

DEAF STUDENTS' ACQUISITION OF DIVERSE LEXICAL PROPERTIES OF ENGLISH VERBS: NEW GUIDANCE FOR ENGLISH TEACHING, LEARNING, AND ASSESSMENT

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ABSTRACT

This paper reports results of novel research focusing on deaf and hard-of-hearing (DHH) students' knowledge of diverse properties of English verbs. Because verbs form the core of sentential propositions, their inherent properties determine the structures and meanings of entire sentences. Accordingly, verb acquisition is central to successful language acquisition. The purpose of this paper is to share new detail on DHH students' relative knowledge in previously unexplored lexical domains of English verbs, focusing on verb-determined transitivity/intransitivity properties, semantic roles, and argument realizations. A 306-item sentence acceptability rating-scale task was developed and administered to 120 college-level DHH students and to two comparison groups, 120 hearing students of English as a second language (ESL) and 40 hearing native speakers (NS) of English. Appropriate statistical tests examined group differences between the DHH students and the two comparison groups and, for the DHH and ESL students, between three levels of overall English language proficiency. Results yielded group differences among the three participant groups and differences across the three English proficiency levels, as well as many performance parallels between the DHH and ESL participants. The results provide new insights into DHH students' English language knowledge in previously unexplored areas and guidance for new teaching methods and materials and for more fine-grained English assessments.¹

INTRODUCTION

English Language Learning

The acquisition of English language knowledge remains one of the most formidable challenges to DHH students' educational progress and success (Karchmer and Mitchell 2003; Qi and Mitchell 2007). The enormity of the challenge has not been matched by a sufficiently large and sustained body of research devoted to a better understanding of DHH students' English language development and to the search for more effective English teaching methods, materials, and assessments for DHH students. Furthermore, to a considerable extent, research on DHH students' English acquisition has not kept up with theoretical developments in fields that provide the contexts for much of the English language research targeting other populations such as hearing ESL learners.

To address some of the fundamental English challenges, a comprehensive research agenda is underway that examines college-level DHH students' knowledge of inherent properties of English verbs and the sentence structures that verbs participate in as guided by their inherent properties. One of the research questions examined in this research is whether and how lexical knowledge of English verbs varies among students who differ in overall English proficiency as assessed through global measures such as the Michigan Test of English Language Proficiency (2003). Isolating specific lexical domains associated with verbs might uncover variation in lexical knowledge that is not predicted by global assessments of English proficiency. The DHH students' English verb knowledge is assessed relative to two comparison groups, hearing college-level ESL students, also grouped into overall English proficiency levels on the basis of their Michigan Test scores, and college-level hearing native speakers of English.

Targeted Lexical Domains

Year 1 of this program of research targeted three broad areas within which the lexical properties of verbs establish the morphological and syntactic structures available to specific verbs and the semantic interpretations derived from these structures: (i) transitivity and intransitivity, (ii) semantic roles—that is, the functions (e.g., AGENT, THEME, INSTRUMENT) of a verb's "arguments" (subjects and objects), and (iii) argument realizations and

alternations—that is, the sentence patterns and variations permitted by specific verbs. Year 2 assessments are targeting linguistic event structures and event types.²

METHOD

A 306-item sentence acceptability 6-point rating scale task was devised for assessing research participants' knowledge of lexical properties of verbs in the three domains listed above. The format and sample items on the sentence acceptability task are shown in Table 1. Participants were instructed to read each sentence carefully and to decide how "acceptable" or "unacceptable" the sentence feels to them. If the sentence, in their opinion, seems completely acceptable, they should circle the number 6 on the scale (= DEFINITELY GOOD). If the sentence seems completely unacceptable, they should circle the number 1 (= DEFINITELY BAD). It was explained that some of the sentences might feel not exactly acceptable or not exactly unacceptable and that, in that case, they should circle a 2, 3, 4, or 5 to show how bad or how good a sentence feels in their opinion.

