/ and /e/ respectively in the Arabic phoneme inventory. Moreover, Arabic dialects tend to neutralize differences between the short vowels, especially /u/ vs. /i/. So short vowel quality is rather non-salient for these speakers and, as said above, all Hebrew vowels are phonologically short. Notably, this issue of vowel differentiation should not rise at all in writing, since in the unvocalized Hebrew script /u/ and /o/ share a single vowel letter (W), as do /i/ and /e/ (Y), as said above; so phonemic under-differentiation in both these cases is concealed in writing. However, many graduates of the Arabic school system do partially vocalize their Hebrew

writing, even after two years at college at university level (Haskel-Shaham et al., 2018; Henkin, 2003; Tamir et al., 2016). This insistence on vocalization has been attributed, among other factors, to importance of diacritics in Arabic script, where they distinguish letters. Native adult readers in both languages, however, generally read 'without vocalization' even if it is supplied. Vocalized חשוּב *ḥašov* for Modern Hebrew *ḥašuv* 'important' in Table 4c may be a pseudo-correction, evading /u/ as common to L1 and L2 in favor of the specifically L2 /o/. None of the teachers in our tests corrected the many cases of /u-o/ substitution. This error then ranked TTS3, with no G-effect.

3.2 Morphology

Since Hebrew and Arabic are morphologically similar, morphological interference is expected in both inflections and derivations. I will limit the discussion to the former and demonstrate with two very salient types: (a) hybrids, combining elements from L1 and L2 in a form not acceptable in either, and (b) morphological interference in some suffixes.

(a) Hybrids. Arabic has no infinitive. In (1) the target infinitive *laʕavod* 'to work' begins correctly with the particle *l-* 'to', probably by rote collocation after the verb 'want' + 'to'. But it is followed by the Future form 'she will work', following the L1 pattern. The infinitival prefix *l- 'to'* followed by a Future form creates a hybrid (cp. also Abu Bakr, 2005):

(1)	*hi*	*roca*	*le*	*-taʕavod*	[target: *l-aʕavod* 'to-work']
	she	wants	to	-she.will.work	
	she wants to work [11/8][2]				

This infinitival hybrid reached maximal salience at TTS1(100%). Another common hybrid involves 3F.PL verbal forms (cp. Bassal, 2007). Modern Hebrew has lost this historical form in its Past tense, retaining its Future form in high style only; in contrast, Standard Arabic and many dialects, including Negev Arabic, have retained 3F.PL verbal forms throughout the system. So, our speakers sometimes add the 3F.PL Arabic suffixes to Hebrew forms. In (2) the starred non-target suffix is the Negev Arabic variant, in other cases the Standard Arabic suffix **-na* appears:

(2)	*ha-išot*	*šela-hem*	*yaʕavod*	**-in*	[target: *yaʕavd-u* / *taʕavod-na*]
	the-wives	of-them	will.work	-F.PL	
	their wives will work [9/21]				

[2] *Sources of the corpus examples are in brackets, opening with level (9, 11, or St) followed by R in case of the 9th graders' regular school (as distinct from HSS 9th graders); then the text number in that sub-corpus; and tokens of this error in that corpus if applicable. So [11/8] as the source of (1) designates essay no. 8 in the 11th graders' corpus; [9/21X2] in (3) means that two tokens of the item in question occurred in essay no. 21 in the 9th grade HSS corpus.*

The two stylistic target variants of the verb in '(their wives) will work' are the gender-neutral 3PL *ya-ʕavd-u* and the marked 3F.PL *ta-ʕavod-na* which, however, is elevated. The hybrid in (2) reached TTS1(91%), making the average of the two hybrids tested TTS1(96%), and [G0].

(b) Inflectional suffixes. Most confusingly for Arabic-speakers, their colloquial "Past tense" suffixes for 'I' and feminine singular 'you' reverse in Hebrew, as we see in Table 5 (cp. Shatil, 2008).

Table 5. Past tense suffixes for 'I' and feminine singular 'you'

suffix	Hebrew example		gloss	Arabic	example	gloss	TTS(%)	G
-ti	1SG	*katav-ti*	I wrote	2F.SG	*katab-ti*	you.$_{F.SG}$ wrote	2(67%)	0
-t	2F.SG	*katav-t*	you.$_{F.SG}$ wrote	1SG	*katab-t*	I wrote		

So, an Arabic-speaker may say in Hebrew 'you submitted my paper and I graded it', meaning 'I submitted my paper and you graded it'. Moreover, in Negev Arabic "Past tense" 1SG and 2M.SG forms are identical; and in non-pointed written Standard Arabic 2F.SG and 3F.SG also share the same form KTBT. In written Hebrew too, the corresponding consonantal form KTBT is similarly ambiguous. Finally, the only difference in written Hebrew between the correct and incorrect form in Table 5 is the minute, dot-like final vowel letter י in the 1SG suffix, i.e. כתבתי KTBTY 'I wrote' vs. KTBT 'you wrote'. Perceptual salience, particularly in handwriting, is thus not expected to be high, and indeed it ranked TTS2, and [G0].

Another problematic Hebrew suffix is the F.SG active participle, with its two major allomorphs, *-ah* and *-et*. The former, which is more frequent in Modern Hebrew, is also the only variant of the cognate Arabic participle, so tends to replace the *-et* variant in Hebrew of Arabic-speakers:

(3) *ha-išah* *ha-ʕovd* *-ah* [target *ʕoved-et*]
the-woman the-working -F.SG
the working woman [9/21X2; 9/28; 11/8; 11/10]

This particular form occurred several times at the high school levels, and the substitution also occurred with some other participles. It may be analyzed as interference from the single corresponding *-ah* suffix in the Arabic morphological system, where *-t* suffix is associated with "Past tense". It may, however, also be considered a G-effect of paradigm leveling or over-generalization of the more frequent Hebrew F.SG suffix *-ah*. Moreover, Hebrew allows some overlap, where both F.SG allomorphs interchange, often differing in register, e.g. *boded-et ~-ah* 'single', *mitlav-et ~ -ah* 'accompanying', *nixbed-et ~ nixbad-ah* 'honorable'—in fact, even *ʕovd-ah* of (3) above is perfectly normative Hebrew (Barkali, 1968), it just does not occur in ordinary Modern Hebrew. The alternation of such doublets throughout the participial system makes this issue rather opaque, especially for language learners.

Combining the two categories of verbal and participial suffixes, they average at TTS2(72%); and since only one of them carries a G-effect, I rated their average at G [0.5], the only instance of this medial value in the corpus.

