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THE IMPACT OF ALPHABETIC PRINT LITERACY LEVEL ON ORAL SECOND LANGUAGE ACQUISITION¹

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1 Introduction

The complex relationship between literacy in one's first and second languages (L1 and L2 respectively) and oral skills in one's L1 and L2 has been only partially examined. Table 1 shows that until recently there have been two primary research emphases: (1) the impact of L1 oral forms (C) on the acquisition of L2 oral forms (D), and (2) the impact of L1 literacy (A) on the acquisition of L2 literacy (B) (e.g., Cummins, 1981).

Table 1: *Primary Emphases in Second-Language Acquisition Research*

	L1		L2
Literacy	A. L1 Literacy	↔	B. L2 Literacy
Oracy	C. L1 Oral Forms	↔	D. L2 Oral Forms

Second language acquisition (SLA) research has seldom crossed modalities to explore the impact of L1 and L2 literacy (A and B above) on the acquisition of L2 oral forms (D above). Particularly in recent years, SLA researchers have typically focused on the L2 speech production of school and university learners who were assumed to be literate in both L1 and L2. Although Europe has a long tradition of research projects focused on L2 learners with low levels of education, North American research has not for the most part focused on the SLA of low-educated learners. And even when low-educated L2 learners have been the object of study, their literacy levels have almost never been measured, nor has research focused

¹ We want to thank the Somali participants who trusted us enough to provide the data for this study. This research was partially funded by the University of Minnesota's Graduate School Grant-in-Aid-of-Research Program and College of Liberal Arts Graduate Research Partnership Program. We were assisted by graduate students Kim Johnson, Larry Davis, Mike Hinrichs, and Becky Uran Markman. Bob delMas, a co-author of Bigelow, delMas, Hansen & Tarone (2006), did the statistical analysis, and Bonnie Swierzbins, co-author of Tarone, Swierzbins & Bigelow (2007), performed an analysis of the narrative data. An earlier version of this paper was presented at the LESLLA Conference, Virginia Commonwealth University, Richmond, Virginia, on Nov. 2, 2006; we are grateful for the suggestions and input of participants at that conference.

on the impact of literacy on oral L2 skill development²) (Bigelow & Tarone, 2004). This is a problem. There are increasing numbers of low literate and illiterate L2 learners world-wide. Their teachers tell us that there is something very different about the way they learn oral L2. But we have almost no research to tell us what these individuals are doing when they acquire oral L2 skills. To our knowledge, the study reported in this paper is the first to examine the impact of L1 and L2 literacy on the processing and acquisition of L2 oral forms.

2 Literature Review

2.1 Oral Language Processing by Illiterate Adults

One group of scholars has crossed this boundary between literacy research and oracy research, exploring the impact of L1 alphabetic print literacy³ (A) on L1 oral language processing (C) (see Tarone and Bigelow, 2005, for a detailed summary of their findings). In order to develop tests that might be able to identify brain damage⁴ in an illiterate population, cognitive psychologists needed to find out how normally functioning illiterate adults did on a set of oral language tasks when compared to normally functioning literate adults. What they found was that normally

² Beginning in the 1970s, European researchers carried out large studies of L2 learners who had low levels of education, but these studies did not specifically measure literacy levels in this population. Research on the SLA of low educated adults certainly has been done, but our point is that none of this research, to our knowledge, has specifically measured and targeted the impact of LITERACY level on oral SLA. Educational level and literacy level are not the same thing (see Table 3 of this paper for evidence of this). The Heidelberger Pidgin Projekt began in the 1970s; the European Science Foundation Project (ESF) (Perdue, 1993) looked at impact of educational level on SLA, but didn't measure literacy separately. The ZISA project also tracked level of education but not literacy per se; it distinguished 2 types of learners, those who used "variational" features of L2 (semantically redundant grammatical morphemes like 3ps S or past tense -ED) and those who did not, but did not relate these 2 types of learner to educational level or literacy level.

³ We focus in this paper only on literacy in an alphabetic script, where a written letter corresponds more or less to a phoneme, and words are represented as collections of these letters representing phonemes. This research does not focus on other forms of literacy, such as the ability to read ideographic or logographic scripts. This is because de Gelder et al., 1993, and Read et al., 1986, have shown that Chinese adults who are educated using logographic script, but who do not read an alphabetic script, also get low scores on oral tasks exploring segmental representation of oral language (e.g., deleting the initial consonant of a spoken pseudoword).

⁴ Dellatolas, et al. (2003, p. 772) cite a "need for specific norms in the normal illiterate population for assessing neuropsychological functions in brain-damaged illiterates," referring to research and assessments developed by Ardila, 2000, Ostrosky-Solis et al., 1999, and Roselli et al., 1990.

functioning literate and illiterate adults performed the same on some oral tasks but very differently on others.

