

127. Working Memory and Study Abroad: A study of memory and language gains

Lauren R. Adams and Dr. Bernard Issa, Dept. of MFL

Introduction

Study abroad is largely thought of as the secret to success in learning a second language (L2). However, research in Second Language Acquisition (SLA) has shown variability in learners' development of linguistic skills during study abroad (Brecht et al., 1995). This may be due to particular characteristics of study abroad (SA) program (e.g., length of stay) as well as to individual learner characteristics (e.g., cognitive abilities, motivation, extroversion, etc.). Research has shown that longer programs tend to result in more robust linguistic development, however, spending a semester or year abroad is not financially or academically feasible for many students. For this reason, short-term SA programs (two months or less) have become increasingly popular in recent years (IIE, 2019). Interestingly, these short-term programs are understudied in SLA.

Thus, the present study aims to shed light on linguistic development in short-term SA by examining students' gains in language production and comprehension after a short five weeks abroad, and to what extent these gains are related to working memory capacity, an individual learner characteristic thought to be important in L2 learning.

Background

Working memory (WM) is a system of memory that contains two parts: short-term memory and executive control. The former is responsible for the temporary storage of information, and the latter is processes information to be acted upon or potentially stored in long-term memory. Greater capacity for this memory system has been posited as beneficial for processing and extracting meaning from L2 linguistic input (Linck, 2014). In an SA context, WM might be especially important given the constant exposure to unfamiliar, complex and authentic L2 input. However, research on the role of WM and SA is mixed (Grey et al., 2015; Tokowiz et al., 2004).

Grey et al (2015) found that students made L2 gains after five weeks abroad, however, those gains were independent of individual cognitive ability.

Research Questions

1. Do students make gains in their second language after a short period (5 weeks) of total language immersion?
2. Are gains in language proficiency associated with a higher WM capacity?

Method

This study is comprised of 25 undergraduate students (age range: 19-21) who participated in a five-week, language-intensive program in Oviedo, Spain during the summer term of 2019. All students have at least one semester of Spanish at the university level, while most have two or more.

Digit Span Task

This test was administered to all 25 participants during the first week of their SA program. The test presents the participant with series of numbers one at a time and increasing in length, and they must recall the numbers by entering the series on a keypad on a computer screen in either the order the saw the numbers or in reverse.



Elicited Imitation Task

Two versions of the test were administered (in a counterbalanced order) to all participants during the first and final weeks (weeks 1 and 5) of their SA program. This test consists of five practice items in their L1 (English) and 30 test items in their L2 (Spanish) in which a pre-recorded native speaker reads aloud a sentence and the participant repeats as much of the original stimulus as they can while being recorded with a digital voice recorder.

Analysis

Digit Span Task

In this task, the final score is measured by longest series of numbers that a participant recalls correctly before making two errors consecutively.

Elicited Imitation Task

Responses were recorded and then transcribed and scored 0-4 (0 being no or minimal response, and 4 being a perfect repetition). Total possible score is 120.

Table 1

EIT Item 30 (Version A)

Stimulus	Scores	Sample Transcription
<i>Hay mucha gente que no toma nada para el desayuno.</i>	0	<i>Hay mucho gente...</i>
	2	<i>Hay mucha gente que no tomaba nada por el desayuno.</i>
	3	<i>Hay mucha gente que no toma nada para l- desayuno.</i>

Results

Table 2

Descriptive Statistics for EIT

EIT Week 1	EIT Week 5	Change
M (SD)	M (SD)	M (SD)
68.32 (20.44)	78.28 (15.80)	9.96 (11.02)

References:

- Bowden, H. W. (2016). Assessing second-language oral proficiency for research: The Spanish elicited imitation task. *Studies in Second Language Acquisition*, 38(4), 647-675.
- Brecht, R., Davidson, D., & Ginsberg, R. (1995). Predictors of foreign language gain during study abroad. *Second language acquisition in a study abroad context*, 9, 37.
- Grey, S., Cox, J. G., Serafini, E. J., & Sanz, C. (2015). The role of individual differences in the study abroad context: Cognitive capacity and language development during short-term intensive language exposure. *The Modern Language Journal*, 99(1), 137-157.

RQ1: Using a paired-samples *t* test, we found a significant relationship with a confidence interval of 95% [-14.51, -5.41], ($p = 0.00014$). between participants' performance on the EIT week 1 and EIT week 5 (M change = 9.96, SD = 11.02).