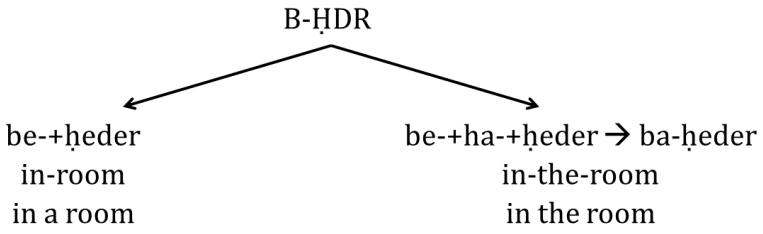
3.3 Morphosyntax and syntax

Beyond the single lexeme, issues of (morpho)syntax occupy a higher segmental level and are somewhat less localized. This may lower their error salience. Within this category, syntactic rules may be rigid, with just one correct variant, or flexible, allowing alternant structures marked for discourse-pragmatic or rhetoric effects. An example for rigid syntax is grammatical agreement; many issues of word order, in contrast, are often pragmatically conditioned. I argue that violations of rigid syntax may be more error salient than those of flexible syntax.

3.3.1 Rigid syntax errors

(a) Preposition and determiner. Three Hebrew clitic prepositions, *b(e)-* 'in'*, l(e)-* 'to'*, k(e)-* 'as', partially assimilate a following determiner, usually *ha-* in colloquial Hebrew, so *b(e)-* + *ha-* > *ba-*. In unpointed writing, the determiner leaves no trace, so the resulting written word is ambiguous with respect to determination, dependent on context for decoding:

Figure 1. Ambiguous prepositional phrase in written Hebrew: determined or not?



Orthographic retention of the determiner *ha-*, represented in writing by the letter H, e.g. B-H-ḤDR instead of the target B-ḤDR of Figure 1, is frequent in Hebrew writing of Arabic-speakers at various levels of acquisition (e.g. Abu Bakr, 2005; Bassal, 2007; Shatil, 2008). This can be seen as morphosyntactic interference, as in Arabic the article following a clitic preposition is predominantly retained in both writing and speech (unless the noun begins with a sun letter, in which case assimilation and gemination occur, but the article is still graphically present). But it also reflects a G-effect phenomenon, a tendency of interlanguage for analyticity (Szmrecsanyi & Kortmann, 2012); also, a crosslinguistic tendency to retain the independent form of determiners

after prepositions, notwithstanding exceptions, such as German *zu* 'to' + *dem* (dative M.SG. determiner) > *zum*. So, despite the visual salience of the additional letter (H), violating a rule of rigid syntax, error salience was relatively low at TTS2(55%); and augmented by a G-effect [G1].

(b) Governed prepositions. Preposition choice in L2 is conventionally considered very challenging for acquisition due to the crosslinguistic arbitrariness in the issue of governed prepositions. Consequently, they were characterized as resistant to corrective feedback or 'less treatable' (Ferris, 1999) than simple Past tense and articles in English (Bitchener et al., 2005; Van Beuningen et al., 2012). Arbitrariness is one of Todeva's three high risk categories of features prone to stabilization, and prepositions are the first representatives of that category, as presented by Long (2003).[3] The literature on the Hebrew interlanguage of Arabic-speakers contains many lists of preposition choices under L1 influence at all levels of education, including professional teachers of Hebrew (Abu Bakr, 2005; 2016; Bassal, 2007; Shehadeh, 1998; Tamir et al., 2016; Watad, 2014). It was targeted as one of the most persistent errors over two years of Hebrew studies at college (Haskel-Shaham et al., 2018). (4) shows syntactic interference from Arabic where 'help', as in English, governs a direct (accusative) object, whereas in Hebrew it governs the dative preposition *l(e)-* 'to':

(4)	*taʕazor*	*ot*	*-am*	[target: *la-hem* 'to them']
	she.will.help	ACC	-3M.PL	
	she will help them [11/1]			

I attribute the high TTS1(88%) to the rigid syntax status of the error in the majority of cases, when the governed preposition is one. General interlanguage difficulty [G1] is due to the arbitrariness of preposition choice.

(c) Concord. The Arabic concord system treats several classes of PL. entities as F.SG. This includes non-human plural nouns, as in 'long days', with the adjective 'long' marked F.SG although the noun 'day' is masculine in Arabic; some human collective nouns also behave similarly (Cantarino, 1974; Mansouri, 2005). These may all trigger deviant agreement in L2 Hebrew, as shown in (5) and (6).

(5)	*ha-maṭar*	*-ot*	*ha-ḥašuv*	*-a*
	the-goal	-F.PL	the-important	-F.SG
	the important goals [St/6]			

(6)	*ha-našim*	*hitpatḥ*	*-a*
	the-women	developed	-F.SG
	(today) women have progressed [11/7]		

Medium-high error salience of this feature, at TTS2(63%), may be due to violation of rigid syntactic rules; moreover, the complex concord rules and numerous

[3] *Although Nacey & Graedler, 2015 claim, based on advanced L1 Norwegian speaking learners of English, that preposition choice is less difficult than commonly thought.*

irregularities in Semitic language systems are challenging for learners in general, so agreement difficulties of all sorts may be coded as [G1].

3.3.2 Flexible syntax

The remaining features, though used erroneously in the corpus, do occur in native Modern Hebrew, but are limited to restricted, marked environments. This duality raises opacity and may be expected to lower error salience and raise the G-level.

(a) Definite object marker et*.* The accusative morpheme *et* preceding a definite direct object (including personal names, possessive constructions, etc.) is unique to Hebrew. The independent non-bound morpheme is *et* (7a) whereas the bound allomorph, preceding suffixes, is *ot-* (7b):

(7a)	*hu*	*ohev*	*et*	*Dan*
	he	likes	ACC	Dan
	he likes Dan			

(7b)	*hu*	*ohev*	*ot-o*
	he	likes	ACC-3M.SG
	he likes him		

Deletion of the independent particle *et* in (7a) is very common in learner language, regardless of L1. Hebrew interlanguage of Arabic-speakers is no exception (Abu Bakr, 2005; Haskel-Shaham et al., 2018; Shatil 2008; Shehadeh, 1998; Tamir et al., 2016; Watad, 2014). In (7b), however, omission of the inflecting accusative allomorph *ot-* would leave a stranded suffix *-o,* that cannot stand alone.

This omission in (7a) was found to be of low error salience, TTS3(40%), which may be the result of several factors. First, as already said, omission is in principle harder to detect than addition, as it is not physically tangible. More importantly, it belongs to the category of redundant grammatical elements, since accusativity is usually marked by word order; as such, it is expected to be of low salience and impermeable to corrective feedback. Moreover, the cognitive concept of limiting accusativity marking to determination is alien to non-native speakers of Hebrew—both the essence and the rules of the *et* ~ ∅ allomorphic alternation are obscure to non-native speakers. Finally, the rules of usage are flexible—not strictly syntactic, but often stylistic or discourse-pragmatic, conditioned by register and genre. It is well known, for example, that the first Prime Minister of Israel, David Ben-Gurion, shunned *et* and spoke against it (possibly under interference from his European L1). Today too, it is often elided in telegraphic written style, such as journalistic headlines and texting. Importantly, L1 speakers' omission of *et* is based on native intuitions or *Sprachgefühl*, whereas L2 writers' omissions (and hyper-corrective additions) often clash with these. These cases of misuse are attributable both to interference, as Arabic does not have it, and to G-effect. In sum, this extremely pervasive feature ranking TTS3 and [G1], is expected to be highly persistent.

