

Motivation and Technology Use During Second-Language Study Abroad in the Digital Age

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Abstract

Study abroad culture is constantly changing (Kinging, 2013), involving new challenges such as easier access to the first language culture via technology. There has been little research done on technology use abroad and its relationship with both linguistic gains (Coleman & Chafer, 2010; Kelly, 2010) and motivation (Allen, 2013; Irie & Ryan, 2015). To explore the role of motivation in developing a successful study abroad culture in the digital age, we documented technology use in the first language and second language of 15 college students during their summer sojourn in Argentina. We quantitatively evaluated participants' motivation (Gardner, 1985; Ushida, 2003) and proficiency (Seibert Hanson & Carlson, 2014), and qualitatively analyzed their responses to open-ended questions about goals and culture shock. We found that higher motivation levels were correlated with greater linguistic gains and less technology use in the first language (specifically internet-related). Lower motivation levels matched increased technology use in the first language, and perceptions of failure to achieve study abroad goals and integrate into the host culture.

Résumé

La culture de l'étude à l'étranger est en pleine évolution (Kinging 2013), ce qui entraîne de nouveaux défis comme l'accès facile à la culture de la langue maternelle grâce à la technologie. L'usage de la technologie à l'étranger, y compris son rapport aux acquisitions linguistiques (Coleman et Chafer, 2010 ; Kelly, 2010) et à la motivation des étudiants (Allen, 2013 ; Irie et Ryan, 2015), est un sujet peu étudié jusqu'à présent. Afin d'explorer le rôle de la motivation dans le développement réussi d'une culture de l'étude à l'étranger, nous avons documenté l'usage de la technologie dans la première et la deuxième langues d'étudiants universitaires lors de leur séjour d'été en Argentine. Nous avons analysé quantitativement la motivation des participants (Gardner, 1985 ; Ushida, 2003) et leur maîtrise linguistique (Seibert Hanson et Carlson, 2014), et avons analysé qualitativement leurs réponses aux questions ouvertes posées au sujet de leurs objectifs et du choc culturel. Nous avons trouvé que des niveaux de motivation plus élevés étaient en corrélation avec de meilleures acquisitions linguistiques et avec moins d'usage de la technologie dans la langue maternelle (spécifiquement la technologie liée à l'Internet). Des niveaux de motivation plus bas étaient en corrélation avec un usage plus élevé de la technologie dans la langue maternelle, aussi bien que la perception d'avoir échoué à atteindre les objectifs de leur étude à l'étranger et de bien s'intégrer à la culture d'accueil.

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Introduction

Among the many reasons that university students choose to study abroad is their motivation to acquire a second language (L2) more easily and fully. This is most likely due to the assumption that the study abroad context is linguistically rich (Ranta & Meckelborg, 2013). Historically, study abroad has had the potential of being a true immersion experience (Hoffa, 2007). Although there have always been options of escape from the host culture, such as more fully integrating oneself into social networks of co-nationals, one relatively recent change in the culture of study abroad allows students to remain, “virtually ‘at home’ via the Internet” (Kinging, 2013, p. 6). There is an increased use of and accessibility to technology in society as a whole, which is predominant in the cohort of college-aged students studying abroad (Pew Research Center, 2014). While there are many positive aspects to increased access to authentic language materials such as movies and music in the target language, easier access to the first language (L1) through multimedia poses new challenges to study abroad success. The present study asks the question: If pre-departure motivation to learn the L2 is accepted as a predictor of linguistic gains while studying abroad, as shown in previous studies, has the increased presence and use of digital media influenced such an outcome? We explore both quantitatively and qualitatively the possible relation between motivation for L2 learning as a predictor of linguistic gains, taking into account the new factor of the L1 environment being more present than before in the L2 environment because of the Internet. This paper is organized as follows. First, we outline the recent research on motivation and second language acquisition (SLA) in general, and then, as it pertains to the study abroad setting. We also present the research on Internet and technology use during study abroad. Next, we present our method, results, and analyses. Finally, we discuss our results with regard to our research question, including suggestions for enhancing study abroad culture and limitations to be addressed in future research.

Background

Motivation and Second Language Acquisition

Various kinds of motivation orientations for SLA have been proposed in the literature. Integrative motivation was defined by Gardner (1985) as the desire to belong in a group, have affection for, and identify with the L2 community. Instrumental motivation, on the other hand, is the utilitarian use of the L2 for personal gain, such as for a job, et cetera (Gardner & MacIntyre, 1991). According to Masgoret and Gardner (2003), neither orientation in this model was more likely to be linked to linguistic achievement. Many studies in this tradition have found that motivation in general is correlated with positive SLA outcomes (see Gardner, 2006). Dörnyei and Clément (2000), however, found integrative motivation to be the most influential in determining students’ effort levels toward learning an L2.

The trajectory of the L2 learning process is incredibly complex, rendering it difficult to isolate variables like motivation. The recent introduction of a dynamic systems perspective into applied linguistics has allowed researchers to better account for the highly

complicated and nonlinear patterns of language acquisition (see Larsen-Freeman & Cameron, 2008; Verspoor, de Bot, & Lowie, 2011). Taking into account dynamic systems theory, Dörnyei, Muir, and Ibrahim (2014) recently presented a new theoretical approach to motivation, directed motivational currents (DMCs), that goes beyond flow theory (Csikszentmihalyi, 1990) by comprising longer periods of intense motivation guided by a clear goal or vision. This longer period of intense motivation as it relates to L2 learning, however, is still described as relatively short-term in that it is a highly intense burst of motivational energy on top of the steadier motivation students exhibit throughout a course of study. Because the multiple variables whose influence on motivation waxes and wanes make it difficult to chart L2 learners' motivation, the single-minded focus of DMCs may allow the extraneous noise to fall away so researchers can observe language development more precisely. Since it appears that motivation changes over the course of one's trajectory in L2 acquisition due to various factors, it is important to consider the possibility that learners may experience a DMC during study abroad due to the more focused purpose of such a period of time. The prospect of going abroad itself, according to Irie and Ryan (2015), can give focus to one's language learning.

