**The Effect of Explicit Positive Evidence
upon English L2 Acquisition by Hebrew Speakers**

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# Abstract

Anchored within the generative framework, this research project endeavors to unearth the potential benefit that may lie in the synergy between linguistic (generative) theory and language instruction. Specifically, the studies reported in this dissertation investigate the acquisition of English as a second language (L2) by Hebrew-speaking youngsters (18-year-olds). They focus on linguistic aspects in which the learners’ L2 (English) differs from their first language (L1; Hebrew): the syntactic properties associated with the Null Subject (Meso-)Parameter (NSP), and resumptive pronoun (RP) use in relative clauses. This research seeks to characterize the linguistic competence of Hebrew speakers in L2 English concerning these properties, as well as to unveil the influence of a pioneering instruction method that is based on generative grammar and utilizes *explicit positive evidence* (EPE) as L2 input. The method is inspired by Schwartz and Gubala-Ryzak (1992), but unlike their definition, it does not resort to descriptive, metalinguistic explanations.

The effect of *input flood*, namely, quasi-natural input involving a copious amount of target forms, enhanced by EPE, i.e., explicit emphasis on target forms, is measured regarding both knowledge internalization and retention of acquired knowledge over time. This research further compares the findings concerning youngsters to those of children (12-year-olds), which were reported and analyzed in Brandel (2014, 2018), and offers an analysis of these previous data that were not analyzed before, concerning Hebrew-English bilinguals. Finally, two distinct methodological tools are juxtaposed to assess (both initial and post-intervention) linguistic competence in the L2: grammaticality judgment and translation choice. To my knowledge, the combination of L1 Hebrew and L2 English with respect to the unlearning of null subjects (and related properties) and RPs in the L2, along with the effect of input flood combined with EPE upon L2 acquisition, have not been tested before.

**Theoretical Background**

Relatively few classroom intervention studies have explored the ways in which generative theory can facilitate language teaching (e.g., Gil, Marsden, & Whong, 2013, 2017; Hirakawa, Shibuya, & Endo, 2019; Umeda et al., 2019), although the potential benefits of such a symbiosis have gained more attention in recent years (Rothman, 2008, 2010; Marsden, Whong, & Gil, 2018; Marsden & Slabakova, 2018; White, 2018; a.o.). This research project aims to shed light precisely on this bidirectional relation between theory and practice. It explores the ways in which the input that learners are exposed to should be manipulated in order for L2 acquisition to proceed in a way that imitates L1 acquisition, as well as the ways in which instructed L2 acquisition can provide evidence for/against theoretical proposals.

The project adopts the hypothesis that humans are born with an innate faculty referred to as Universal Grammar (UG), which guides the process of L1 acquisition. Specifically, it puts to the test the meso-parametric proposal (Biberauer & Roberts, 2012, 2015, 2017; Roberts, 2019), which argues that UG consists of (at least) micro-parameters (i.e., formal features associated with functional categories/heads), and that several micro-parameters are aggregated under a single meso-parameter due to principles of computational efficiency. The acquisition of the Null Subject (Meso-)Parameter in the L2 allows us to examine this view.

The project further aims to determine whether UG constrains L2 acquisition in the same way it constrains L1 acquisition. Namely, whether UG is fully accessible during L2 acquisition (Schwartz & Sprouse, 1996; White, 2003; García Mayo, 2009; Snape, García Mayo, & Gürel, 2013, i.a.), only partially accessible in the L2 (e.g., Beck, 1998; Hawkins & Chan, 1997; Tsimpli & Dimitrakopoulou, 2007; Tsimpli & Mastropavlou 2007), or inaccessible to L2 learners (e.g., Clahsen & Hong, 1995; Meisel, 1997; Neeleman & Weerman, 1997; Bley-Vroman, 2009). In this respect, the study puts to the test three hypotheses:

1. Full access to UG, which predicts grammar restructuring to cohere with the meso-parametric view in the NSP study (i.e., the NSP properties should be acquired as a cluster) and with Keenan and Comrie’s (1977) Accessibility Hierarchy in the RP study (i.e., RP rejection should generalize to all relativization sites, but should be regulated by the positions’ accessibility);
2. Sorace’s (2000 et seq.) Interface Hypothesis, which accounts for L1/L2 differences in terms of problems at the interfaces of the syntactic component with other components, e.g., the pragmatic one;
3. The Interpretability Hypothesis (Tsimpli, 2003; Tsimpli & Mastropavlou, 2007; Tsimpli & Dimitrakopoulou, 2007), which propounds that only interpretable features (i.e., semantic features that are visible at the LF interface), are accessible during L2 acquisition, while uninterpretable features (i.e., purely morpho-syntactic formal features) are inaccessible to learners and cannot be used to analyze L2 input

The NSP and RP studies also inspect whether all properties are inherited from the L1 in L2 acquisition (i.e., *full transfer*; e.g., Schwartz & Sprouse, 1996; García Mayo, 2009; Snape, García Mayo, & Gürel, 2013), or if only some syntactic categories and properties are inherited (i.e., *partial transfer*; e.g., Eubank, 1993/1994; Grondin & White, 1996; Vainikka & Young-Scholten, 1996; Yuan, 2001).

In terms of the role of input in L2 acquisition, this research project combines the field of L2 acquisition with that of language pedagogy. It thus inspects the effect of explicit positive evidence (EPE): Input flood involving a high frequency of target forms (Wong, 2005), which are determined as such by generative approaches, accompanied by explicit emphasis upon these forms. The study thus inspects the effect of explicit instruction upon L2 acquisition, which is often disputed: Some argue that knowledge achieved via explicit instruction is conscious and metalinguistic in nature (e.g., Schwartz & Gubala-Ryzak, 1992; Schwarz, 1993; Ellis, 2005), while others claim that explicit instruction can affect learners’ subconscious competence in the L2 (e.g., Long & Rothman, 2013; Whong, Marsden, & Gil, 2013; VanPatten & Rothman, 2014).

**Research Questions**

The current research aims to contribute the abovementioned debates, spanning L1 transfer, UG accessibility in L2 acquisition, and the effect of input flood with EPE upon learners’ subconscious knowledge. In order to do so, one has to deal with syntactic phenomena in which the L1 differs from the L2. The current study thus examines the NSP properties (null subjects, post-verbal subjects, and complementizer-traces sequences) and resumption in relative clauses in Hebrew-speaking youngsters (L1: Hebrew) learning English as an L2. Hebrew and English differ with respect to these phenomena, with English being a non-null-subject, non-resumptive language, which disallows null and post-verbal subjects, complementizer-traces sequences, and RPs, and Hebrew being a resumptive, inconsistent null-subject language, which does allow (and sometimes requires) null and post-verbal subjects, complementizer-traces sequences, and RPs.

 Several questions are thus addressed, pertaining to various interrelated disciplines: linguistic theory, L2 acquisition theory, applied linguistics (language instruction), and linguistic methodology. Concerning linguistic theory and L2 acquisition, the following questions are investigated:

1. Is L2 acquisition qualitatively different from L1 acquisition? More specifically, under the generative framework, to what extent is UG accessible during L2 acquisition?

Namely, given that the L1 influences at least some aspects of the L2 grammar,

1. Are all properties transferred from the L1 to the L2 (i.e., full transfer), or a subset of them (i.e., partial transfer)?
2. Can wrong “inherited” patterns undergo restructuring?
3. Which areas of the L2 grammar demonstrate vulnerability, namely, are more susceptible to persistent effects of the L1?
4. If restructuring is possible, and some areas prove more vulnerable than others, which theoretical approach can better account for the data: full access (including the meso-parametric view in the NSP study and the Accessibility Hierarchy or a configurational account in the RP study), the Interface Hypothesis, or the Interpretability Hypothesis?

As for applied linguistics and linguistic methodology, this project addresses the following queries:

1. Can L2 acquisition processes become more automatic and unconscious, similarly to L1 acquisition processes, when triggered by input flood enhanced by EPE?
2. If so, can both translation choice and grammaticality judgment tasks detect L2 grammar restructuring?
3. If not, and EPE can only trigger a conscious, effortful learning process, can explicit knowledge affect implicit knowledge?