(b) Temporality. The Arabic verbal system is basically aspectual, opposing Complete and Incomplete forms. I will call them "tenses" (in quotes) for compatibility with the Modern Hebrew temporal system, which has 3 basic tenses: Past, Present (participle) and Future. The result is much interference in the sphere of temporality in the Hebrew interlanguage of Arabic-speakers (Henkin, 2004). Particularly common is the Modern Hebrew Future form used by Arabic-speakers, in analogy to its cognate Incomplete present-future or non-past in Arabic, replacing the target Hebrew Present tense (Abu Bakr, 2005; Shatil, 2008):

(8)	*ani*	*eḥlom*	*še-ani*	*rofe*	*ʕenayim*
	I	will.dream	that-I	doctor	eyes
	I dream I am an eye doctor [9R/6]				

I attribute the extremely low salience of this feature, ranking TTS3(14%) to flexible syntax: Hebrew high style enables Future forms for certain types of a-temporal modality, much like English 'boys *will* be boys', e.g. *po lo timca...* 'here you *will* not find…', *lo tamid yagidu lexa et ha-emet* '(people) *will* not always tell you the truth'. Such crosslinguistic links between future and subjunctive modality, especially in high style, may encourage highly educated Hebrew L2 speakers, such as the teachers in this experiment, to accept such Hebrew modal Future forms even when generalized to non-modal contexts, especially when conforming to their L1 norms. I thus grade them as [G1].

Allowing for the future-present opacity in the case of a single verb, we may expect consistent use of one temporal form in a sequence of verbs denoting sequential or simultaneous events in one time frame. Frequently, however, we find verbal sequences with some of the verbs in the Present tense (underlined), and others in the Future tense (double underline), in what seems to be arbitrary interchange:

(9)	*im*	*ha-iša*		*taʕavod*	
	if	the-woman		will.work	
	hi	*marviḥa*	*harbe*	*kesef*	
	she	earns	much	money	
	ve-gam	*hi*	*b-a-ʕavoda*	*taʕazor*	*le-ben zug-a*
	and-also	she	at-the-work	will.help	to-husband-her

if the woman will work she earns a lot of money and also by working she will help her husband [9/17]

As expected, error salience of such fluctuations was slightly higher than of single verbs, but still low at TTS3(27%). Beyond association of modality and future, another possible reason for failing to correct these could be the teachers' hesitation as to which of the two tenses to implement in their correction. In the time limit of 3 minutes for an 80-word essay, a tendency to simply ignore these cases is natural. Interference was also found in the use of compound tenses, which differs in the two languages. This issue was excluded for its minor frequency.

As said above, the Hebrew infinitive is problematic for Arabic-speakers with no infinitive in their L1. Interference often results in a Future form replacing a target infinitive, as amply noted in the research literature (e.g. Shatil, 2008):

(10)	*hi*	*yexola*	*taʕamod*	[target *laʕamod* 'to stand']	*ʕal*	*ragle-ha*
	she	can	she.will.stand		on	feet-her
	she can stand on her own two feet [9/27]					

If taken as a single verbal complex, a rigid syntactic rule is violated here, as only an infinitive can complement Hebrew 'can' referring to a single referent. Yet the written sequence can be read as two distinct clauses: 'she can', 'she stands on her feet'. It can thus classify as flexible syntax, although the tense in this case would more normally be Present. It ranked at a low TTS3(38%), possibly because all the forms are correct, and the syntax is opaque.

In total, the average for the temporality issues sampled (Future for Present, mixed sequences, and Future for infinitive) was TTS3(26%), and [G0]. Another common phenomenon, infinitive replacing target Future forms, was very rare in my corpus, and thus not targeted for the TTS test, although it was found to be frequent in college essays (Tamir et al., 2016) and in keeping with the well-known interlanguage principle of simplification, including the tendency to produce non-inflected forms.

(c) Dislocation. Syntactic patterns such as topicalization and dislocation may be marked in one language but not in another. This may trigger interference in SLA, resulting in structures that are grammatically correct, but pragmatically inappropriate (MacWhinney, 1992; 1997; 2001). Modern Hebrew and Arabic differ in their affinity for the syntactic structure known as left dislocation, whereby a noun is preposed for topicality, and referred to in the course of the sentence by a coreferential pronoun. In Palestinian Arabic, especially in the case of a human topic, dislocation is frequent and unmarked. It is especially prevalent in possessive structures. So, the regular formulation of 'I have two brothers' is 'me—I have two brothers'. The corpus contained many cases of dislocation such as (11):

(11)	*ha-iša*	*asur*	*l-a*	*la-ʕavod*
	the-woman	forbidden	to-her	to-work
	the woman—it is forbidden for her to work			
	It is forbidden for a woman to work [11/5]			

This is pragmatically marked in Hebrew as topicalized or contrastive, whereas in Arabic it is neutral. Since these structures are not wrong, just odd in an unmarked discourse context, their salience is low, especially in written form, in the absence of oral cues to the desired discourse-pragmatic interpretation. So left dislocation ranked at a low TTS3(18%). Moreover, redundancy and preposing the discourse topic are general interlanguage tendencies, so this ranked as [G1].

(d) Asyndesis. Several types of subordination are shown to be difficult for Arab students in their academic Hebrew writing (Manor, 2016). I focus here on omission of the subordinator *še-* introducing content clauses (12) and relative clauses (13). In content clauses, after verbs such as 'know', 'mean', 'fear', the subordinator is

compulsory in Hebrew, but is often optional in Arabic (as in English). In (12) the Hebrew subordinator *še-* was omitted:

(12) *ze* *lo* *omer* ~~*še-*~~ *ha-ʕavoda* *lo* *tova* *l-a-iša*
it not says ~~that~~ the-work not good for-the-woman
it doesn't mean (that) work is not good for the woman [11/15]

The error salience of subordinator omission before a content clause was low: TTS3(27%). I attribute this to potential syntactic ambiguity of flexible syntax in many cases. For example, a saying verb, which in (12) is used in the sense of 'mean', can ordinarily introduce either direct or indirect speech. Only in the latter case is the subordinator required in Hebrew, though not in Arabic (or English: 'he says... (that) he wants to work'. Since quoted speech in school writing is hardly ever punctuated with colons or quotation marks, an utterance may be interpreted as either direct or indirect speech with only the latter case necessitating *še-*. Its omission, when non-grammatical, is thus of low error salience, yet higher than the next case.