Motivation and Study Abroad

Students studying abroad may have varying degrees of motivation to learn an L2 (Allen, 2010). How that motivation then influences contact with native speakers has been examined in the study abroad literature. In some studies, having motivation to learn an L2 has been shown to positively influence the amount and quality of contact that sojourners have with L2 native speakers. For example, Hernández (2010) found a positive correlation for integrative motivation and L2 culture interaction, including via Internet, during study abroad, as well as oral proficiency gains tested by the American Council on the Teaching of Foreign Languages (ACTFL) oral proficiency interview that were correlated with language contact. Also testing whether this increased motivation and therefore interaction with native speakers then leads to linguistic gains, Isabelli-García (2006) found positive correlations between motivation and oral proficiency gains in the study abroad setting. However, the sample size of this study was small. Other research investigating multiple factors affecting linguistic gains during short-term study abroad has not shown significance for motivational factors. Neither Freed (1990) nor Martinsen (2010) found a relationship between motivation and the pursuit of language learning in out-of-class contexts, nor did they find consistent linguistic gains for their participant groups.

In theory, we believe one of the reasons research has not been entirely consistent in this realm is due to the dynamic character of motivation. In order to better chart these fluctuations, Allen (2013) considered a longer period of study. She assessed L2 learning motivation of three French majors over their undergraduate years, which included one short-term study abroad sojourn. She found that these "good learners" of French showed dynamic motivational trajectories throughout their course of study, which shifted based on language learning use and environment. The three participants' motivation to learn French was maintained during the study abroad period specifically, and it also may have been enhanced in subsequent semesters by the study abroad experience. Although the data analysis was based on participants' representations of their experiences and linguistic gains were not measured per se, Allen (2013) wrote that "each participant posited himself or

herself as an active agent of learning, seeing his or her own intentions and actions as critical components to the realization of linguistic goals” (p. 68).

In another recent work, Irie and Ryan (2015) applied the dynamic systems perspective directly to study abroad, asking Japanese university students to sort a series of statements on motivation. From their analysis of the participants’ sorting at both the beginning of the sojourn and after 5 months abroad, Irie and Ryan constructed four different viewpoints: “the naïve optimist,” “the shell-shocked doubter,” “the comfortable user,” and “the duty-bound learner.” They showed the shift each participant experienced from being the naïve optimist at the outset to one of the other three viewpoints, supporting the idea that motivation is measurably dynamic in the study abroad context in addition to the at-home context. Their identification of shell-shocked participants is especially key since this viewpoint leans most heavily toward negativity and helplessness, and therefore a dire outlook for interaction with native speakers and further L2 learning.

Internet and Technology Use

The aforementioned important connection between motivation during study abroad and SLA may be in jeopardy due to the changing nature of study abroad culture. With increased digital connectivity to the L1 world, participants in study abroad may not be seeking out important native-speaker interactions or at least their efforts to seek such interaction will be distracted. To help delineate the role of technology use, it is important to discuss some recent findings. If participants are spending more time isolated or disengaged from the host country due to technology, then there may be negative outcomes for SLA. However, there may be some positive results from increased connectivity if it involves more interaction in and input from the L2. Along these lines, Sundqvist (2009) found positive correlations between the amount of time L1 Swedish ninth-graders spent in an L2 English-mediated environment and their English vocabulary and oral proficiency scores. Specifically, Sundqvist identified video games, the Internet, and reading as the activities in the L2 that had a greater impact than activities where learners could remain fairly passive such as listening to music and watching TV and films. Additionally, Godwin-Jones (2016) proposed that Internet connectivity allows students to maintain L1 social ties to their support groups back home, which is crucial to their emotional stability, while also providing a way to engage with the host culture in the L2 that could last beyond the duration of the sojourn.

Coleman and Chafer (2010) reported on an extensive study on the sheer amount of use of technology by students abroad. Their questionnaire asked 42 U.K. students, who had worked abroad in Senegal after graduating from college, about their Internet, email, and telephone use. Those participants who had been in Senegal between 2004 and 2010 reported using the Internet either several times a week or daily. Coleman and Chafer also found a moderately strong positive correlation between initial homesickness and reported Internet usage. The authors did not differentiate among languages or uses of the Internet, such as for research purposes versus social networking, which if analyzed could reveal more about the type and interactivity of contact. However, in the end, the authors had enough evidence of technology use affecting the sojourn abroad experience to conclude that being “abroad is less abroad than it once was” (Coleman & Chafer, 2010, p. 165).

Kelly (2010) documented Internet and social media use by students studying abroad in Ireland through the use of communication diaries. Although language was not a factor in

this study, the data reported are important to note. The author found that it was not unusual for students in this program to spend more than 5 hours a day on the Internet. According to Kelly,

contemporary students' increasing use of social network sites such as Facebook and Skype compress time and space so that students are operating in a form of ambilocation, which is living in one place while operating co-terminously in a different space. (p. 98)

The author concluded that this lack of presence in the current space is detrimental to cultural immersion and has the potential to make a full immersion study abroad experience a thing of the past.