In testing hypothesized performance, predicted acceptability patterns were tied to hypotheses associated with English properties and English development from the linguistics and first and second language acquisition research literatures. Analysis of variance (ANOVA) was employed to explore any significant group differences between the DHH, ESL, and NS participant groups. Separate ANOVAs were employed to explore any significant differences on the basis of overall English proficiency level within the DHH and ESL groups. Within each of those groups participants were grouped on the basis of their Michigan Test scores into "High English" (76-100), "Mid English" (60-75) and "Low English" (≤ 59) levels.

Table 1. Sentence Acceptability Rating-Scale Task Format and Sample Items

	DEFINITELY BAD			DEFINITELY GOOD		
(1) Jose lent Christopher five dollars.	1	2	3	4	5	6
(2) A bright light was appeared in the sky.	1	2	3	4	5	6
(3) The professor carefully explained.	1	2	3	4	5	6
(4) The girls poured the dog with water.	1	2	3	4	5	6
(5) James watched onto after green the carry thin.	1	2	3	4	5	6
(6) The sun dried the clothes.	1	2	3	4	5	6

SAMPLE HYPOTHESES AND RESULTS

In the results of the various hypothesis-driven analyses, as predicted, the NS group outperformed the DHH and ESL groups in the accuracy of their acceptability judgments. Furthermore, in the results of the majority of the group (DDH, ESL, NS) ANOVAs, the DDH and ESL groups exhibited largely parallel performance. This parallel performance is consistent with the results of several other research studies comparing the English language knowledge of DDH and ESL learners (Berent 1983; Berent, Kelly, and Schueler-Choukairi 2009, 2012). These parallels can be explained on the basis of the inherent relative complexities of the targeted language structures or their syntactic or semantic derivations. Both DHH students and ESL students experience restricted access to the target language (i.e., English) input. In the case of the DHH population, it is their variably restricted access to the spoken-language input otherwise available to hearing learners of spoken languages. In the case of the ESL population, it is the neurological, cognitive, and affective factors that constrain later language acquisition. These constraints variably restrict the internalization of the linguistic input otherwise necessary for successful acquisition. Under restricted access to the target language input, DHH and ESL English learners acquire inherently less complex linguistic forms and structures more successfully than the inherently more complex forms

and structures, resulting in the parallels that are observed across a variety of English language domains (Berent 2009). A small sample of the research results is summarized below.

Overgeneralization of Passive Morphology

The following analysis was one of the only analyses that yielded a performance difference between one specific DHH proficiency level group and all of the other learner groups. Sentence (2) in Table 1 reflects a phenomenon observed among ESL learners and anecdotally reported for DHH learners. Learners often both produce and accept sentences containing the passive form (*was appeared*) rather than the required active form (*appeared*) of so-called “unaccusative” verbs (Zobl 1989). The subject of an unaccusative sentence, such as *A bright light* in (2), is more like the subject of a passive sentence, as in *A bright light was shined at the car*, than the subject of an active sentence, as in *Maria shined a bright light at the car*. In the active sentence, the animate subject *Maria* is an AGENT that initiates the action expressed by the verb, whereas the direct object *a bright light* is a THEME affected by the action, just as the subject of the passive sentence is a THEME. Accordingly, the subjects of passive and unaccusative sentences are semantically similar. However, the subject of another kind of intransitive sentence, so-called “unergative” sentences, as in *Stavros swam in the river*, is semantically an AGENT like the subject of a transitive sentence in that it initiates the action expressed by the verb. English learners rarely use or accept unergative passive sentences such as *Stavros was swum in the river*.

The theoretical explanation for these observations is that, because learners come to associate passive morphology with THEME (i.e., non-AGENT) subjects, they sometimes overgeneralize passive morphology to unaccusative, but not unergative, intransitive sentences (Oshita 2001). Therefore, it was hypothesized that the learner groups would exhibit relatively higher acceptance of “unaccusative passive” sentences such as (2) than “unergative passive” sentences. Furthermore, it was hypothesized that the learners would exhibit higher acceptance of grammatical transitive passive sentences (e.g., *A bright light was shined at the car*.) than the two ungrammatical intransitive sentence types. The ANOVA results of a significant 3-way interaction (passive type x group x proficiency level), $F(4, 470) = 3.42, p < .01$, are illustrated in Figure 1.

