

## **Bilingual Facebook Users' Cognitive Writing Processes**

### **Processus cognitifs d'écriture des utilisateurs bilingues de Facebook**

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#### **Abstract**

This study seeks to explore the cognitive processes involved as bilinguals wrote English and Spanish Facebook status updates. Three phases of data collection were employed: individual interviews, examination of participants' Facebook status updates and a group interview. The findings suggested that regardless of the language in which participants wrote, they made a series of decisions as they selected the content, chose the language, formulated the text and typed the status updates. The findings also indicated that for the individuals in this study, higher language proficiencies resulted in increased automaticity when converting thoughts to nonstandard online communications. While participants engaged in some experiences found in Flower and Hayes' Cognitive Process Model (1981) additional explanation was needed to illustrate how this process varied for online bilingual writers.

#### **Résumé**

Cette étude cherche à explorer les processus cognitifs utilisés lorsque des personnes bilingues écrivent des statuts Facebook en anglais et en espagnol. Trois phases de collecte de données ont été utilisées : entrevues individuelles, examen des mises à jour de statut Facebook des participants et entrevue de groupe. Les résultats suggèrent que peu importe la langue de rédaction utilisée par les participants, ceux-ci procédaient à une série de décisions en sélectionnant le contenu, choisissant la langue, formulant le texte et entrant les mises à jour. Les résultats indiquent également que pour les personnes de cette étude, de meilleures compétences linguistiques se traduisaient par une automaticité accrue au moment de convertir les pensées en communications en ligne non standards. Bien que les participants aient pris part à certaines expériences décrites par Flower et Hayes dans leur Cognitive Process Model (1981), de plus amples explications sont requises pour illustrer comment ce processus varie pour les rédacteurs bilingues en ligne.

## **Introduction**

Today, more than ever, people are using different internet mediums to communicate with one another. The benefits of online writing extend beyond merely socializing. For instance, online writers can gain linguistic empowerment, express themselves, network, and manage their identities (Fullwood, Sheehan, & Nicholls, 2009; Kelly & Safford, 2009). One of the most popular places to write online is Facebook, the world's largest social networking site. Facebook states that its mission is to give "people the power to share and make the world more open and connected" (Facebook, 2013). The site has experienced continued user growth. As of September 30<sup>th</sup>, 2013 on average there were 727 million daily active users and 1.19 billion monthly active users (Key Facts, 2013).

Previous research (Depew, 2011; Shih, 2011; Yunus & Salehi, 2012) has examined how Facebook users can develop their writing through the site. In addition to monolingual users, English language learners (ELLs) may also experience the benefits of writing on Facebook. There, ELLs are able to connect to friends and establish their identities (Depew, 2011). Additionally, the integration of Facebook into the English as a second language writing classroom can build students' knowledge, increase motivation and build confidence (Yunus, Salehi, & Chenzi, 2012). However, despite Facebook's rapid growth and the attention it has received from researchers, little consideration has been given to the cognitive processes employed when communicating on the website through informal writing, particularly for bilinguals. Such information may give educators a better understanding of the similarities bilinguals experience when writing online. Educators can then build on the cognitive practices bilingual learners are already using to guide and support students as they write in a variety of contexts, both on and offline.

## **Review of the Literature**

### **Bilingual Writing Processes**

According to Flower and Hayes' (1981) Cognitive Process model, the writer engages in various metacognitive activities including: planning, translating thoughts and images into words, reviewing what has been written and monitoring the entire process. Following this model, writers are able to jump between these activities, rather than sequentially moving from one activity to the next. Additionally, based on the individual's goals and the task itself, writers are also able to adapt the metacognitive strategies they use based on the task at hand (Negretti, 2012). While this model helps to explain the monolingual writing processes, it does not offer information to describe how this process may vary for bilingual and multilingual writers, particularly in regards to online writing.

When examining the processes of bilingual writing, there is a relationship between one's first and second language (Bialystok, Luk, & Kwan, 2005; Chenoweth & Hayes, 2001, Cummins 1991; Durgunoglu, 1998; Edelsky 1981a,b; Deacon, Wade-Woolley, & Kirby, 2009; Valés, Haro, & Arriarza, 1992). Cummins' (1991) framework of Common Underlying Proficiencies (CUP) has stated that cognitive, academic, and linguistic information and skills acquired in one language may be transferred and demonstrated in another language and, thus, bilinguals' and multilinguals' languages are dependent on one another (Cummins, 1991). An underlying

assumption of language transfer is that the knowledge or skill must initially be present in one's first language before it can be transferred to one's second language.

Previous studies (Bialystok, Luk, & Kwan, 2005; Deacon, Wade-Woolley, & Kirby, 2009; Durgunoglu, 1998; Edelsky, 1982a,b) have examined the implications of Cummins' (1991) CUP in bilinguals. For instance, when CUP was applied to literacy skills of first, second, and third graders in a Spanish-English bilingual program, Edelsky (1982a,b) found that those who possessed Spanish literacy skills transferred those skills to their English writing before they were formally taught how to do so. Edelsky (1982 a,b) concluded that these students were able to apply their personal style as well as spelling skills, and knowledge of word segmentation that had been acquired in Spanish to English. Moreover, when learners recognized the ways in which literacy skills in one language may be used to support literacy skills in another language, they were more likely to experience the benefits of language transfer (Jimenez, Garcia, & Pearson, 1995). It has also been suggested that bilingual literacy skills transfer when writing systems are similar and may not transfer when they are dissimilar (Bialystok, Luk, & Kwan, 2005; Deacon, Wade-Woolley, & Kirby, 2009; Valdés, Haro & Arriarza, 1992).