Another more recent study by Dressler and Dressler (this issue) looked at self-positioning and language use in Facebook posts over two subsequent study abroad sojourns by the same teenage student. They found substantial changes in the posts with respect to: (a) the way that the student positioned herself as an L2 learner or bilingual speaker and (b) which language she chose in order to express herself. Although thought provoking, this study did not compare the overall amount of social media use across sojourns nor assess its relationship to measurable language gain or loss. In Back (2013), however, language use was measured through analyzing the language used in three participants' Facebook posts during study abroad. She found that two out of the three participants increased their use of the L2 during their sojourn and that their use of the L1 on Facebook did not seem to negatively impact this increase. These results highlight the method of monitoring social media interaction as an effective way of gaining a more accurate picture of the development of the L2 and of L2 social networks.

Due to the importance of target-language interaction, Ranta and Meckleborg (2013) investigated Chinese graduate students' quantity and quality of exposure to L2 English at a Canadian university. Using a computerized log, they found that the general trend was one of receptive rather than interactive use of English. Participants were more likely to engage in L2 activities such as reading and writing, watching movies or television, and listening to lectures than they were to interact one-on-one with native speakers of English. However, there was considerable variation among participants. Considering Sundqvist's (2009) findings, this would most likely lead to fewer linguistic gains than if the participants were interacting in the L2. Ranta and Meckleborg also interviewed the participants, asking about their language use. They found that the amount and type of exposure experienced by these individuals was a result of their own choices as well as their study and work contexts. Although these participants were culturally very different from the participants in the present study, an aspect that Ranta and Meckleborg considered relevant since their participants came from a learning culture that is less interactive than that of the West, their study provides a good foundation on which to build. Ranta and Meckleborg concluded that more research is needed that includes both quantitative and qualitative measures in order to better illuminate the challenges facing individuals entering a new speech community, a need we aim to address here.

The Present Study

In the present study, we seek to explore the influence of technology use on motivation and potential linguistic gains in study abroad. Based on previous research (e.g., Dressler & Dressler, this issue; Kelly, 2010; Ranta & Meckleborg, 2013), we hypothesized that students are using the Internet, watching movies, and interacting on social media significantly in the L1 while studying abroad, which may be changing the culture of study abroad. It is unclear how much they are doing the same in the L2, however. This is an area that could potentially have a positive impact on linguistic gains during study abroad. Considering the goal of improved linguistic gains, we hypothesized that students who show motivation for L2 learning will use technology in the L1 less on the whole, and may even use technology in the L2 more, while students with lower motivation will avoid seeking out interaction with native speakers by spending their time in the safe haven of technology use in the L1.

Method

The present study uses a mixed method approach. By including both qualitative as well as quantitative measures, we provide a more complete picture of students' experiences with technology and how this relates to their motivation to learn the L2 while abroad. As Hernández (2010) has maintained, qualitative data allow for triangulation of quantitative results. The quantitative data, in turn, improve comparability across studies that employ similar measures. Since our research question asks about motivation, a construct shown above to be complex and dynamic, it is best to capture these fluctuations with a combined approach of methods.

Participants

Our participants were 15 U.S. university students (nine females, six males) studying abroad in Argentina for a summer semester. All participants lived with local families for the duration of the study abroad sojourn. The length of program ranged between 6 and 12 weeks. Based on their previous amount of Spanish coursework, students were placed into one of two levels in the study abroad program. There were nine beginners, who had less than two semesters of university coursework in Spanish, and six intermediates, who had more than two semesters of university Spanish and, for some, elementary and high school study as well. Seven students had also taken vacation or done mission trips of 2 weeks to Spanish-speaking areas. Two students had done month-long mission trips in a Spanish-speaking country. English was the L1 of all the participants. Their mean age was 22 years ($SD = 5.6$), ranging from 19 to 41, and their mean age of first exposure to Spanish was 9.21 years ($SD = 4.87$). Each student was in class at the local university from 9 a.m. until 1 p.m., Monday through Friday, studying Spanish grammar, literature, and culture, as well as practicing speaking based on their level. The curriculum was designed by the faculty of the Argentine university and based on the text *Voces del Sur*. Students in the beginning class used Level 1 of the text (Corpas, García, Garmendía, & Soriano, 2009), students in the intermediate class used Level 2 (Corpas, Garmendía, & Soriano, 2010), and the advanced students studied supplementary material compiled by the instructor that focused on grammar, history and culture, writing, literature, and cinema. In addition to classes, all

students participated in at least 2 hours of conversation at the university café with their “conversational partners,” Argentine university students. These conversations were supervised by the faculty to ensure that students were speaking Spanish for half of the time and English for the other half. For each meeting, students were given a theme as a guide (e.g., discuss and compare the education systems in the USA and in Argentina). Two days a week, students also took a 2-hour tango lesson conducted entirely in Spanish with a professional Argentine tango dancer. One additional afternoon a week as well as three additional weekend days, students went on cultural excursions with program faculty members. These excursions included city tours given in Spanish, museum visits, hiking in the mountains, and eating with traditional gauchos (cowboys) in the countryside. The other two weekends were entirely free, which many spent with their host families or other native speakers they had met through their conversational partners. There was no official language policy for the program. However, the faculty insisted on speaking only Spanish with the students unless there was an important breakdown in communication. Faculty also encouraged the students to speak only Spanish with each other, although the beginners did not adhere to this, arguing that they could not.