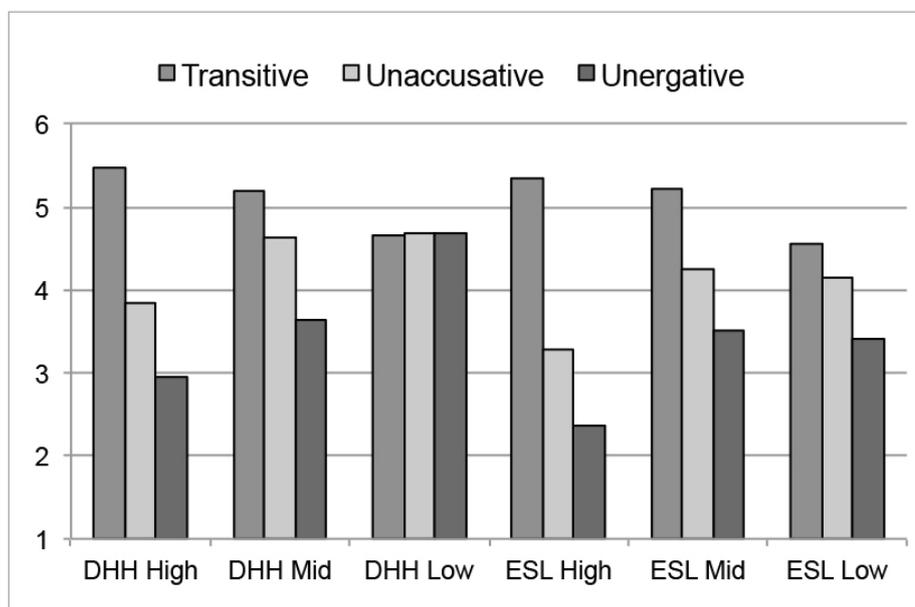


Figure 1. Acceptance of transitive, unaccusative, and unergative passive sentences.

Figure 1 reveals that the hypothesized performance was confirmed for all groups except the Low English DHH group. The ESL High English group was the most accurate in its high and low acceptance patterns for the three sentence types, respectively, followed by the DHH High English group. The other groups exhibited the same acceptance pattern but

with somewhat higher acceptance of the two ungrammatical passive sentence types. The most striking result is the DHH Low English group's inability to discriminate between the three sentence types, with relatively high and equivalent acceptance rates on all three. They differed in this regard even from the ESL Low English group, with whom they were matched in overall assessed English proficiency. The DHH Low English group's performance suggests low or non-acquisition of English passive morphology, knowledge required to distinguish the three sentence types. Accordingly, DHH college students scoring within the lowest Michigan Test range may be vulnerable to the consequences of a more serious English morphological deficiency than those scoring above that range.

Psych Verbs

The following analysis yielded a difference between the Low English proficiency level (DHH and ESL combined) and the Mid and High English levels. One type of English "psych verb" is *fear*-type verbs, in which the sentence subject is the EXPERIENCER of the psychological state and the direct object is the STIMULUS (cause) of the psychological state, as in *Stevan fears disease*. Another type of psych verb is *frighten*-type verbs, in which the sentence subject is the STIMULUS and the direct object is the EXPERIENCER, as in *Darkness frightens Helena*. It was hypothesized that the learner groups would exhibit greater knowledge of the EXPERIENCER subject sentences than the STIMULUS subject sentences because an EXPERIENCER is always animate and cross-linguistically sentence subjects are overwhelmingly animate. Knowledge of *frighten*-type verbs was further assessed through the inclusion of ungrammatical sentences containing a *frighten*-type verb but an EXPERIENCER subject, as in **Chloe frightens sickness*. It was further hypothesized that, with increasing overall English proficiency, the learner groups would show lower acceptance of the ungrammatical EXPERIENCER subject sentences.