Relative clauses in Modern Hebrew are generally syndetic, connected to the main cause via a relative particle.[4] In Standard Arabic, in contrast, syndetic and asyndetic structures are in suppletive distribution: syndesis is limited to a determined antecedent, whereas asyndesis is used for an indeterminate antecedent as in (13), showing interference from Arabic in Hebrew:

(13) *ze* *davar* ~~*še-*~~ *ani* *lo* *ohevet* *ot-o*
this thing I not like ACC-3M.SG
this is something (that) I don't like [9R/11]

This very common interference phenomenon is noted in all our sources (Abu Bakr, 2005; Haskel-Shaham et al., 2018; Shatil, 2008; Watad, 2014). No teachers corrected these errors. In addition to the factors already listed, opacity here is increased by syntactic ambiguity, as the relation between the two clauses may be interpreted as simple juxtaposition: 'this is a thing, I don't like it'. Combining content and relative clauses, the issue of asyndesis rates TTS3; and [G1], since function particles in general tend to be omitted in interlanguage.

(e) Pro-drop. Arabic is a pro-drop (or null subject) language, whereas Modern Hebrew is considered 'partial pro-drop', allowing pro-drop in certain syntactic and discourse positions (Barbosa, 2011; Berman, 1990; Farghaly & Shaalan, 2009). In keeping with findings of L1 interference in the transition from a pro-drop L1 to a non pro-drop L2 (Roberts et al., 2008; White, 1985), subject pronoun elision was found to be very frequent in written Hebrew interlanguage of Negev Bedouin schoolchildren (Henkin, 2001). In our corpus, elision of subject pronouns that are obligatory in unmarked Modern Hebrew discourse rated very low at TTS3(13%). So evidently it is

[4] *There is a single exceptional asyndetic pattern, limited to fairly high style, though considered non-normative:* ha-bayit b-o garti *lit. 'the-house in-it I lived' 'the house I lived in'. It occurs in the standard register that teachers are exposed to, but outside the scope of high schoolers.*

non-salient for the L1 Arabic speaking teachers, although native Modern Hebrew-speakers will find (14) totally incoherent:

(14) *be-maʔamar-o* *šel* *I.B.* ~~*hu*~~ *mosif* *ʕal* *dvar-av* *šel* *N.Š.*
in-article-his of I.B. ~~he~~ adds to statements-his of N.Š
In I.B.'s article ~~he~~ adds to N.Sh's statements (= in his article, I.B adds to N.Sh's statements) [St/4]

As for the G-effect, pro-drop structures have been found crosslinguistically, also specifically in Modern Hebrew, to be produced earlier than overt subjects in both L1 and L2 acquisition (Bloom, 1990; Romaine, 2003). This is expected, since learner language is economical and content-focused, eliminating function words such as pronouns. So pro-drop rates at [G1].

3.4 Combined results

Table 6 shows the combined results of the cross-sectional test, analyzing 56 essays in the three age-group corpora, of 2000 words each, for tokens of 14 selected interference phenomena in the diverse linguistic domains. The TTS value ranges from 1 (high) to 3 (low), according to the percentage of teachers correcting the item, as explained in the methodology section. The G-effect score ranges from 0 to 1. The next three columns present the tokens of errors found in the corpus at grade 9, grade 11, and undergraduate student level respectively.[5] Finally, the right-hand column shows the persistence ratio, calculated tokens of students' errors as a percentage of the 9th graders' errors for each linguistic feature.

[5] *Values for the errors are in raw numbers rather than percentages, since the total of tokens in a text could often not be reliably established. For example, nos. 2, 6, and 11 concern vowels, which are usually not marked in the largely vowel-less Hebrew script.*

Table 6. Combined quantitative analysis of three age-group data

no.	domain	feature	TTS	G	gr9	gr11	st.	st/gr9 (%)
1	morphology	hybrids	1	0	19	14	0	0.00
2	orthography	additional V-letters	1	0	21	4	2	9.52
3	phonology	consonants	1	0	22	10	3	13.64
4	morphology	suffixes	2	0.5	11	8	3	27.27
5	morphosyntax	preposition+article	2	1	5	5	2	40.00
6	orthography	omitted V-letters	3	0	29	11	13	44.83
7	syntax flex.	tense	3	0	48	36	26	54.17
8	syntax rigid	governed preposition	1	1	32	36	18	56.25
9	syntax flex.	asyndesis	3	1	40	34	39	97.50
10	syntax flex.	*et*	3	1	18	12	18	100.00
11	phonology	V-differentiation	3	0	7	7	7	100.00
12	syntax flex.	dislocation	3	1	17	21	21	123.53
13	syntax rigid	concord	2	1	5	6	8	160.00
14	syntax flex.	pro-drop	3	1	8	7	18	225.00

Note. TTS – Teachers' Test Salience; G- general learner effect; gr9 – Grade 9 score; gr11- Grade 11 score; st – students' score; st/gr9 (%) – ratio students'/Grade 9 score.

Table 6, ordered by rising persistence ratio (final column), shows a significant positive correlation between the TTS and the actual persistence ratio, Spearman's rank-order correlation (r_s = .663, p < .010). Likewise, we see a significant positive correlation between G-effect and the actual persistence ratio, Spearman's rank-order correlation (r_s = .641, p = .013). These correlations and the few exceptions will now be discussed.

4. DISCUSSION

Returning now to our research questions, RQ1 is answered positively, in general: with time, features 1–9 showed a drop in error tokens, features 10–11 were stable and 12–14 showed a rise. This implies (though it does not prove) effectiveness of the instruction in general, but not in all domains of language.

Regarding RQ2, we see error salience in general dropping as items become less localized or, in the case of syntax, more flexible:

TTS1 (high): morphology (no. 1); orthography (no. 2); phonology (no. 3)
TTS2 (medium): morphology (no. 4); rigid morphosyntax (no. 5); rigid syntax (no. 13)

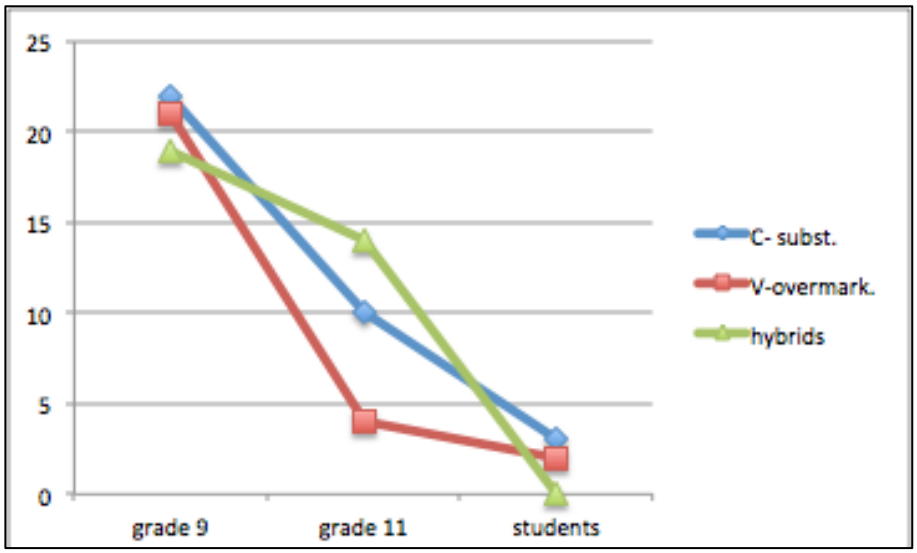
TTS3 (low): flexible syntax (nos. 7, 9, 10, 12, 14)

The three exceptions (nos. 6, 8, 11) will be discussed below. So, my answer to RQ2 in general, i.e. in 11 out the 14 features checked, is that error salience drops as unit size increases; and in the case of syntax, flexibility also lowers error salience.