Of the 15 participants, four were selected for a qualitative analysis. These four showed particular extremes in terms of Internet and technology use as well as motivation and linguistic gains. Their pseudonyms and background data are in Table 1 (in order of their qualitative presentation below).

Table 1

Participant Profiles

Name	Age	Academic Year	Major	Spanish Study (years)	Length of Sojourn (weeks)	Level at Start
Jill	21	Junior	Apparel merchandising	2 HS 0.5 C	9	Beginner
Gus	21	Junior	Political science	3 HS	9	Beginner
Laura	21	Junior	Philosophy, History	5 ES 2 C	6	Intermediate
Kelsey	21	Senior	Psychology	8 ES 4 HS 1 C	6	Intermediate

Note. ES = elementary school; HS = high school; C = college.

Instruments

Background linguistic information was gathered from all 15 participants via a language history questionnaire. This consisted of questions about the participants’ language background and about their contact with and use of Spanish up until their sojourn abroad. Students were asked to write down the length and location of any other travel abroad to

Spanish-speaking countries. They were also asked to state their goals for the semester abroad.

Linguistic gain was operationalized as the difference over time in scores on two versions of an objective proficiency test adapted from Dracos (2013) and portions of the Diploma de Español como Lengua Extranjera (DELE) exam. This test was also used in Seibert Hanson and Carlson (2014). It is composed of 77 items divided over three grammar sections (low, intermediate, and advanced) and one reading comprehension section. Seven of the participants took Test A during Session 1, which took place after one week abroad, and Test B during Session 2, which took place during the last week spent abroad. The other eight participants took Test B during Session 1, and Test A during Session 2 in order to counterbalance any test-taking artefact.

We tested motivation quantitatively as an average score on the Attitude/Motivation Test Battery developed by Gardner (1985, 2004) and modified by Ushida (2003) for Spanish learners in the USA. There were 46 items that tapped into constructs as outlined by Gardner (1985): attitudes toward the learning situation, integrativeness, motivation, and language anxiety. We looked at 10 items in particular relating to integrativeness and motivation. We did not analyze items relating to language anxiety since we believe that, although related, this is a separate field of inquiry. Within the “attitudes toward the learning situation” category of items, we analyzed:

1. Learning Spanish is really great.
2. I really enjoy learning Spanish.
3. I plan to learn as much Spanish as possible.

Within the “integrativeness” category, we analyzed:

4. I enjoy meeting and listening to people who speak Spanish.
5. I wish I could speak another language perfectly.
6. I would study a foreign language in college even if it were not required.

And, within the “motivation” category, we analyzed:

7. I wish I were fluent in Spanish.
8. I make a point of trying to understand all the Spanish I see and hear.

We also analyzed two items categorized as “instrumental orientation”:

9. Studying Spanish can be important because it will make me a more knowledgeable person.
10. Spanish is an important part of my education.

Participants responded based on a 5-point Likert scale: 1 = *strongly disagree*, 2 = *disagree*, 3 = *neither agree nor disagree*, 4 = *agree*, and 5 = *strongly agree*. We averaged their scores for the 10 items, which constituted their motivation score. This test was administered twice, once at the beginning and once at the end of the sojourn. We also assessed motivation qualitatively through an open-ended questionnaire about participants’ goals and achievement.

Finally, technology use in both languages was determined as average hours per week through a language contact questionnaire adapted from Hernández (2010) and taken in the final testing session. Students were asked to circle the number of hours per week they spent doing the following:

1. speaking Spanish (L2) with fluent Spanish speakers;
2. reading Spanish web pages, email, Facebook posts, tweets;
3. watching and listening to Spanish television, radio, movies, videos, and music outside of class time; and
4. writing Spanish email, tweets, and Facebook posts.

They were also asked to circle the number of hours per week that they spent on average doing the above activities in English (their L1). After answering the above questions, the students were asked a few open-ended questions about their goals for study abroad and if they had been able to achieve them. The questions were:

1. Think back to your first week of your study abroad experience. Describe the objectives/goals that you had at that time for your study abroad experience.
2. Do you think you were able to achieve these objectives/goals? Explain.

Before completing their time abroad, all of the participants had expressed orally to one of the researchers that they had experienced some type of culture shock. Therefore, their final assignment was a culture shock essay, in which they could express their level of understanding of and degree of integration into the host culture, both important in successful study abroad experiences. The prompt for this essay was as follows:

Given that we have all experienced one or another form of culture shock during our time here, you should explain one aspect of culture shock that made you uncomfortable, one aspect that you found surprising, and one aspect that you found valuable and reflect on why you reacted the way you did in all three cases.

The students' responses were read and analyzed for motivation and integration by focusing specifically on their comments and observations regarding the host country, host family and friends, and differences in the way things are done in the host country and what they know from their home country.

All of the tests and questionnaires were administered with pen and paper in a classroom at the host university in Argentina. All participants completed the first session during the beginning of the second week of the summer semester. Participants completed the second session during the last week of their summer semester. Depending on the length of stay, this was 6, 9, or 12 weeks after their arrival in the host country. In the first session, participants read and signed the consent form, filled out the language history questionnaire, completed the motivation and proficiency tests, and performed a self-assessment of their language abilities based on their level (the results of which will not be reported here). In the second session, students performed all of the same tasks except that they completed the language contact profile and the writing assignment of the culture shock essay.