Illiterate and literate adults (closely matched in social background) did equally well on oral tasks focused on rhyme and phonetic discrimination; for example, “Do these words rhyme? Bird/word.” Or, “Do these words begin with the same sound? Pen/Ken.” Literate and illiterate adults also did equally well on oral tasks focused on meaning, such as repeating lists of words they knew the meaning of, or in fluency tasks focused on meaning (e.g., “Name all the animals you can think of in a minute”). But the illiterate adults in study after study did significantly worse than literate participants on oral tasks that required an awareness of language forms, such as individual phonemes, syllables, or words. They had substantial trouble repeating lists of “pseudowords” (phonologically similar to real words but meaningless); doing phonological fluency tasks (e.g., “Say all the words you can think of that begin with /p/.”); doing phoneme deletions (e.g., “If you take the ‘t’ off of ‘tres’, what do you have?”), phoneme reversals (e.g., “What is ‘sol’ backwards?”); and syllable reversals (e.g., “What is ‘kade’ backwards?”) (Reis & Castro-Caldas, 1997; Adrian, Alegria & Morais, 1995).

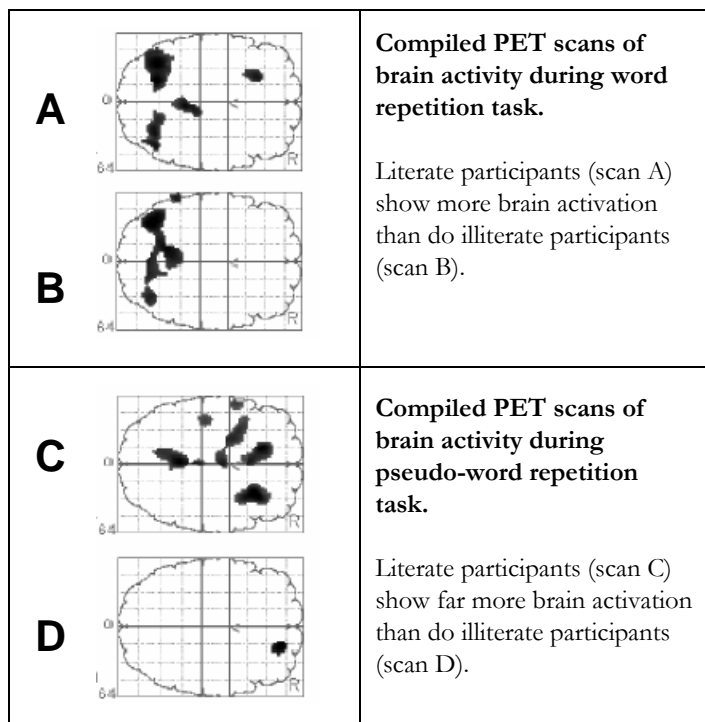
More recently, PET brain scans have shown that oral repetition of pseudowords involves neural structures that differ between literates and illiterates⁵ (Castro-Caldas, et al., 1998, p. 1057). In other words, learning to read and write an alphabetic script alters the language network in the human brain (Petersson, et al., 2000).

Alphabetic literacy seems to provide us with tools and strategies for processing language forms that are separated from their meanings:

Literate individuals develop a strategy where visual-graphic meaning is given to units that are smaller than words, units with no semantic meaning. These segments are introduced sequentially in a working memory system with a new content of visual experience. Then we can play with those written symbols, each coded to a sound, for example, to form pseudowords with no semantic meaning. This involves conscious phonological processing, visual formal lexical representations, and their associations – all of which are strategies available to literates and not illiterates. (Reis & Castro-Caldas, 1997, p. 445)

⁵ PET scans show that the brains of literate and illiterate adults repeating meaningful words are similarly activated. Since their performance in repeating meaningful words is similar, this should not be surprising.

Figure 1: PET Scans of Literate and Illiterate Brain Activity During Word and Pseudo-Word Repetition Tasks (Petersson et al., 2000).



2.2 Oral L2 Processing by Low Literate Adolescents

If literacy affects performance on native language oral tasks, then it must surely have a similar impact on second language oracy. In 2003 we initiated what we believe to be the first SLA project to focus on the oral L2 skills of low literate learners. We worked with a large group of recent immigrants from Somalia, many of whom had spent a decade in refugee camps with little to no opportunity to become literate in any language; they had had little schooling since arriving in the U.S. (see Table 3 below for specifics). There was therefore a range of alphabetic print literacy levels to be found in this group. We chose to replicate research designs in three areas of oral SLA research where we could compare our findings with findings for literate learners; we refer to these three sub-studies as Study 1, Study 2 and Study 3, respectively:

Study 1: Corrective feedback: What do L2 learners notice when they are given oral corrections? Accurately repeating an oral correction focused on a grammar error one has made requires awareness of and ability to manipulate meaning-less language forms. This kind of SLA study can be replicated entirely orally with illiterate or low literate L2 learners.