**Methodology**

Both the NSP study and the RP study involved cross-sectional (463 participants: 236 in the NSP study and 227 in the RP study) and longitudinal (333 participants: 164 in the NSP study and 169 in the RP study) designs. Two phenomena were inspected. The NSP study examined the properties of null subjects (both expletive and referential, in all persons and tenses), post-verbal subjects (following both transitive and unaccusative verbs), and complementizer-trace sequences (involving both *if* and *that* as complementizers, as well as both D-linked and non-D-linked *Wh*-phrases). The RP study examined RPs in four relativization sites: subject, direct object, indirect object, and oblique (involving mainly animate RPs, but also inanimate ones in the direct object position).

The studies examined 18-year-old Hebrew-speakers learning English as an L2 concerning each of the phenomena under inspection. Both studies involved five stages. First, learners’ proficiency in English was determined as intermediate based on a placement test. Second, learners were tested pre-teaching concerning the relevant phenomena to determine L1 transfer and to ensure these learners’ L2 grammar differed from the target (English) grammar. The tests involved a binary grammaticality judgment and correction task, and, in the case of the NSP study, a Hebrew-to-English translation choice task as well. The third phase involved the division of the participants into two groups, and their exposure to the same input flood: texts abundant with occurrences of a certain construction related to the phenomenon being taught. The input in the NSP study involved an abundance of expletive elements (both *It* and *There*), while the input used in the RP study included a copious amount of gapped relative clauses (involving mostly subject, direct object, and oblique relativization sites). The texts were read in class and translated into the learners’ L1 (Hebrew). The only difference between the two groups was that in one of them the learners’ attention was drawn to the construction appearing repeatedly in the input, and English and Hebrew were juxtaposed concerning this construction (+EPE), while in the other group the construction was not referred to explicitly (-EPE).

In the fourth stage, learners were tested immediately post-teaching to evaluate the immediate effects of teaching and the extent of post-teaching grammar restructuring. These tests involved the same task type(s) used in the second stage, namely, grammaticality judgment in the RP study and both grammaticality judgment and translation choice in the NSP study. The final stage included delayed post-teaching tests, administered a year after the teaching sessions were over. Those meant to examine knowledge retention, and involved the same task type(s) used pre-teaching and immediately post-teaching. Learners’ scores in all three tests were compared to native-speaker controls when a grammaticality judgment task was involved, and to English-speaking learners when a translation choice task was used (as the latter required a working knowledge of both Hebrew and English), in order to inspect whether learners met the native standard or the Hebrew-English bilingual standard concerning the properties under examination.

**Results and Discussion**

The pre-teaching scores of the NSP study indicated that learners managed to unlearn referential null subjects and post-verbal subjects, but not complementizer-trace sequences. As for expletive null subjects, a mixed pattern was revealed, as learners appeared to have unlearned null *It*-expletives in all constructions under examination (extraposition or weather), while null *There*-expletives were only unlearned in existential constructions, but not in *There*-unaccusative constructions. The RP study showed that pre-teaching, learners rejected animate RPs in matrix subject position and inanimate RPs in direct object position, but accepted animate RPs in direct object, indirect object, and oblique positions. In both studies, pre-teaching findings cohered better with full – rather than partial – transfer, and digressions from the full transfer account were explained on methodological or proficiency-related grounds. In terms of pre-teaching grammar restructuring, the findings cohered best with a full access view, supporting the meso-parametric view in the case of the NSP study, and only partially supporting the Accessibility Hierarchy in the RP study. The RP findings conformed better with a configurational account, argued to regulate the resumptive strategy such that greater phrasal discontinuity/length of dependency between the relative head and the relativization site often opts for RPs rather than gaps. Neither the Interface Hypothesis nor the Interpretability Hypothesis could provide an exhaustive account for the findings.

 Immediately post-teaching, the NSP study found that the +EPE learners demonstrated significant improvement only in NSP properties not involved in the input flood and not stressed via EPE in the translation choice task (both D-linked and non-D-linked *that*-trace sequences), and only in properties involved in the input flood in the grammaticality judgment task (null *There*-expletives). The -EPE learners demonstrated significant improvement only in properties involved in the input flood in the translation choice task (null *There*-expletives), and in properties both involved and uninvolved in the input flood in the grammaticality judgment task (null *There*-expletives, referential NSs in first and second persons, and D-linked *that*-trace sequences). Only the +EPE learners’ improvement in properties involved in the input flood in the grammaticality judgment task (null *There*-expletives) was maintained a year post-teaching.