Results and Analyses

For the quantitative data analysis, the data were analyzed within session first and then compared across sessions. Since we were working with a small sample size, we first used online JavaScript software to perform bootstrapping. Through this resampling, we attained a more regular distribution. Then we ran correlations (95% confidence interval) between proficiency test scores and motivation scores, between technology use in each of the languages and motivation, and between linguistic gains and technology use. With this confidence interval, we were able to make a test decision of whether to reject or fail to reject the null hypothesis at the $\alpha = 0.05$ level. For the qualitative analysis, we zoomed in on four individuals who showed noteworthy trends with regard to the three constructs we are studying here. In particular, we examined their responses to the open-ended questions regarding their goals and achievement of said goals, as well as their culture shock essays. We elaborated on their individual stories in order to more fully understand the story presented in our quantitative data. In the following sections, we begin with the descriptive statistics from each measure and the quantitative results from each session. Then, we present the qualitative analysis. Finally, we discuss all the results in light of our research objective.

Descriptive Statistics

The means and standard deviations for the proficiency scores by session for each level are found in Table 2.

Table 2
Means and Standard Deviations of Proficiency Scores

Group	N	M		SD	
		Session 1	Session 2	Session 1	Session 2
Beginners	9	29.33	29.56	4.64	7.07
Intermediates	6	44.17	47.5	11.2	11.22

There were no significant differences between sessions for either group, which is not surprising given the short period of study. This corroborates findings from previous studies, in which most gains seen during study abroad sojourns were in the domain of oral fluency and not grammatical competence (Segalowitz & Freed, 2004). Additionally, Collentine (2004) found few measurable grammatical gains for study abroad participants as compared to at-home counterparts. Here, as a group the participants did not make any linguistic gains during their study abroad experience.

Due to the small number of participants, we combined all participants into one group to analyze motivation and technology use. The motivation scores were assessed on a scale of 1 to 5 with 5 being the highest motivation. The means and standard deviations for the motivation scores by session for each session were: Session 1: $M = 4.09$, $SD = 0.51$; Session 2: $M = 4.14$, $SD = 0.56$. For the participants as a group, there were no statistically significant differences between their motivation means in Session 1 and in Session 2. When divided by proficiency level, there were no significant differences either. The items on which students scored the highest as a group in both sessions were: "I wish I were fluent in Spanish" (Session 1: $M = 4.79$, $SD = 0.43$; Session 2: $M = 4.73$, $SD = 0.5$); "I wish I could

speak another language perfectly” (Session 1: $M = 4.5$, $SD = 0.94$; Session 2: $M = 4.56$, $SD = 0.73$); and “I plan to learn as much Spanish as possible” (Session 1: $M = 4.43$, $SD = 0.65$; Session 2: $M = 4.3$, $SD = 0.5$). The items on which students scored the lowest in both sessions were: “I really enjoy learning Spanish” (Session 1: $M = 3.71$, $SD = 0.91$; Session 2: $M = 3.56$, $SD = 0.73$) and “I would study a foreign language in college even if it were not required” (Session 1: $M = 3.5$, $SD = 1.34$; Session 2: $M = 3.0$, $SD = 0.87$).

The means and standard deviations of the group technology use by language for their time abroad are shown in Table 3.

Table 3
Means and Standard Deviations of Technology Use

Language	M (hours/week)	SD	t test
English (L1)	40.2	39.34	$p < .05$
Spanish (L2)	16.47	14.91	

Although, statistically speaking, the participants as a group used more technology in the L1 than in the L2 over the course of the semester, there was great variability in use as evidenced by the large standard deviations. There may have been differences among the participants in their ability to access the Internet in their host family homes, however, there was full accessibility at the university and in cafés downtown. We divided the results by type of technology use (Internet-related vs. other media such as movies, television, and music) below to see if one particular type of technology use was driving this variability over the others.

Table 4
Type of Technology Use by Language

Type of Use	Language	M (hours/week)	SD	t test
Internet	L1	18.53	20.13	$p < .01$
	L2	3.4	4.12	
Media	L1	21.67	22.19	$p = .20$
	L2	13.07	11.87	

As shown in Table 4, the participants reported, for both languages, spending more time watching movies and listening to music in general than being on the Internet, again with great variability, which we will consider in the qualitative analysis below. Between languages, the only significant difference was in the amount of use of the Internet. The participants as a group spent significantly more time on the Internet in the L1 than in the L2.

Session 1 Results

Motivation scores from Session 1 correlated strongly and positively with the proficiency scores from the same time of testing with a large effect size (95% CI: $r = 0.57$, $R^2 = 0.33$). Those participants with higher proficiency upon entering the study abroad program were more motivated, which resonates with the idea that these students in particular had chosen to study abroad to improve their linguistic skills as opposed to students in other studies who may have sought a cultural or educational experience regardless of the language spoken in the host country (e.g., Kelly, 2010). Anticipating the results from Session 2, we ran a correlation between the linguistic gain construct (Proficiency Time 2 – Proficiency Time 1) and motivation scores from the first session, but found no reliable correlation ($r = 0.17$, $R^2 = 0.03$). Those participants who were more motivated at the beginning of the sojourn may have shown minimally more improvement in their linguistic abilities according to their objective proficiency test scores, however, as mentioned previously, as a group there were no statistically significant changes between the proficiency test scores from the first session and those from the second session. This small correlation between motivation and linguistic gains for the group may prove to be more insightful on the individual level. We will examine this further in the participant analysis section.