Study 2: Elicited imitation: Does literacy level affect a L2 learner's ability to repeat a fairly long oral L2 utterance? Elicited imitation is a standard technique in SLA studies that is understood to assess short-term memory and indicate what grammar forms have been internalized by the L2 learner. This established methodology can be used with illiterate and low literate learners, and can be done entirely orally.

Study 3: Oral narrative: Does literacy level affect the grammatical forms used when second language learners produce oral narratives? Again, this is an established methodology, and can be done completely orally, without requiring a reading ability on the part of the learner.

3 *The Research Project*

3.1 *Target Grammatical Form*

In Study 1 and Study 2, we chose to focus on our learners' production of English questions. There is now clear evidence that L2 learners (literate ones, anyway) acquire questions in English L2 in an established developmental order consisting of 6 stages of acquisition. Those stages are claimed to be the same for all learners, being based on changes in word order, and are represented in Table 2. Note there are 6 stages, beginning with one-word questions like "Why?", moving through questions with SVO word order "This is picture?" to questions with subject-verb inversion and do-support, like "What does she hold in her hand?"

3.2 *Participants*

We gathered data from 35 participants, all adolescent or adult Somali immigrants living in Minnesota. They reported having had varying levels of schooling before coming to the U.S., but because this reported "schooling" often took place in refugee camps, where attendance,

Table 2: *Stages of Question Formation in English* (Pienemann, Johnston & Brindley, 1988)

Stage	Examples
1a: Single words	Why? This? Scissors? Red?
1b: Single units	A boy? To who? What else? What color?
2: SVO word order	This is picture? *They stay oceans?
3a: Fronting wh-	What he is doing? *Why he is stopped the car?
3b: Fronting do	Do you have flowers? *Does he going home?
3c: Fronting other followed by uninverted sentence	Is he is mad? *Is he have neighbor?
4a: Inversion: yes/no questions with auxiliary or copula	Is she mad about that? So is he going to drive the car? *Has he answering the phone?
4b: Inversion: yes/no questions with modal	Can he see because of the snow? Can you repeat that?
4c: Inversion: wh- questions with copula (not aux)	What is this lady? *Where are this place? Why is he surprised? Which color is yours?
5a: Inversion: Auxiliary (e.g., <i>is</i>) in 2nd position	*Who is the woman who talk to the girl? Who's buying it? What's he doing? What's she going outside for?
5b: Inversion: Do operator (e.g., <i>does/do</i>) in 2nd position	What does she hold in her hand? *What does she asking for, this girl? How do you call it? *Why did he crying?
5c: Inversion: Modal (e.g., <i>may</i>) in 2nd position	Who may be calling? Where will she take this?
6b: Negative question with do operator	Doesn't she want to come in?

methodology, & content are unknown, reported years of schooling in our population can't be assumed to relate reliably to ability to read. Because

we needed to demonstrate the impact of alphabetic literacy level⁶ on SLA, we developed and administered an independent objective measure of alphabetic literacy level. We used the Native Language Literacy Screening Device (NLLSD) shown in the references and devised the rating scale in Appendix A to rate the performance of our participants on the NLLSD on a scale from 0 (no literacy) to 9 (moderate literacy).

3.2.1 Participant Group Assignment for Study 1 and Study 3

Eight of the 35 original participants were selected based on both their L1 and L2 literacy scores on this rating scale. The low literacy group had mean⁷ scores on the literacy measure ranging from 3.5 to 6, while the moderate literacy group had mean scores ranging from 8 to 9. The 8 participants who took part in Study 1 and Study 3 are shown in Table 3.

Table 3: Participant Profile for Study 1 and Study 3

ID	Age	Gen- der	Literacy level			Develop- mental stage	Years schooling		Years in U.S.
			Mean	L1	L2		L1	L2	
Abukar	15	M	5	4	6	5	0	4.5	4.5
Najma	27	F	5.5	5	6	5	7	1.5	3
Ubax	17	F	3.5	0	7	5	0	3	3
Fawzia	20	F	6	6	6	5	0	3	3
Khalid	16	M	8.5	8.5	8.5	5	0	7	7
Faadumo	18	F	9	9	9	5	0	3	3
Moxammed	17	M	9	9	9	5	0	7	7
Sufia	15	F	8	9	7	5	0	3	3

Notice that, as predicted above, reported years of schooling and literacy level do not coincide for these individuals. For example, four participants reported having had 3 years of schooling but their literacy levels were very different: 3.5, 6, 9 and 9. Notice also that their stage of acquisition of

⁶ As Tables 2 and 3 show, we cannot trust “years of schooling” to be a reliable measure of literacy level.

⁷ The mean literacy scores were the average of the L1 literacy score and the L2 literacy score. Alphabetic print literacy in either or both languages can be assumed to affect oral L2 processing.