The answer to RQ3 is seen in Table 6, ordered by rising persistence. The findings for nos. 1–6 are compatible with the observations that, in general, discrete or local items such as spelling errors and morphology are the most correctible (Truscott, 1996; 2007), so least persistent. The most persistent domain in our corpus is syntax (nos. 7–14, excluding no. 11), particularly flexible syntax. This conforms with research findings that syntax is relatively 'untreatable' or impermeable to CF (Bitchener & Ferris, 2012; Ferris, 1999; Lee, 2013; Włosowicz, 2012). This is prominent particularly when pragmatics are at play (Long, 2003; Sheen, 2007)

The main question, RQ4, is thus answered so: both error salience and developmental G-effect correlate significantly with persistence, pointing to a multiple effect error—salient errors corroborated by a G-effect, do indeed persist most. The implications are that the combination of error salience and G-effect is a good indicator of persistence. Moreover, the high persistence items tend to be non-localized, in the domain of flexible syntax, whereas low persistence characterizes highly salient, localized items of phonology, orthography and phonology, as we see in Figures 2 and 3 respectively. Figure 2 shows the three items with the steepest decline or lowest persistence over time (nos. 1,2, 3 in Table 6).

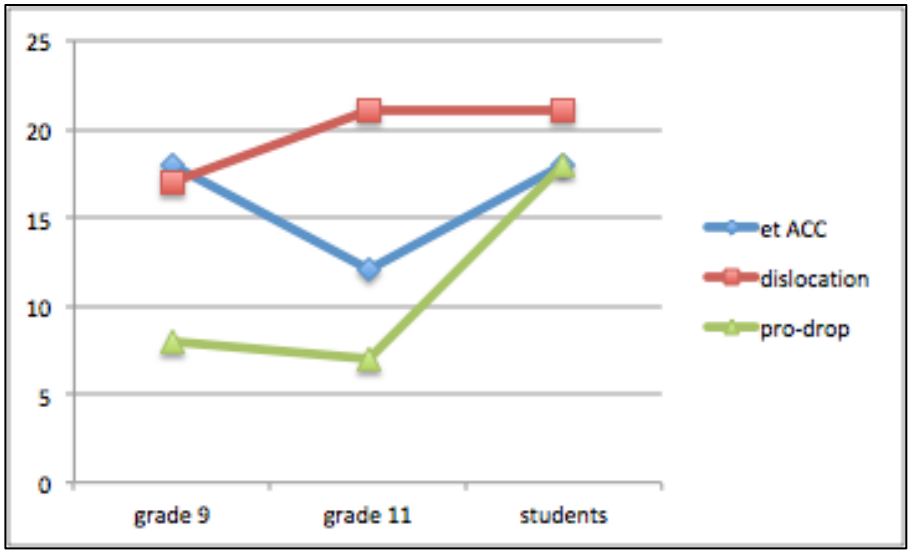
Figure 2. Least persistent interference phenomena (error tokens/2000 words)



We see that these items were of high error salience (TTS1, all above 80%) and single source (just interference, [G0]). Notably, all belong to the lower micro-levels, the smaller units or domains of linguistic analysis: the phonological phenomenon (no. 3) of consonant substitution /b-p-v-f; s-c/, ranking TSS1(100%); the orthographic phenomenon (no. 2) of added vowel letters; and topping the list (no. 1), fastest to decline, were morphological hybrids.

The slowest to decline were predominantly items that ranked at the lowest TTS3, under 50% correction rate, with an additional G-effect. Among these were the accusative particle *et* [no. 10], left-dislocation [no. 12], and pro-drop [no. 14] (and two others that will be discussed below).

Figure 3. Most persistent interference phenomena (error tokens/2000 words)



Notably, all belong to the suprasegmental level of syntax which, moreover, is of the flexible type—they are all partially legitimate as discourse-pragmatically marked variants in the target language, though not in the contexts used in the corpus.

Four items in Table 6 ostensibly do not conform to the clear correlation between TTS, G-effect and persistence. Almost all may be explained as interplay of combined factors:

(i) First is no. 6, omitted vowel letters. As an orthographic error, it was expected to be of higher error salience. But the opacity and flexibility of unpointed Hebrew script vis-à-vis vowels clearly promote errors in acquisition.

(ii) Next is no. 8, governed prepositions, notorious for persisting difficulty in general SLA research literature and specifically for Hebrew L2 of Arabic-speakers. This seems to be a case of discrepancy between perceptual

salience and error salience: the surprisingly high error salience, at TTS1(88%), contradicts the renown low perceptual salience from the learner's point of view, leading to the high persistence. The high TTS may be due to rigidity of the syntactic rules in the use of governed prepositions; also, as noted above, grammatical forms are more salient in written L2 input than in spoken language, so the written mode of our corpus may have promoted visibility and salience.

(iii) No. 11 is an issue of vowel-differentiation, interchanging the vowel letters for /o/ and /u/. The match between minimal TTS(0) and high persistence is as expected, but its minimal unit size should predict greater error salience. A reason for this mismatch may be that the grapheme is minute, namely upper dot over the letter (i) rather than internal dot (ı). Moreover, as vocalization is very rare in both Arabic and Hebrew writing, it is generally simply ignored—the teachers apparently read 'without vocalization', as is customary. Moreover, a teacher may notice the error, but ignore it as irrelevant to L2 competence—as a relic of earlier grades, it is expected to disappear soon, simply because vocalization characters are not readily available on computer keyboards and since vocalization slows writing down too much for efficient online note taking in high education.

(iv) Finally, concord issues of no. 13 ranked at almost maximal persistence, in keeping with their syntactic nature; but their error salience was lower than expected, at TTS2. Possibly the small token number in the corpus (19 as against, for example, 113 in item 9) prevented accurate evaluation.