Regarding the technology use overall means, no significant correlations were found between technology use in L1 English as a whole and motivation scores at Time 1. We found for technology use in L2 Spanish and motivation scores from this session that curiously there was a small negative correlation ($r = -0.25$, $R^2 = 0.06$). It is possible that students with less motivation at the start will revert to technology use, regardless of language, in order to escape the challenging study abroad environment, that is, there is less real-time pressure in using a language in the Internet than in face-to-face interaction. Since there was significantly less L2 than L1 technology use overall, these results may be simply spurious.

Session 2 Results

The slight correlation found in Session 1 between motivation scores from Session 1 and linguistic gain (Proficiency Time 2 – Proficiency Time 1) may have been weak due to the proficiency scores in Session 2. We posit this because we found no correlation between proficiency scores and motivation scores in Session 2. There was a small positive correlation between motivation scores in Session 2 and linguistic gains ($r = 0.26$, $R^2 = 0.07$), however, which is perhaps reassuring that the materials we used measured accurately the constructs we aimed to measure. Unlike in Session 1, the participants' motivation scores as a group did not correlate with technology use in L2 Spanish overall in Session 2. However, there was a negative correlation between motivation scores in Session 2 and technology use in L1 English, which is moderate ($r = -0.35$, $R^2 = 0.12$). This supports our hypothesis that students who are less motivated may spend more time engaged with home or family via L1 media. When we separated Internet and social media use from television, movies, and music, we found that the negative correlation was even stronger and the effect size even greater between L1 Internet use and motivation at Time 2 ($r = -0.49$, $R^2 = 0.24$), and the correlation with use of other L1 media such as movies was much weaker ($r = 0.21$, $R^2 = 0.04$), indicating that grouping these two types of technology use together was muddying

our previous results. There were no significant correlations between any type of technology use in the L2 and motivation scores taken during Session 2. Here, we recall that there was relatively low reported use of technology in the L2. Additionally, toward the end of the study abroad sojourn it is possible that participants were anticipating returning home, thus lowering motivation to learn Spanish and increasing their desire to contact their home friends and family in English. There was more interestingly a small to moderate negative correlation between technology use in L1 English and linguistic gains ($r = -0.28$, $R^2 = 0.08$), which was more negative when we separated L1 Internet use and ran the correlation again with linguistic gains ($r = -0.3$, $R^2 = 0.09$). This result showed a medium effect size, which offered support to our hypothesis that staying connected with the L1 via media may detract from the study abroad experience. There was no correlation between technology use in L2 Spanish overall and linguistic gains.

As mentioned previously, there was low reported use and significant variability among the participants in their L2 during the period of the sojourn. In order to more closely examine this, we included a qualitative analysis of the data for the four most informative participant cases. We chose these four due to the both positive and negative changes in their quantitative motivation and proficiency scores over the course of the sojourn. We believe these four cases may have cancelled each other out statistically with regard to any trends of technology use. Next, we discuss these four participants' perceived success of reaching their goals, analyzing their culture shock essays for more in-depth understanding of their motivation.

Participant Analysis

We selected four of the participants, two from each level, based on the trends in their motivation and technology use data for a more individualized qualitative analysis. The quantitative data for these participants can be found in Table 5.

Table 5

Quantitative Data for Four Participants Selected for Qualitative Analysis

Name	Spanish Level	Length of Sojourn (weeks)	Change in Motivation Scores	Change in Proficiency Scores	Tech Use in L1 (hours/week)	Tech Use in L2 (hours/week)
Jill	Beginner	9	+0.7	0	39	6
Gus	Beginner	9	+0.2	-1	14.5	11.5
Laura	Intermediate	6	+0.2	0	13	14
Kelsey	Intermediate	6	-0.9	0	161	2

When considering the qualitative data, the greatest distinctions appeared to happen with the two beginners we examined, which is not altogether that surprising since they entered the study abroad program with the least knowledge of the language and culture and possibly with the greatest potential for gains (Brecht, Davidson, & Ginsberg, 1993; Lapkin, Hart, & Swain, 1995). Additionally, their lack of experience with language learning in general could lead to some unrealistic and more likely unmet goals for a short summer sojourn (Day, 1987). This mismatch in goals and perceived outcomes may have a significant impact on students' continuing motivation to learn the L2. We will also consider two of the

intermediates, who showed very different amounts of technology use and also very different outcomes.

Jill. Jill was a beginner learner of Spanish. Her answers to the language contact profile open-ended questions indicated that she met her goals during her sojourn, which were to be able to speak to locals and improve her vocabulary. She elaborated that she met her goals in the end because she had spoken Spanish every day. However, this sentiment is not consistent with her reported high level of technology use in the L1 and her culture shock essay statements. In her culture shock essay, she revealed only superficial and minimally insightful observations about her host country's culture, such as mentioning that she had observed Argentines' strong love for soccer. Most significantly, she wrote in the essay that she felt out of place at a host family party:

I was soon surrounded by locals that spoke Spanish crazy fast. I felt so out of place. It was very hard to socialize with them and some didn't have any desire to talk to me. It was definitely an event that made me realize we are not in the US anymore. And I felt very uncomfortable. (Jill)

Her discomfort with trying to integrate herself into the host culture is quite evident.