The RP study revealed that both +EPE and -EPE learners improved significantly immediately post-teaching in RP rejection in relative clauses both involved in the input flood (incorporating the direct object and oblique relativization sites) and uninvolved in the input (incorporating the indirect object relativization site). However, only the +EPE learners preserved improvement a year post-teaching, and they did so only concerning the relative clauses involved in the input flood (incorporating the direct object and oblique relativization sites).

The two studies have shown that both input flood alone and input flood combined with EPE can trigger immediate changes in L2 learners’ grammar. This was particularly evident concerning RPs, as both input type groups improved significantly immediately post-teaching concerning resumptive rejection in the same three relativization sites. However, in the long run, only the improvement achieved by the learners exposed to EPE was maintained concerning two of the relativization sites: direct object and oblique, both of which were abundant in the input flood.

In the NSP study, too, both +EPE and -EPE learners improved immediately post-teaching, in both properties present in and absent from the input flood (depending on the task), but only the +EPE learners preserved their immediate post-teaching improvement, and they did so only in properties involved in the input flood. The conclusion that can be drawn is that only exposure to input flood with EPE has a long-term effect upon learners’ performance. Specifically, only properties with which the input is abundant and which receive explicit emphasis by the teacher demonstrated significantly higher accuracy a year post-teaching, compared to pre-teaching scores. Improvement in properties not emphasized by EPE – whether involved in the input flood or not – was not maintained a year post-teaching. This indicates that input flood with EPE proves more beneficial than input flood alone, and that EPE also proves superior to other types of explicit instruction, which do not appear to have long-lasting effects (e.g., White, 1991; Snape & Yusa, 2013; Zhao & MacWhinney, 2018; Umeda et al., 2019).

In terms of grammar restructuring, both studies provide support for universal principles expected to guide language acquisition, such as conditions that concern economy and efficiency of computation. The NSP study provides support for the meso-parametric approach to language variation, which is argued to render the acquisition process more efficient. This is evident in the fact that emphasis upon a certain property results with improvement in another property, which did not receive any emphasis. As for the RP study, the Accessibility Hierarchy is only partially supported, and the findings agree better with a configurational account, which contributes to computational efficiency as well.

The results of the study are nevertheless inconclusive with regard to the ability of EPE to result in implicit knowledge, since the improvement concerning properties uninvolved in the input did not persist in the long run. The process thus seems to tally with unconscious learning, but the end result does not. It is impossible to determine whether this type of input simply cannot lead to implicit knowledge, or whether the persistent lack of exposure to the cues necessary for restructuring in the period that followed the teaching sessions did not enable the learners to finalize the restructuring process. The fact that the learners were not exposed to a substantial number of expletives or relative clauses between the immediate and delayed post-teaching tests might have undone the improvement instigated by the exposure to the initial input.

Finally, concerning linguistic methodology, the NSP study indicated that, when it comes to detecting the presence or absence of functional elements, grammaticality judgments prove to be a less reliable tool than translation choice, at least in the way grammaticality judgments were administered in the current study. Learners proved less accurate in the grammaticality judgment task and controls’ performance in this task was subpar as well. These findings are attributed to the nature of this task, which requires a careful, word-by-word reading that contrasts with “natural” reading. In the case of the latter, readers pay attention to larger units of meaning and tend to “ignore” function words.

The research is thus interdisciplinary and has implications for four interrelated domains: theoretical linguistics, L2 acquisition theory, linguistic methodology, and applied linguistics (language instruction). Concerning linguistic theory, the findings provide some evidence regarding theories of linguistic variation ((meso-)parameters). In the field of L2 acquisition, the study offers answers to queries of UG access, the (persisting) effect of L1 transfer, and the possibility for L2 grammar restructuring. In terms of linguistic methodology, the findings validate the reliability of tasks other than grammaticality judgments, such as translation choice, when it comes to tapping linguistic competence in the L2. As for applied linguistics, the long-term effects of EPE upon learners’ performance in the L2, which was observed in both the NSP and RP studies, should be desired by any language teaching practitioner. Moreover, the finding that EPE concerning certain phenomena can trigger improvement in other phenomena is important for designing optimal teaching methods (and materials) tailored to specific linguistic phenomena and to speakers of distinct L1s, and has the potential to revolutionize the area of language teaching.