Our findings also refine recent longitudinal research on Hebrew interlanguage of Arabic-speaking students. Haskel-Shaham et al. (2018) studied persistence of errors in prepositions, asyndetic relative clauses, and accusative *et*, our items 8, 9, and 10 respectively. They note preposition errors at both time points; the asyndetic relative clause error did not diminish significantly over the 2 years of their study; and erroneous accusative *et* omission diminished by the second stage which, however, contained occasional hypercorrections. Unfortunately no numerical data are supplied in that paper. Using my criteria, these findings may be explained and refined in terms of TTS and G-effect: all three elements are [G1], contributing to a relatively high persistence rate, all above 56%. The extremely high persistence of both non-target asyndesis (97.5%) and accusative particle omission (100%) is explained as a result of their relatively flexible syntax; the specific persistence of *et*-omission is attributed to redundancy and opacity in its relation to determination and allomorphy, in addition to being unique to Hebrew and conditioned by discourse-pragmatic-stylistic factors. The hypercorrections at stage 2 of the longitudinal study are not surprising—in my corpus they occurred already in 9th grade, pointing to opacity in this issue at all stages of acquisition.

5. CONCLUSIONS, IMPLICATIONS, AND FOLLOW-UP

This study of persistence covered 3 age groups, focusing on 14 interference features in the major grammatical domains. The gradient of persistence that emerged showed good prediction of persistence by a combination of error salience and general learner effects: lowest error salience combined with G-effect predict highest persistence, typical of syntactic items, especially when conditioned by discourse-pragmatic factors in the target language. Flexible syntax increases opacity, making such errors harder to detect and uproot, especially by L1 Arabic-speaking teachers.

The link established here between error salience, G-effect and persistence could contribute to research on corrective feedback in second language writing. The practical, didactic implications are that written corrective feedback seems to be fairly effective in the direct, unfocused or comprehensive form practiced in the Negev. But its effectiveness decreases in correlation to decreasing error salience and rising G-effect. This may be remedied by conscious efforts to focus more on syntactic issues, particularly those subject to pragmatic conditioning, such as dislocation and use of the accusative marker. For example, verbs may be profitably taught along with their governed prepositions (Haskel et al., 2018). This focus on errors that tend not to get corrected should increase with proficiency, as proposed by MacWhinney (1992, p. 14):

> As the student advances, the goal of instruction should be to progressively sharpen attention to those aspects of language which had previously been ignored and where the student is likely to make the largest numbers of errors. This can be done most effectively by increasing emphasis on error detection and error correction in later stages of L2 learning to prevent the fossilization of forms and mapping

Major limitations of the study include the small size of both the written corpus and the number of teachers correcting the TTS sample essay, and the fact that the study is cross-sectional. Follow-up research is needed with larger samples from each age group in longitudinal studies. The participants should receive their essays, selectively corrected for the targeted items, and undergo immediate and long-term post-tests targeting these same items. Additional research questions concern language varieties: given the diglossic situation in Arabic, it would be interesting to establish which Arabic interferes more in academic writing, Standard or Colloquial? Varieties of Hebrew—normative, standard and colloquial—should also be targeted for study in their interaction, as acquisition proceeds from the classroom to immersion conditions.

Finally, "instruction should be designed to maximize the positive effects of transfer and minimize the negative effects" (MacWhinney, 1992, p. 14). Haskel-Shaham et al. (2018) ended their study on Arabic interference in Hebrew with the Arabic proverb *jārak qarībak* 'your neighbor is your relative', alluding to the pedagogic potential for focusing on positive transfer between the related Semitic languages as an aid to acquisition (and cultural familiarization). This can be counterbalanced with the

Arabic proverb *al-aqārib ʕaqārib* 'relatives are scorpions', cautioning for care with negative interference. I conclude that distribution of instructional focus on both similarities and differences, and specifically on items with low error-salience, should promote optimal exploitation of the relationship between the languages of this bilingual minority in its sociolinguistic setting.

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REFERENCES

Abu Bakr, R. (2003). Hebrew writing of Arab graduates: Semantic aspects. *Al-Jam'a,* 7, 116–122. [Hebrew]

Abu Bakr, R. (2005). *Hebrew in Arabic mold: Arab graduates write Hebrew.* Baqa al-Gharbiyye, Israel: Al-Qasemi College Research Center. [Hebrew]

Abu Bakr, R. (2016). The influence of the Arabic mother tongue on the speech and the writing of Arab students at an Arabic-speaking college. In S. Kleeman (Ed.), *Ivrit bekavana thila: A collection of articles from the International Conference on Teaching Hebrew as an additional language for diverse populations in Israel and around the world* (pp. 63–69). Tel Aviv, Israel: The Mofet Institute. [Hebrew]

Amara, M. (2007). Teaching Hebrew to Palestinian pupils in Israel. *Current Issues in Language Planning, 8*(2), 243–254. https://doi.10.2167/cilp107.0

Barbosa, P. (2011). Pro-drop and theories of pro in the Minimalist Program Part 2: Pronoun deletion analyses of null subjects and partial, discourse and semi pro-drop. *Language and Linguistics Compass, 5*(8), 571–587. https://doi.org/10.1111/j.1749-818X.2011.00292.x

Barkali, Sh. (1968). luaḥ ha-peʕalim ha-šalem. [Comprehensive Verb Tables] (14th ed.). Jerusalem, Israel: Rubin Mass. [Hebrew]

Bassal, I. (2007). Teaching Hebrew as L2 to Arab pupils: Interference from L1 and contribution of contrastive analysis. In S. Iliyan, Y. Avishur, N. Alkasem, & M. Hugerat (Eds.), *Jubilee volume in honor to Dr. Najeeb Nabwani: Studies in philosophy, culture & education* (pp. 101–133). Haifa, Israel: The Institute for Multi-Cultural Research and the Arab Academic College for Education in Israel [Hebrew]

Berman, R. A. (1990). On acquiring an (S) VO language: Subjectless sentences in children's Hebrew. *Linguistics*, 28(6), 1135-1166. https://doi.org/10.1515/ling.1990.28.6.1135

Bitchener, J., & Ferris, D. R. (2012). *Written corrective feedback in second language acquisition and writing*. London, UK: Routledge. https://doi.org/10.4324/9780203832400

Bitchener, J., Young, S., & Cameron, D. (2005). The effect of different types of corrective feedback on ESL student writing. *Journal of Second Language Writing*, *14*(3), 191–205. https://doi.org/10.1016/j.jslw.2005.08.001

Bloom, P. (1990). Subjectless sentences in child language. *Linguistic Inquiry*, *21*(4), 491–504.

Cantarino, V. (1974). *Syntax of modern Arabic prose*. Vol. 1 The simple sentence. Bloomington, IA: Indiana University Press.