Gus. A different story played out with Gus, also a beginner learner of Spanish. His goals were to understand and use Spanish well, and he wrote that he felt he could read well by the end of the sojourn. Contrary to Jill, Gus reported about the same total amount of technology use in the L1 and L2 per week. The comments in the culture shock essay corroborate these data. This participant wrote a self-reflective and culturally-engaged response to the essay prompt, admitting his homesickness but eventual adaptation to the host culture. His comments revealed substantial personal growth, and empathy for and understanding of the host culture. He remarked that this was the first time he had been thousands of miles away from his family, but that he was impressed by the fact that his host family welcomed him with open arms. Summing up his experience, he wrote:

At first I was nervous and confused about a lot of things when I came here. But each of these aspects of culture shock have made me into a stronger individual. I believe that every college student should experience traveling/studying abroad to broaden their cultural thoughts and horizons. (Gus)

This is a prime example of how, even with initial homesickness, a study abroad participant can get used to a new culture and feel like a part of it in time.

Laura. Laura was a highly motivated intermediate learner of Spanish when she began her summer sojourn in Argentina. Like Gus, her technology use was comparable in each of the two languages, but with technology use in the L2 reported as being slightly higher. Her written goals were to be fluent in Spanish eventually and to learn during her sojourn in general. She felt her conversation abilities improved a lot and that she had reached her goals by the end of the 6 weeks. Because of her language proficiency level, she wrote her culture shock essay in Spanish, and she demonstrated in-depth knowledge about

differences between her host and home cultures. After describing a few inconvenient things about her host country's schedules, she wrote:

Pienso que las cosas que me sorprendieron y el aspecto valioso son un poco más importante [sic] que estas costumbres incómodas. [I think that the things that surprised me and their value are a bit more important than these uncomfortable routines.] (Laura)

She concluded her essay saying that she was thankful for the experience.

Kelsey. Of all the participants, Kelsey may have the most compelling story. Like Laura, she was an intermediate learner at the beginning of her sojourn. With only 6 weeks abroad and starting at a relatively high level, her self-reported technology use was the highest of any of the participants. In addition, she reported that she did not reach her goals for study abroad, which were to have fun and to become fluent in Spanish. She wrote that they were “set too high.” This is a relatively obvious assessment in that becoming fluent is not easily achieved in a 6-week sojourn, although this is often misconceived by students going abroad, and it makes sense in light of her other data. In her culture shock essay, she wrote how she has changed physically, emotionally, and spiritually. For example:

Un aspecto de choque cultural me pareció sorprendente fue que [sic] el choque cultural ocurre [sic] en mi cuerpo. Mi cuerpo pasó por un choque cultural con el cambio brusco en la alimentación y la dieta. Fue una reacción positiva, y voy a tratar de mantener esta misma dieta cuando vuelva a la [sic] EE.UU. [One surprising aspect of culture shock occurred with my body. My body had a culture shock with the rough change of food and diet. It was a positive reaction, and I am going to try to maintain this same diet when I return to the U.S.] (Kelsey)

This was not the type of culture shock that we expected students to experience. Kelsey also commented on how, despite feeling alone, she had been able to go out and make friends at the university. However, we learned through personal communication with the program director that these friends were fellow U.S. participants in the study abroad program. Other than through the food, she never mentions the host culture as the source of her transformation.

Discussion

While these participants' qualitative data is intriguing in its own right, we now synthesize what we found in our quantitative and qualitative analyses in order to respond to our research question: If pre-departure motivation to learn the L2 predicts potential linguistic gains while studying abroad, has the increased presence and use of digital media influenced such an outcome? The present data indicate significant reported Internet and technology use during study abroad, which supports our premise and corroborates prior research (e.g., Coleman & Chafer, 2010; Kelly, 2010; Ranta & Meckleborg, 2013). The amount of L1 Internet use, when separated from the overall technology use, showed a moderately strong negative correlation with motivation scores from the second session. Similarly, there was a moderate negative correlation between L1 Internet use and linguistic

gains. These correlations support the hypothesis that the greater availability of technology in the L1 and L1 Internet access in particular makes this a viable outlet for students who are homesick or “shell-shocked” (Irie & Ryan, 2015), and may be drawing students away from engaging with the host culture through the target language, thus limiting the possibility of them reaching their linguistic goals while abroad. As we saw with Jill in her culture shock essay, there was a lack of integration into the host culture paired with a lot of technology use in the L1. On the contrary, Gus and Laura showed more comparable use of technology between the L1 and the L2, which was paired with insightful culture shock essays that described great personal growth and understanding of the host culture. Hence, the importance of looking at each individual becomes apparent. Laura, in particular, began the program at a higher proficiency level relative to many of the other participants, which may have allowed her greater facility with technology in the L2, which is encouraging in regard to improved outcomes for participants of higher proficiency. It is important to note that she had high motivation scores, positive feelings of having reached her study abroad goals, and insightful culture shock essay comments. Regardless of any linguistic gain measure, these all point toward a successful sojourn. Additionally, spending less time engaging online in the L1 with friends and family from home potentially allowed her more time to achieve success.