The participant group (DHH, ESL, NS) ANOVA results revealed very high acceptance by the NS group of both the EXPERIENCER subject and STIMULUS subject sentences and very low acceptance of the ungrammatical EXPERIENCER subject sentences. Once again the DHH and ESL groups exhibited parallel performance, with highest acceptance of EXPERIENCER subject sentences, lower acceptance of STIMULUS subject sentences, and lowest acceptance of ungrammatical EXPERIENCER subject sentences. However, the learner group/proficiency level ANOVA results yielded a significant sentence type x proficiency level interaction, $F(4, 570) = 34.32, p < .0001$, which is illustrated in Figure 2. The figure reveals, as hypothesized, higher acceptance of both the EXPERIENCER subject and STIMULUS subject sentences as overall English level increases. For the ungrammatical EXPERIENCER subject (*frighten*) sentences, acceptance decreased as proficiency level increased, as predicted. The figure shows that the Low English proficiency group (DHH and ESL combined) accepted as many grammatical STIMULUS subject sentences as ungrammatical EXPERIENCER subject sentences, suggesting little, if any, acquisition of the lexical properties of *frighten*-type psych verbs at that level.

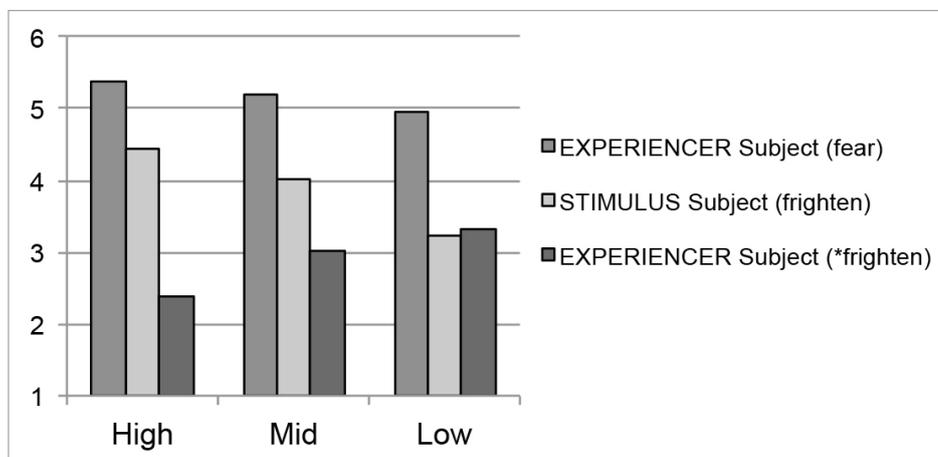


Figure 2. Acceptance of psych verb sentence types by English proficiency level.

IMPLICATIONS

The discussion above includes just a small amount of detail regarding the kinds of lexical domains that are being explored in this program of research on DHH students' acquisition of English verbs and their lexical properties. Along with assessed verb knowledge in many other lexical domains, a broad and detailed picture is emerging of DHH students' knowledge of diverse types of English verbs along with associated morphological, syntactic, and semantic knowledge. What this program of research reveals is that the mental grammars of DHH students, including their mental lexicons, are principled systems (Berent 2009) exhibiting great variation and relative degrees of acquisition of the diverse properties of English. Relative degrees of success in the acquisition of verbs and their properties can be explained, to a considerable extent, on the basis of relative complexities inherent in the forms and structures themselves. The numerous parallels in lexical knowledge observed between the DHH participants and the ESL participants provide strong empirical support for the principled nature of DHH students' developing English lexical and grammatical knowledge.

With respect to pedagogical implications, the parallels between the DHH and ESL participants suggest that principled methods and materials developed, justified, and employed within the vast field of ESL teaching need to be exploited to greater extents than is currently the case. In view of the fact that DHH students, unlike hearing ESL students, are primarily visual learners, visually based teaching methods, such as the successfully implemented methodologies in Berent et al. (2007) and Berent, Kelly, Schmitz, and Kenney (2009), need to be continually developed and tested in classrooms in which English is taught to DHH students. Specific lexical domains explored in this program of research in which wide variation in DHH students' English lexical knowledge is uncovered should be incorporated into English assessment measures to provide more sensitive, fine-grained English assessments for educational purposes.

ENDNOTES

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²For the results of pilot research that preceded this grant research, see Berent et al. (2013).

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