English questions, based on the criterion that they could produce at least two non-formulaic interrogatives of any given stage, was the same: all had reached stage 5.⁸

3.2.2 Participant Group Assignment for Study 2

The participants in Study 2 on elicited imitation were slightly different. This occurred because, after analysis for Studies 1 and 3 had been completed, we learned that 2 of those participants (one in each literacy group) had not completed their elicited imitation tasks. For this report, we replaced those 2 with participants who had completed EI tasks and were as similar to the originals as possible in all other regards. Table 4 provides detailed information on the participants in Study 2 on elicited imitation.

Table 4: Participant Profile for Study 2

ID	Age	Gen- der	Literacy level			Develop- mental stage	Years in schooling		Years in U.S.
			Mean	L1	L2		L1	L2	
Abukar	15	M	5	4	6	5	0	4.5	4.5
Najma	27	F	5.5	5	6	5	7	1.5	3
*Ghedi	16	M	2.5	0	5	5	0	3	3
Fawzia	20	F	6	6	6	5	0	3	3
*Zeinab	33	F	7.5	8	7	5	4	1	1
Faadumo	18	F	9	9	9	5	0	3	3
Moxammed	17	M	9	9	9	5	0	7	7
Sufia	15	F	8	9	7	5	0	3	3

*asterisk indicates different participant from those in Table 3

⁸ Not shown on Table 2 are the participants' SPEAK test scores: we asked trained raters of the Test of Spoken English to listen to tapes of their speech and assign SPEAK test scores. SPEAK test scores of the two literacy groups in Table 2 were exactly the same; within each literacy group, the first participant had a SPEAK test score of 50, the next two had scores of 40, and the last had a score of 30.

3.3 Data Collection

Data were collected for Studies 1, 2, and 3 in the course of one or two individual sessions carried out individually, always with the same researcher. All the data collection was carried out in non-school settings. Each session followed the same data elicitation procedures:

- Introductory conversation
- Two spot the difference tasks
- Three story completion tasks
- Three story retell in narration
- Two elicited imitation⁹ tasks
- Literacy measure (L1 then L2)

3.4 Study 1: Literacy, Recasts and Oral L2 Language

Study 1 on learner processing of corrective feedback (fully reported in Bigelow, delMas, Hansen & Tarone, 2006), was a partial replication of Philp (2003)'s exploration of the impact of proficiency level, sentence length and complexity on the ability of L2 learners to recall recasts (described below). As with most SLA studies on corrective feedback, all of Philp's participants were university educated and highly literate L2 learners. Learners in her study asked questions about a series of pictures; when they made grammatical errors with question formation, the interviewer provided a recast (a correct version of the erroneous question), alerting them to the recast by knocking on the table. Upon hearing a knock, the learners were supposed to repeat the recast (correct) question.

Participant <u>Trigger</u> :	What she doing?
Researcher <u>Recast</u> :	What is she doing? [2 knocks]
Participant <u>Recall</u> :	What is she doing? (correct)

Philp (2003) asked what affected L2 learners' ability to accurately recall the recast, and found that, for her participants, proficiency level, number

⁹ The Elicited Imitation task required participants to produce 28 English questions, each one eight syllables long, of the following types:

- Stage 4 copula in wh-Q: What is the name of the teacher?
- Stage 5 inversion wh-Q (no do support): What is the new drug store selling?
- Stage 4 aux in yes/no Q: Is she nice to the young children?
- Stage 6 embedded Q: Would you ask if I can attend?

of changes the recast made to the trigger utterance, and length of the recast all made recall more difficult.

In replicating this study by Philp, we added literacy level as a grouping variable, and proportion of correct or modified responses (combined) in the recall as a dependent variable.

3.4.1 Research Questions

We asked the following research questions in Study 1 on recasts:

- Is the ability to recall¹⁰ a recast related to the literacy level of the learner?
- Is the ability to recall a recast related to the length of the recast?¹¹
- Is the ability to recall a recast related to the number of changes¹² made by the recast?

¹⁰ *Accuracy of recall* was operationally categorized as correct, modified, or no recall. An example of “no recall” is:

Trigger: What color it is?

Recast: What color is it?

Recall: What colorrrrr (no recall)

¹¹ In measuring *length* of recast, we considered long recasts to consist of 6 or more morphemes, and short recasts to consist of 1-5 morphemes. An example of a short recast is:

Trigger: Why he's so happy?

Recast: Why is he so happy? [2 knocks]

An example of a long recast is:

Trigger: What he doing, the man in the sitting chair?

Recast: What is the man sitting in the chair doing?

¹² The *number of corrections in the recast* focused on whether there were fewer or more than 2 changes made to the original question. Below is an example of more than 2 changes:

Trigger: What he doing, the man in the sitting chair?

Recast: What is the man sitting in the chair doing?

3.4.2 Results:¹³ Literacy and Recall of Recasts

Research Question 1:

The ability to recall a recast in correct or modified form was significantly related to the literacy level of the participants. The higher literacy level group performed better overall ($p=.043$), and even better specifically on recasts with 2+ changes ($p=.014$).

Research Question 2:

The ability to recall a recast was not related to the length of the recasts for either group, nor were there any statistically significant differences in length of recast recalled between the two literacy level groups.