RQ2: Neither the Forward nor the Backward Digit Span Task presented a significant relationship. The Forward task ($r(24) = 0.2$, $p = 0.33$) presents a small, positive correlation, yet it is not significant. The Backward task ($r(24) = -0.09$, $p = 0.68$) presents a negligible, negative correlation that is also not significant.

Figure 1

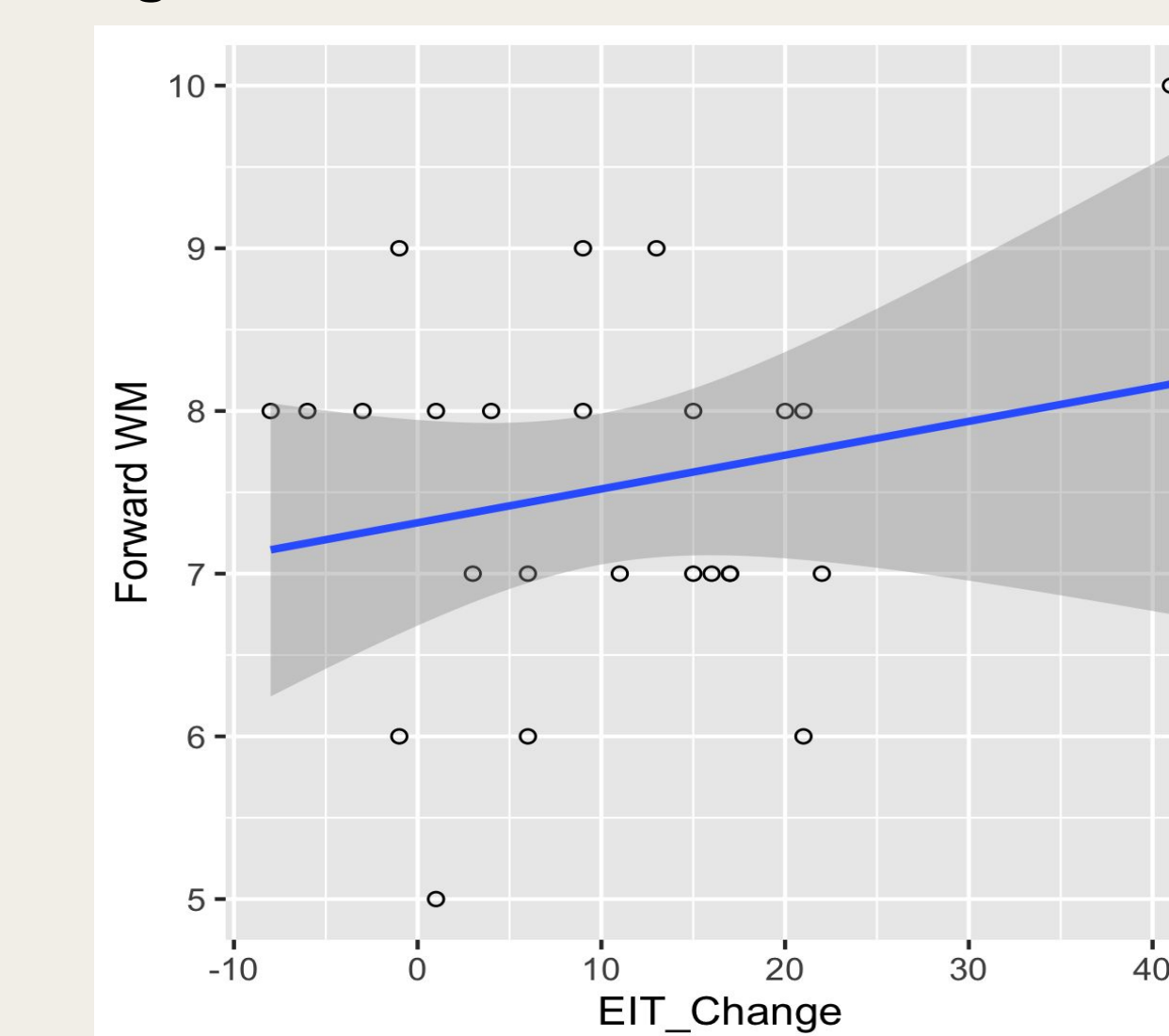
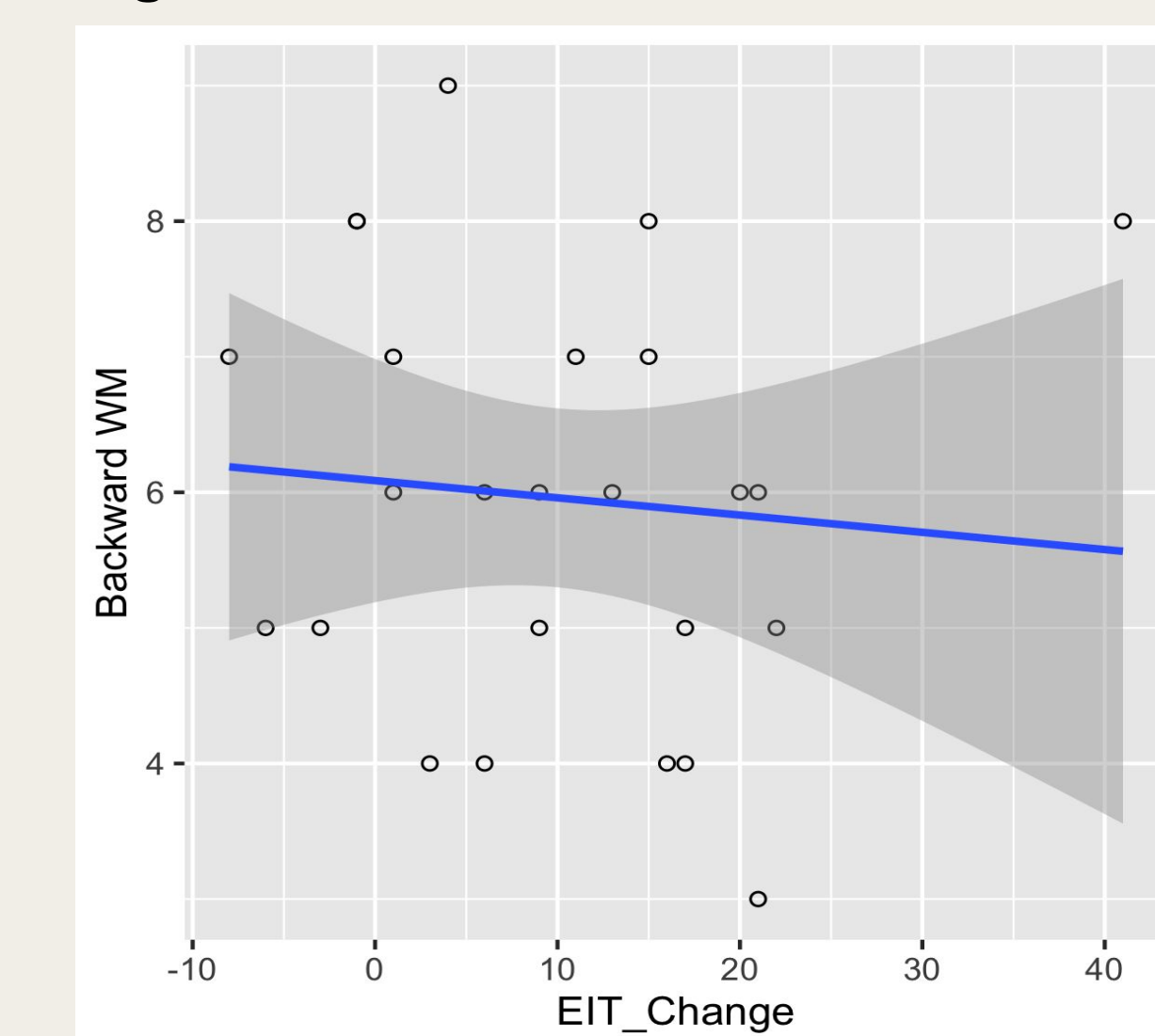


Figure 2



Discussion

RQ1: Similar to Grey et al. (2015), we find gains in students' L2 production and comprehension, adding to the body of research on short-term study abroad programs. These results suggest that short-term SA is in fact beneficial for learners' L2 production and comprehension abilities, as the EIT is a universal measure of language proficiency (Bowden, 2016).

RQ2: Compared to previous research, our findings on WM are different than general research within SLA but are similar to Grey et al. (2015) in that L2 gains are made independently of one's WM capacity. Based on these findings, we suspect that our measure of linguistic development, the EIT, may not be directly associated with WM capacity. We cannot discount the role of WM in a learners ability to reap benefits from SA, so more research with different measures of development and additional WM tasks is necessary.

Conclusion

This study demonstrates that short-term study abroad programs do in fact benefit a students' L2 production and comprehension abilities, and therefore, we hope that this study encourages students to consider one of these more accessible program types. More research still must be conducted with regards to the role of one's working memory in second language acquisition.