Finally, Kelsey proved to be a curious case in that her technology use in the L1 was very high, her motivation and linguistic gains were low, and yet she wrote in her culture shock essay about how she had been transformed. With such a high amount of technology use in English, we must question whether it is the case that her goals were set too high or whether by disconnecting from the host country around her she never gave herself a chance to be able to even start to achieve them. Perhaps, inferring from her low motivation scores, she was not motivated sufficiently to want to achieve these goals (see Day, 1987). Upon closer examination, we see that the transformation she revealed in her culture shock essay did not concern the host language or culture, but rather a change in social status within her American cohort. Scoring lower on the standardized motivation test battery over time, showing no change in proficiency, claiming unfulfilled goals, and reporting very high amounts of technology use in the L1 all fit the profile of an unsuccessful L2 sojourn. One might ask what linguistic and cultural transformation might she have enjoyed if she had not been so connected to her home and L1 via technology and media?

If we define study abroad success as partly linguistic gain and partly integration into the host culture, then we see here a positive relationship between success and motivation, which are negatively affected when participants succumb to the lure and comfort of the L1 via technology and may be positively reinforced when participants engage in L2 Internet and technology use. In the cases of the four participants examined qualitatively, we found that technology use in the L1 and motivation were negatively related. Also, positive feelings about the host culture and perceptions of having met personal study abroad goals were present in the cases with lower reported use of technology in the L1.

Although there were no statistically significant linguistic gains according to our proficiency test, this is not surprising given the short sojourn (Schmidt-Rinehart & Knight, 2004; Segalowitz & Freed, 2004). It is not new to report, unfortunately, that some students in short-term study abroad regress in L2 abilities (see Martinsen, 2010). It is possible that students may have made gains in areas not tested by this instrument, such as oral fluency, which is more typical for study abroad (Brecht et al., 1993). Additionally, no significant

changes in motivation scores were found, which was the case in Allen and Herron (2003), who also examined a 6-week study abroad program.

Conclusion and Future Directions

Although the study abroad experience has been said to be extremely individual (Coleman & Chafer, 2010; Shaules, 2015) and dynamic (Allen, 2013; Irie & Ryan, 2015), we found here some significant trends in regard to the relationships among these three constructs: motivation, technology use in the L1, and linguistic gains during study abroad. From our results it is clear that the most successful sojourn, the sojourn in which a participant most fully experiences and integrates into the host culture and language, is one in which the participant is motivated to learn the language and resists the urge and comfort of frequent L1 contact via technology with family and friends back home. This has critical implications for study abroad programs worldwide. If we are becoming more connected, as is evidenced here, and it is becoming harder to shed our previous lives in order to better focus on the one at hand, then full immersion study abroad will be a thing of the past, which has its own implications for educating tomorrow's global citizens. As Schaules (2015) lamented, "despite increased connectivity and technological advances, cultural misunderstanding, differences in language and culture, ethnic conflict, intolerance, and even genocide are not disappearing anytime soon" (p. 3). Therefore, if we as a society are not going to be giving up the Internet, perhaps researchers and instructors can seek out ways to shift students' technology use to the L2. One suggestion by Allen and Herron (2003), made in light of their participants showing no integrative motivation gains after study abroad, was to exploit the Internet for L2 resources. Encouraging participants in study abroad to connect with host families prior to departure through Skype or Facebook, to text message native speakers when in the host country, or to engage in online research in the L2 are all possible ways to enhance comfort with using technologies in the L2. Trentman (2013) found that American study abroad participants in Egypt maintained successful friendships with native L2 speakers that they had begun prior to study abroad. Another possibility to mitigate the time spent using technology and media in the L1 may be to more fully occupy students' time while abroad. In the present study, students were engaged during some afternoons and weekends in travel and social interaction with conversational partners, which were important in encouraging L2 interaction. Increasing these L2 interaction requirements to include L2 communication via technology as well could help bridge the gap between students' propensity to enter the virtual world and the language in which they choose to do so. Educating students before they go abroad about the significant amount of time and focus that is needed to see linguistic gains during a short-term study abroad program would also help students set realistic goals, perhaps even begin a DMC that could be sustainable for this period of time abroad and ultimately lead to more success. Finally, having the ability to share experiences abroad with friends and family back home via the Internet could have some facilitative effects in increasing students' level of comfort as an L2 learner in the new environment (see Back, 2013; Dressler & Dressler, this issue) to avoid that perspective of being a "shell-shocked doubter" as described by Irie and Ryan (2015).

This study presented novel data on a relatively new topic, however there are some limitations that could be addressed in future research. The language contact questionnaire employed here was only administered at the end of the sojourn. Participants may not have

been able to recall precisely their Internet and technology use for the whole sojourn, especially in the last few, perhaps emotional, days of their time abroad. A more comprehensive log of technology use and Internet activity such as the one used by Ranta and Meckleborg (2013) would increase the power and depth of data gathered. In future research, perhaps a more objective measure of technology use that includes tracking participants' online usage via a computer program or application might eliminate the need for self-reporting altogether. Another potentially reliable method, such as Back (2013) employed, is becoming friends with participants on Facebook to monitor their L1 and L2 use in a medium in which the researcher is not the intended audience. Additionally, due to the growing consensus on the dynamic nature of motivation, it is possible that the present quantitative motivation measure was not sufficient to capture all the changes in motivation experienced by language learners over the course of a sojourn abroad. The use of a Q set analysis, like in Irie and Ryan (2015), many times throughout the time abroad may better represent motivation trajectories. New ways to measure the complex dynamic systems approach to motivation in SLA are still needed, especially reliable and consistent qualitative measures. Most significantly here, we have put forth the first study that analyzes the amount of technology used by sojourners in both the L1 and L2, and how this relatively new aspect of their daily lives potentially impacts motivation, linguistic gains, and ultimately the culture of study abroad.

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