Research Question 3:

Increasing the number of changes made by the recast significantly affected the recall of the low literacy level group; the more literate group recalled recasts with 2+ changes significantly more accurately ($p = .014$).

3.4.3 Discussion: Study 1 on Recasts

Literacy level significantly affects L2 learners' ability to accurately recall corrective feedback they are given in oral interaction. The more literate they were, the better able our participants were to produce correct or modified recall of recasts of their erroneous English L2 questions. Literacy level was also positively related with the ability to recall, in correct or modified form, more complex recasts, those with 2+ changes from the original trigger question. It is interesting, though, that their accuracy of recall was not significantly related to the length of the recast, particularly in light of the fact that this was a highly significant factor for Philp's (2003) more literate L2 learners.

¹³ We also tracked the developmental stage of the questions in each trigger and the recast. Overall interrater reliability in the data analysis was 99.5%. Due to the small size of our two groups, we used the exact permutation test (Effron & Tibshirani, 1993, p. 210) as a statistical measure to compare the performance of our two literacy groups in answering each of the three research questions. (A full discussion of this statistical measure is provided in Bigelow, delMas, Hansen & Tarone, 2006.) We set the level of significance at .05, but because of the exploratory nature of this study, we also commented on findings where probability levels fell between .05 and .10.

The findings of Study 1 are highly consistent with Reis and Castro-Caldas' (1997) assertion that literate individuals have strategies for "conscious phonological processing, visual formal lexical representations, and their associations – all of which are strategies available to literates and not illiterates" (p. 445). The findings are important for SLA research in that they show that an individual L2 learner's level of alphabetic print literacy may influence the way L2 oral skills are acquired in interaction with others. And, as our results, do not accord with those of Philp (2003), they raise questions about the degree to which any findings on the way literate L2 learners process oral feedback apply to less literate or illiterate populations. Many questions remain, and the results of Study 1 need to be replicated with other low literate and illiterate L2 learners.

3.5 *Study 2: L2 Learner Recall of Elicited Imitation vs. Recasts*

Study 2, on learners' ability to perform elicited imitation (fully reported in Hansen, 2005), explores the impact of literacy level on accuracy of recall of L2 utterances in two distinct tasks: elicited imitation (EI) and recast. The elicited imitation task may require more phonological processing in short term memory than the recast task, which provides a more meaningful context and more support for semantic processing.

In EI, learners must recall decontextualized, sentence-level L2 questions that the researcher reads to them. Each learner hears the same 28 questions,¹⁴ each one 8 syllables long; each question is semantically unrelated to the preceding question. While the questions have meaning, there is less meaningful context to assist the learners in retaining these questions in short term memory; in EI, learners do not know what question to expect, from one to the next, and so may need to rely more on phonological processing in recalling them. In contrast, in the recast task, learners are recalling corrected forms of L2 questions they themselves initiated in contextualized, meaningful interaction. This increase in context may enable them to rely less on phonological processing, and more on meaning-based strategies in recalling recast questions. Thus, based on the assertions by Reis & Castro-Caldas (1997) cited earlier, we might predict that less literate learners would have more difficulty than more literate learners in recalling questions in the EI

¹⁴ Examples of these questions used in elicited imitation include:

How do you get to the market?

What do they learn at the movies?

Has he done the driving road test?

Why haven't your friends come to class?

Have you been to school since Monday?

condition (where they may need more phonological processing strategies) than in the recast condition (where less literate learners, like more literate counterparts, may be able to rely more on semantic processing strategies). In Study 2, as in Study 1, exact permutation tests were used to measure the significance of the relationships among literacy level, accuracy of recall, and task.

3.5.1 Research Questions

We asked the following research questions in Study 2 on elicited imitation:

- Is the ability to recall target questions in an elicited imitation task related to the literacy level of the learner?
- Is there a difference in accuracy of recall of target questions in the elicited imitation task and the recast recall task?