Cintrón-Valentín, M. C., & Ellis, N. C. (2016). Salience in second language acquisition: Physical form, learner attention, and instructional focus. *Frontiers in Psychology, 7*, 1–21. https://doi.org/10.3389/fpsyg.2016.01284

Dana, Y. (1976). The emergence of present-day Arabic-Hebrew: Consonant alternation and assimilation. [or: The Emergency of an Arab-Hebrew Dialect: Consonant Change and Elision] *Iyunim bexinu*x (*Studies in Education), 13*, 93–98. [Hebrew]

DeKeyser, R., Alfi-Shabtay, I., Ravid, D., & Shi, M. (2017/2018). The role of salience in the acquisition of Hebrew as a second language: Interaction with age of acquisition. In S. Gass, P. Spinner, & J. Behney (Eds.), *Salience in second language acquisition* (pp. 131–146). London, UK: Routledge. https://doi.org/10.4324/9781315399027-7

Dulay, H.C., & Burt, M.K. (1974). Errors and strategies in child second language acquisition. *TESOL Quarterly, 8*(2), 129-136. https://doi.org/10.2307/3585536

Ellis, N. C. (2006). Selective attention and transfer phenomena in L2 acquisition: Contingency, cue competition, salience, interference, overshadowing, blocking, and perceptual learning. *Applied Linguistics, 27*(2), 164–194. https://doi.org/10.1093/applin/aml015

Ellis, N. C. (2016). Salience, cognition, language complexity, and complex adaptive systems. *Studies in Second Language Acquisition, 38*(2), 341–351. https://doi.org/10.1017/S027226311600005X

Ellis, N. (2017/8). Salience in usage-based SLA. In S. Gass, P. Spinner, & J. Behney (Eds.), *Salience in second language acquisition* (pp. 21–40). London, UK: Routledge. https://doi.org/10.4324/9781315399027-2

Farghaly, A., & Shaalan, Kh. (2009). Arabic natural language processing: Challenges and solutions. *ACM Transactions on Asian Language Information Processing (TALIP*), *8*(4), 1–22. https://doi.org/10.1145/1644879.1644881

Ferris, D. (1999). The case for grammar correction in L2 writing classes: A response to Truscott (1996). *Journal of Second Language Writing*, *8*(1), 1–11. https://doi.org/10.1016/S1060-3743(99)80110-6

Ferris, D. R. (2010). Second language writing research and written corrective feedback in SLA: Intersections and practical applications. *Studies in Second Language Acquisition, 32*(2), 181–201. https://doi.org/10.1017/S0272263109990490

Ferris, D. R. (2012). Written corrective feedback in second language acquisition and writing studies. *Language Teaching*, *45*(4), 446–459. https://doi.org/10.1017/S0261444812000250

Gass, S. M., Spinner, P., & Behney, J. (Eds). (2017). *Salience in second language acquisition*. London, UK: Routledge. https://doi.org/10.4324/9781315399027-1

Goldschneider, J. M., & DeKeyser, R. M. (2005/ 2001). Explaining the natural order of L2 morpheme acquisition in English: A meta-analysis of multiple determinants. *Language Learning,* 55(1), 27–77. https://doi.org/10.1111/j.0023-8333.2005.00295.x

Granger, S. (2015). Contrastive interlanguage analysis: A reappraisal. *International Journal of Learner Corpus Research, 1*(1), 7–24.

Haskel-Shaham, I., Klaus, R., & Tamir, R. (2018). Discourse—yes, grammar—no. Influence of Arabic mother tongue on Arab students writing in Hebrew. *L1-Educational Studies in Language and Literature*, *18*, 1–26. https://doi.org/10.17239/L1ESLL-2018.18.01.07

Henkin, R. (2001). šonut tluyat maṭala bi-sfat-benayim (Task-related variation in interlanguage: Evidence from Bedouin schoolchildren's Hebrew essays). In Y. Tobin (Ed.), *Proceedings of the 16th annual meeting of the European society of linguistics (Israeli branch)* (pp. 27–42). Beer-Sheva, Israel: Ben-Gurion University of the Negev. [Hebrew]

Henkin, R. (2003). ʕod ʕal yeterut tluyat maṭala bi-sfat benayim [More on task-related overwording in interlanguage]. In D. Sivan & P. Y. Halevy-Kirtchuk (Eds.), *Yaakov Bentolila Jubilee Volume* (pp. 151–175). Beer-Sheva, Israel:Ben-Gurion University of the Negev Press [Hebrew]

Henkin, R. (2004). Task-related variation in tense use in Arabic-Hebrew interlanguage. In D. Ravid & H. Bat-Zeev Shyldkrot (Eds.), *Perspectives on language and language development. Essays in honor of Ruth A. Berman* (pp. 393–405). Dordrecht, The Netherlands: Kluwer. https://doi.org/10.1007/1-4020-7911-7_28

Henkin-Roitfarb, R. (2011). Hebrew and Arabic in asymmetric contact in Israel. *Lodz Papers in Pragmatics, 7*(1), 61–100. https://doi.org/10.2478/v10016-011-0004-7

Hinkel, E. (2005). Analyses of second language text and what can be learned from them. In E. Hinkel (Ed.), *Handbook of research in second language learning and teaching* (pp. 615–628). Mahwah, NJ: Lawrence Erlbaum Associates. https://doi.org/10.4324/9781410612700

Heydari, P., & Bagheri, M. S. (2012). 'Error analysis: sources of l2 learners' errors.' *Theory & Practice in Language Studies, 2*(8), 1583-1589. https://doi.org/10.4304/tpls.2.8.1583-1589

Hyland, K. (2016). Methods and methodologies in second language writing research. *System, 59*, 116-125. https://doi.org/10.1016/j.system.2016.05.002

Lee, I. (2013). Research into practice: Written corrective feedback. *Language Teaching, 46*(1), 108–119. https://doi.org/10.1017/S0261444812000390

Long, M. (2003). Stabilization and fossilization in interlanguage development. In C. J. Doughty, & M. H. Long (Eds.), *Handbook of second language acquisition* (pp. 487–535). Oxford, UK: Blackwell. https://doi.org/10.1002/9780470756492.ch16

MacWhinney, B. (1992). Transfer and competition in second language learning. *Advances in psychology* (pp. 371–390). Dordrecht: Kluwer. https://doi.org/10.1016/S0166-4115(08)61506-X

MacWhinney, B. (1997). Second language acquisition and the competition model. In A. M. B. de Groot, & J. F. Kroll (Eds.), *Tutorials in bilingualism: Psycholinguistic perspectives* (pp. 113–142). Mahwah, NJ: Erlbaum.

MacWhinney, B. (2001). The competition model: The input, the context, and the brain. In P. Robinson (Ed.), *Cognition and second language instruction* (pp. 69–90). New York, NY: Cambridge University Press. https://doi.org/10.1017/CBO9781139524780.005

Manor, R. (2016). The quality of second-language writing (Hebrew) among Arab students in Israel. *Multilingual Education, 6*(1), 1–16. https://doi.org/10.1186/s13616-016-0027-z

Mansouri, F. (2005). Agreement morphology in Arabic as a second language. In M. Pienemann (Ed.), *Cross-linguistic aspects of Processability Theory* (pp. 117–153). Philadelphia, PA: John Benjamins. https://doi.org/10.1075/sibil.30.06man

Margolin, B., & Ezer, H. (2013–2014). Quality of expository writing of Jewish students (L1) and of Arab students (L2) in Israeli Education Colleges. *Helkat Lashon,* 46, 157–178. [Hebrew]

McEnery, T., & Xiao, R. (2011). What corpora can offer in language teaching and learning. In E. Hinkel (Ed.), *Handbook of research in second language teaching and learning* 2 (pp. 364–380). Mahwah, NJ: Lawrence Erlbaum Associates.