3.5.2 Results: Literacy and Recall of Elicited Imitation

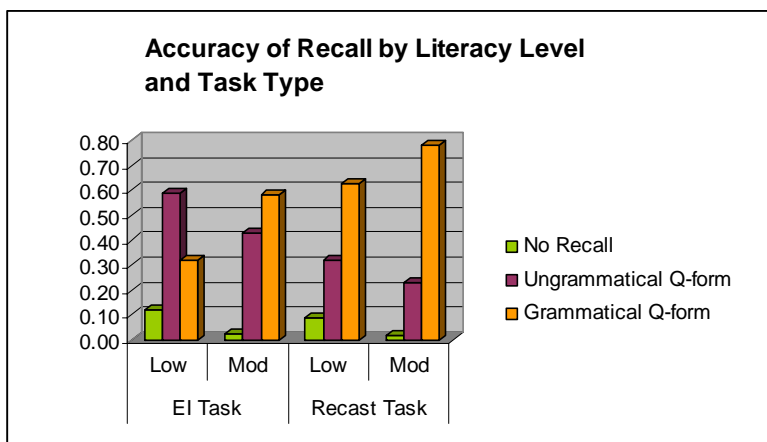


Figure 2: Accuracy of Recall by Literacy Level and Task Type

The data in Figure 2 are reported by task; each task shows percentage of recalls by the low literacy group and the moderate literacy group, separated out in terms of correct recalls (right column), incorrect recalls (middle column), and no recalls (left column). Figure 2 shows that higher literacy levels improved recall of target questions on both the EI and the recast tasks: the higher literacy level group had more correct recalls, fewer incorrect recalls, and fewer “no recalls” than the low literacy level group. Furthermore, the elicited imitation task was clearly more difficult for both

literacy groups than the recast task; for both groups, there was a lower accuracy of recall of questions in the elicited imitation task than in the recast recall task. Even so, the more literate group did better than the less literate group on the more difficult elicited imitation task. Exact permutation analysis showed that both groups found the EI task significantly more difficult than the recast task, at $p=.008$. The difference in performance of the higher and lower level literacy groups approached significance on the EI task at $p=.057$, but was highly significant on the recast task at $p=.014$.

3.5.3 Discussion: Study 2 on Elicited Imitation

To sum up, we found that recast tasks were easier than elicited imitation tasks regardless of the literacy level of the learner. This may be because the context-rich recast task environment facilitates comprehension by reducing the load on short term memory. The high redundancy inherent in the recast task may also serve to strengthen the short-term memory trace, and facilitate rehearsal, hypothesis testing and recall.

We also found that alphabetic print literacy¹⁵ appears to promote better L2 oral recall of oral L2 prompts in both recast and EI tasks. The higher literacy group recalled questions better than the lower literacy group no matter what the task; this difference was most pronounced on the recast task. Possible explanations point to an interaction among literacy skills, short term memory, the impact of literacy on brain activity, and contextual factors.

3.6 Study 3: Grammar Forms in Oral Narratives

Study 3, on grammatical forms in oral narratives (fully reported in Tarone, Swierzbin & Bigelow, 2007), turns to an examination of the nature of the grammatical forms which are used by our two groups of learners. Does literacy level correspond to the grammatical forms they use in telling the same stories? This final analysis focuses on the two literacy groups' use of semantically redundant grammatical morphemes and sentence complexity in story retells. Specifically, we wondered if the low literate learners would use fewer "variational features": the semantically redundant grammatical

¹⁵ We specify alphabetic literacy here because this is the type of literacy we studied. We do not want to use the term "literacy" without specifying the type of writing system our learners are literate in, because of the research findings of Read et al., 1986, and de Gelder et al., 1993, cited above, that it is alphabetic literacy that affects performance on oral language segmentation tasks.

morphemes identified in the ZISA study (e.g. plural *-s*, third person singular *-s*, past tense *-ed*). And we also wondered if their sentence complexity would suffer from their difficulties in processing grammatical forms in the oral input. Because this third analysis focuses on small numbers of grammatical forms produced in meaningful communication, we did not conduct a quantitative analysis, but rather carried out a qualitative linguistic analysis whose findings will be suggestive of patterns we will have to test out more rigorously in future studies.

3.6.1 Research Question

The research question addressed in Study 3 was:

- Are the interlanguage grammatical forms used in oral narratives related to the literacy level of the learner?

3.6.2 Data Analysis

Data analysis focused on verb marking, noun marking, and sentence complexity in the oral narratives. In considering the learners' use of semantically redundant grammatical morphemes, we explore whether the groups used "bare verbs" – that is, verbs with no morphological marking at all – as compared to verbs with morphology, whether accurate or not. In addition, we examine whether they marked plural *-s* on regular nouns or not. With regard to sentence complexity, we compared the two groups with regard to number of relative clauses, noun clauses, and clauses expressing causality with *because*, *so*, or *since*.

3.6.3 Results: Grammatical Forms used in Oral Narrative

3.6.3.1 Verb Marking

The low literacy group seemed to produce more bare verbs than the higher literacy group in their oral narratives, though the performance of both groups was variable. Representative utterances for third person singular marking are:

Faadumo (moderate literacy):	Her mom <u>says</u> , "Come in now, in a car."
Najma (low literacy):	Her mother they <u>say</u> , "We going right now..."

Examples for past tense marking are:

Khalid (moderate literacy): So, she *called* him.
 Fawzia (low literacy): Somebody *call* him.

Table 5 shows the number of verbs produced by both groups in their oral narratives, and how many of these were bare verbs.

Table 5: *Bare Verbs vs. Verbs with Morphemes*

Participant	Lit. Group	Bare Verbs	Verb + Morpheme	Total Verbs (100%)
Abukar	Low	61 (64%)	34 (36%)	95
Najma	Low	50 (54%)	43 (46%)	93
Ubox	Low	53 (66%)	27 (34%)	80
Fawzia	Low	41 (77%)	12 (23%)	53
TOTAL		205 (64%)	116 (36%)	321 (100%)
Khalid	Mod.	45 (38%)	74 (62%)	119
Faadumo	Mod.	64 (56%)	51 (44%)	115
Moxammed	Mod.	60 (51%)	58 (49%)	118
Sufia	Mod.	61 (58%)	45 (42%)	106
TOTAL		230 (50%)	228 (50%)	458 (100%)

Both groups produced a good number of verbs in their narratives, though the higher literacy group produced more (458 as opposed to the low literacy group's 321). Table 5 shows that bare verbs made up 64% of those produced by the low literacy group; the moderate literacy group left fewer of their verbs unmarked: 50%.

3.6.3.2 *Noun Plural Marking*

There are far fewer obligatory contexts for plural nouns than for verbs. And here again, there was considerable variability in the performance of the two groups on this measure. That said, there did seem to be a trend for the low literacy group to leave off the plural *-s* on plural nouns,

sometimes substituting quantifiers to convey the notion of plurality. Representative examples of noun plural marking are:

Khalid (moderate literacy): *The monkeys took all his hats.*
 Ubax (low literacy): *A lot of monkey_ they take his hat_.*

Table 6: Noun Plural Marking

Participant	Lit. Group	Plural -0	Plural -s	Total Nouns (100%)
Abukar	Low	2 (11%)	16 (89%)	18
Najma	Low	3 (25%)	9 (75%)	12
Ubax	Low	19 (83%)	4 (17%)	23
Fawzia	Low	12 (75%)	4 (25%)	16
TOTAL		36 (52%)	33 (48%)	69 (100%)
Khalid	Mod.	2 (12%)	14 (88%)	16
Faadumo	Mod.	0	10 (100%)	10
Moxammed	Mod.	3 (25%)	9 (75%)	12
Sufia	Mod.	8 (42%)	11 (58%)	19
TOTAL		13 (23%)	44 (77%)	57 (100%)

Table 6 shows that more literate learners supplied more noun plural marking. The moderate literacy group's average supply of plural -s is 77% of their plural nouns, as compared to an average of only 48% for the low literacy group. But we must be cautious in drawing any strong conclusion on this point: the raw numbers here are very low, and also there is a lot of individual variation on this measure. One low literacy individual did better than 3 of the moderate literacy individuals in marking noun plurals.

3.6.3.3 Sentence Complexity

The more literate group seemed to produce more complex sentences in their oral narratives than the less literate group, as we see in Table 7.

On average, the moderate literacy group used more dependent and "so" clauses overall than the low literacy group (131 vs. 72). Just

considering their use of dependent clauses, we see that the low literacy group used fewer dependent clauses (54), while the higher literacy group used more (87). Literacy also seemed to be related to use of certain types of clauses more than others. There was a markedly lower use of relative clauses by the low literacy group (8 as opposed to the higher literacy group's 28 relative clauses). But there was also individual variation in sentence complexity in expressing causality; regardless of literacy group, individual participants seemed to have clear preferences on this point. For example, within each literacy group, there were individuals who preferred "so" clauses while other individuals in the same group preferred dependent clauses with "because" and "when."

Table 7: *Dependent and "So" Clauses*

Participant	Lit. Group	"so"	Dep.: "because" "when," etc.	Dep.: Relat. clauses	Dep.: Noun clauses	Other Dep. clauses	Total Dep. & "so" clauses
Abukar	Low	0	14	3	1	2	20
Najma	Low	11	3	2	2	1	19
Ubax	Low	6	10	3	4	0	23
Fawzia	Low	1	8	0	1	0	10
TOTAL		18	35	8	8	3	72
Khalid	Mod.	21	2	5	5	1	34
Faadumo	Mod.	15	9	3	4	2	33
Moxammed	Mod.	8	13	18	6	6	51
Sufia	Mod.	0	6	2	2	3	13
TOTAL		44	30	28	17	12	131

3.6.4 Discussion: Study 3 on Oral Narrative

Literacy level seems to be related to the grammatical forms used by L2 learners in their oral narratives, but we have insufficient data on this point to be sure. We need more data from replication studies on this point. The data so far suggest that the higher literacy group marked verbs and nouns with redundant morphemes more than the low literacy group. In addition, on average, the moderate literacy group used more dependent clauses, including more relative clauses, than the low literacy group.