Ministry of Education (2011). Hebrew as a second language in Arab schools for the three age groups, grades 3 through 12. In Ministry of Education, Pedagogical Secretariat, Department for Curriculum Planning and Development. Jerusalem, Israel: Tal.

Myles, F. (2005). Interlanguage corpora and second language acquisition research. *Second Language Research*, *21*(4), 373–391. https://doi.org/10.1191/0267658305sr252oa

Nacey, S., & Graedler, A. L. (2015). Preposition use in oral and written learner language, *Bergen Language and Linguistics Studies, 6*, 45–62. https://doi.org/10.15845/bells.v6i0.808

Nagel, O. V., Temnikova, I. G., Wylie, J., & Koksharova, N. F. (2015). Functional bilingualism: Definition and ways of assessment. *Procedia-Social and Behavioral Sciences*, *215*, 218–224. https://doi.org/10.1016/j.sbspro.2015.11.625

Odlin, T. (2003). Cross-linguistic influence. In C. J. Doughty & M. H. Long (Eds.), *The handbook of second language acquisition* (pp. 436–486). Oxford, UK: Blackwell. https://doi.org/10.1002/9780470756492.ch15

Ortega, L., & Iberri-Shea G. (2005). Longitudinal research in second language acquisition: Recent trends and future directions. *Annual Review of Applied Linguistics*, *25*, 26–45. https://doi.org/10.1017/S0267190505000024

Prior, A., Degani, T., Awawdy, S., Yassin, R., & Korem, N. (2017). Is susceptibility to cross-language interference domain specific? *Cognition, 165*, 10–25. https://doi.org/10.1016/j.cognition.2017.04.006

Ringbom, H. (1992). On L1 transfer in L2 comprehension and L2 production. *Language Learning, 42*(1), 85–112. https://doi.org/10.1111/j.1467-1770.1992.tb00701.x

Roberts, L., Gullberg, M., & Indefrey, P. (2008). Online pronoun resolution in L2 discourse: L1 influence and general learner effects. *Studies in Second Language Acquisition*, *30*(3), 333–357. https://doi.org/10.1017/S0272263108080480

Romaine, S. (2003). Variation. In C. J. Doughty, & M. H. Long (Eds.), *The handbook of second language acquisition* (pp. 410–435). Oxford, UK: Blackwell. https://doi.org/10.1002/9780470756492.ch14

Saiegh-Haddad, E., & Jayusy, A. (2016). Metalinguistic awareness in reading a second language. In R.A. Berman (Ed.), *Acquisition and development of Hebrew: From infancy to adolescence* (pp. 353–385). Amsterdam, The Netherlands: John Benjamins. https://doi.org/10.1075/tilar.19.12sai

Selinker, L. (1972). Interlanguage. *International Review of Applied Linguistics,* 10(1–4), 209–232. https://doi.org/10.1515/iral.1972.10.1–4.209

Selinker, L. (1993). Fossilization as simplification? In M. L. Tickoo (Ed.), *Simplification: Theory and Application* (pp. 14–28). Singapore: SEAMEO Regional Language Center.

Shatil, N. (2008). The Arabs in Israel: Linguistic influences and Hebrew acquisition methods. *Hed HaUlpan HaHadash [The New Hed Ha-ulpan], 93*, 70–88 [Hebrew]

Sheen, Y. (2007). The effect of focused written corrective feedback and language aptitude on ESL learners' acquisition of articles*. Tesol Quarterly, 41*(2), 255–283. https://doi.org/10.1002/j.1545-7249.2007.tb00059.x

Shehadeh, H. (1998). The Hebrew of the Arabs in Israel. *Lěšonénu La'am* (*Leshonenu la-am) 49*(4), 168–180. [Hebrew].

Szmrecsanyi, B., and Kortmann, B. (2012). Introduction: Linguistic complexity—Second language acquisition, indigenization, contact. In B. Kortmann, & B. Szmrecsanyi (Eds.), *Linguistic complexity: Second language acquisition, indigenization, contac*t (pp. 6–34). Berlin, Germany: de Gruyter. https://doi.org/10.1515/9783110229226.6

Tamir, R., Haskel-Shaham, I., & Klauss, A. (2016). Writing of the age of the future: Characteristics of Hebrew writing of Arab students who specialize in teaching Hebrew as an additional language. In S. Kleeman (Ed.), *Ivrit bekavana thila: A collection of articles from the International Conference on Teaching Hebrew as an additional language for diverse populations in Israel and around the world* (pp. 70–79). Tel Aviv, Israel: The Mofet Institute. [Hebrew]

Tarone, E. (2018). Interlanguage. In C.A. Chapelle (Ed.), *The Encyclopedia of applied linguistics* (pp. 1–7). London, UK: Wiley. https://doi.org/10.1002/9781405198431.wbeal0561.pub2

Truscott, J. (1996). The case against grammar correction in L2 writing classes. *Language Learning, 46*(2), 327–369. https://doi.org/10.1111/j.1467-1770.1996.tb01238.x

Truscott, J. (2007). The effect of error correction on learners' ability to write accurately. *Journal of Second Language Writing, 16*(4), 255–272. https://doi.org/10.1016/j.jslw.2007.06.003

Van Beuningen, C. G., De Jong, N. H., & Kuiken F. (2012). Evidence on the effectiveness of comprehensive error correction in second language writing. *Language Learning*, *62*(1), 1–41. https://doi.org/10.1111/j.1467-9922.2011.00674.x

Van Weijen, D., Van den Bergh, H., Rijlaarsdam, G., & Sanders, T. (2009). L1 use during L2 writing: An empirical study of a complex phenomenon. *Journal of Second Language Writing*, *18*(4), 235–250. https://doi.org/10.1016/j.jslw.2009.06.003

Watad, A. (2014). The characteristics of the Hebrew writings of the Arab teachers in the 'Istaba' website. *al-Hasad* (The Harvest), *4*, 155–169.

White, L. (1985). The 'pro-drop' parameter in adult second language acquisition. *Language Learning*, *35*(1), 47–61. https://doi.org/10.1111/j.1467-1770.1985.tb01014.x

Włosowicz, T. M. (2012). Cross-linguistic interaction at the grammatical level in L3 reception and production. In D. Gabryś-Barker (Ed.), *Cross-linguistic influences in multilingual language acquisition, second language learning and teaching* (pp. 131–150). Heidelberg, Germany: Springer. https://doi.org/10.1007/978-3-642-29557-7_8