Alphabetic print literacy may be related, then, to the grammatical forms that the learner acquires in an L2 and is able to use in tasks such as the oral narrative task. The oral language of less literate L2 learners may contain fewer dependent clauses, and fewer redundant grammatical morphemes. These findings would be consistent with the claims of Ravid & Tolchinsky (2002) who synthesize research on child language acquisition and argue that the more complex syntactic forms of the native language, those needed for what they call “linguistic literacy,” a kind of metalinguistic awareness, are not acquired until after children have become (alphabetically) literate. We do not know whether this is simply because literate learners have more exposure to complex constructions that occur most frequently in written discourse. Future research can determine this. If linguistic literacy develops simply because of frequency in the input of written discourse, then we would expect to find that literacy always results in increased complexity of oral language regardless of the writing system the learners are literate in. It is also possible, as Reis et al. (1997) claim, that it is literacy specifically in an alphabetic script which encourages this increased oral syntactic complexity by improving verbal memory. We need large-scale studies to examine the impact of literacy in alphabetic and non-alphabetic writing systems on the grammatical forms that learners acquire in an L2, and quantitative evaluation of the significance of the effect conveyed by levels of literacy in these different writing systems. The findings of the present small scale study are interesting, however, as they fall in the predicted direction, are consistent with studies in related fields, and set out a clear agenda for next steps of research.

4 *Summary*

We have presented evidence that alphabetic print literacy affects oral L2 processing and use: it affects the recall of oral recasts of grammatical errors, and it affects accuracy in decontextualized elicited imitation tasks. Our data are less conclusive in suggesting that alphabetic literacy may even affect the grammatical forms used in oral narratives. If it turns out that low literate L2 learners do consistently have more difficulty noticing and acquiring certain grammatical forms in their oral use of a L2, there will be a number of implications.

First, these findings increase the urgency of the need to teach alphabetic literacy skills. Lack of native language literacy does not only impede L2 *literacy*. Low literacy overall may also impede the acquisition of oral skills in an L2. This finding obviously makes instruction in alphabetic

print literacy, and particularly those decoding skills linked to sound-symbol correspondence, even more important than previously thought.

Second, it is possible that a lack of literacy may make the acquisition of certain grammatical forms of the L2 more difficult. This could be because learners who are not literate have less exposure to these forms, which occur more frequently in written discourse. It could also be because, as Reis et al. (1997) claim, alphabetic print literacy improves verbal memory. We must carry out research studies to determine whether lack of literacy does affect the acquisition of specific grammatical forms, and if so, whether writing system makes a difference. If such studies are able to identify specific oral grammatical forms whose acquisition is linked to literacy level, then teachers of low literate L2 learners may be able to find alternative means of helping them notice and acquire those grammatical forms orally.

Third, our study suggests that, because previous SLA research has not systematically studied the impact of the individual variable of literacy on oral SLA processes and outcomes, current conclusions about SLA sequences, processes and outcomes may simply not apply to less literate populations such as those we studied, much less to illiterate populations elsewhere in the world. Future SLA research studies documenting oral L2 learning must focus on non-traditional language learners and social contexts, particularly on low literate and illiterate learners in social contexts beyond university and school settings. We clearly need to replicate the studies reported in this paper. Replication studies should explicitly document the impact of low alphabetic literacy level, precisely measured, on L2 learners' processing of oral L2 input and their acquisition of oral skills and grammar in the L2. Until we have that information, we must actively work with second-language teachers to design pedagogical solutions while we seek a more accurate research base. Many questions remain for us in this line of research.

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*Appendix A: Rubric for Scoring of Native Language Literacy Screening Device
(used in Bigelow, delMas, Hansen, & Tarone, 2006)*

Rating Scales for Native and Second Language Literacy Tests
Literacy Rating Scale (Native Language)

Reading Fluency

- 1 Follows with pen; much subvocalization; slow speed; retraces/backtracks; much comprehension difficulty*; asks researcher for help
- 2 Starts out slowly and then speeds up, still showing some difficulty in decoding; may follow with pen or finger and/or subvocalize; often reads twice, much faster the second time
- 3 Very comfortable. Little subvocalization; speed relatively quick; little comprehension difficulty*; may comment on perceived orthographic errors in the Somali text

Writing

- 1 Writes in another language, can/will not write in native language
- 2 Writes laboriously in native language; may complain about not knowing how to spell; subvocalizes; may ask for help
- 3 Writes in native language without any hesitation

Confidence

- 1 Expresses reluctance to read or write in native language; may say cannot do it
- 2 Will try, but not very sure of skills; asks questions along the way
- 3 Approaches task without hesitation

* evidenced by responses to researcher questions

Rating Scales for Native and Second Language Literacy Tests
Literacy Rating Scale (Second Language)

Reading Fluency

- 1 Follows with pen; much subvocalization; slow speed; retraces/backtracks; much comprehension difficulty*
- 2 Starts out slowly and then speeds up, still showing some difficulty in decoding; may follow with pen or finger and/or subvocalize; often reads twice, much faster the second time
- 3 Very comfortable. Little subvocalization; speed relatively quick; little comprehension difficulty*

Writing

- 1 Writes in native language, can/will not write in second language
- 2 Writes laboriously in second language
- 3 Writes in second language without any hesitation and few orthographic errors

Confidence

- 1 Cannot tackle a single word
- 2 Will try but not very sure of skills; asks questions along the way
- 3 Approaches task without hesitation

* evidenced by responses to researcher questions