Some studies have emphasized the role of cross language transfer in the revision process (Chenoweth & Hayes, 2001; Elola & Mikulski, 2013; Valdés, Haro & Arriarza, 1992; Thorson, 2000). For instance, Elola and Mikulski (2013) compared the amount of time L2 heritage Spanish speakers spent on revising short compositions in English and Spanish. To accomplish this, the study relied on screen capture software which recorded the activity within the word processing program and any other programs the students used. In both languages, students made surface revisions which did not alter the meaning (e.g., spellings, tense, punctuation, number, modality, additions, and deletion) and meaning revisions which included both minor and major revisions to the text (e.g., adding several words to a sentence). More time was spent revising text in English. These findings suggested that the types of revisions were nearly the same in both languages, highlighting the role of cross linguistic transfer.

Valdés, Haro and Arriarza (1992) emphasized how one's abilities in a first language can be used to support writing in a second language. They examined Spanish text produced by students studying at selective American universities. Eighteen of these students were enrolled in their first year, 12 were enrolled in their second year and eight were participating in advanced Spanish composition college courses. All participants were English speakers who were now acquiring Spanish. The students' wrote about themselves and were analyzed based on their quality of message, organization and style, and standards of language use. They found that students built directly on the writing abilities learned in their L1. Students who were more advanced in their Spanish abilities were able to capitalize on knowledge of writing and conventions which had been developed in their L1, which resulted in more sophisticated and coherent Spanish writing.

Chenoweth and Hayes (2001) examined the revision processes of six native English speakers who were learning French or German. Participants answered several prompts in both their L1 (first language) and L2 (second language). As they did, they shared their thoughts through a think a loud. The findings suggested that as the writers gained more experience in their second language, their writing fluency (measured by words written per minute) increased. The average number of words that were verbalized during pauses or during revisions also increased. The researchers indicated that as writers become more familiar with the grammar of a given

language, they were able to revise less frequently, because the writer produces more accurate text. The researchers theorized that two mechanisms are at work: a translation process which converts thoughts into text of the given language and a revision process which revises or selects the chosen language.

Thorson (2000) also examined revisions made in participants' L1 and L2. In this study, computerized tracking was used to examine the text created by American university students enrolled in intermediate German language and upper level culture courses. It was found that the students wrote less in German but revised more than when they wrote in English. Ultimately, both Thorson (2000) and Chenoweth and Hayes (2001) concluded that writers revised less when writing text in a language in which they had a high level of proficiency; while more revisions were required in a language in which they had less proficiency.

### **Online Writing Processes**

While writers likely are able to transfer language abilities learned in academic contexts, it may be unclear the degree to which such transfers occur in other areas (Valdés, Haro, & Arriarza, 1992). The aforementioned studies shed light on the processes of bilingual writing for traditional purposes, however, less attention has been devoted to exploring the writing process bilinguals employ when writing to communicate with one another online. Given the widespread use of computer mediated communication, existing literature (Depew, 2011; Murugaiah & Thang, 2010; Stapleton, 2010) has looked at how L2 (second language) learners write in English online, but have not simultaneously focused on students' L1 (first language).

For instance, Depew's (2011) study highlighted how three college level ELLs wrote in English on Facebook. The study included two native speakers of Gujarati and one native Spanish speaker. Each student was asked to take the researcher on a tour of his or her Facebook page. As the students reviewed their Facebook writing, they explained the decisions they made as they wrote. The findings indicated that participants had made choices about the pictures displayed, monikers used, text chosen and languages selected as they wrote.

Others (Riley, 2011; Carroll, 2008; Evans, 2009) have noted bilingual writers' choices of language when writing online. For instance, in a study of emergent bilinguals who were asked to communicate online using French and/or English, Evans (2009) found that when students navigated from one language to the other, they did not do so arbitrarily, but rather were generally aware of the reasons prompting their actions. Thus, these learners had some cognitive rationale that resulted in discourse-related choices (Evans, 2009). Evans (2009) also suggested that emergent bilingual writers refrained from codeswitching (switching between languages), because they thought and operated in one language at a time.

Both studies which have focused on the writing processes of bilinguals offline (Chenoweth & Hayes, 2001; Elola & Mikulski, 2013; Valdés, Haro & Arriarza, 1992; Thorson, 2000) and studies which have examined bilinguals' nonstandard online writing (Riley, 2011; Carroll, 2008; Cunliffe & Harries, 2005; Evans, 2009) have not given sufficient attention to the ways in which writers mentally convert thoughts in each language, particularly to nonstandard writing in digital communications, nor have they thoroughly reviewed the writing with the authors. Instead, research on bilinguals' cognitive online writing processes has resulted largely in investigators'

speculation of what the participants may have thought as they composed online text or a cursory look at why the participants made choices while writing online. In various studies (Carroll, 2008; Elola & Mikulski, 2013; Valdés, Haro & Arriarza, 1992), conclusions have been drawn by the researchers after reviewing online text, but without feedback from the writers themselves. In a similar study (Riley, 2011), bilingual online writers answered general survey questions about the decisions they made while writing on Facebook, but did not explain why they had made specific choices. Given the lack of studies that address bilinguals' cognitive processing when writing nonstandard text in each language online, the purpose of this study is to explore how participants converted thoughts into Facebook status updates, and how these processes may be similar and different in each language.

In this article, the researcher argues that bilingual participants who were relatively equally dominant in English and Spanish engaged in similar cognitive processes throughout the online writing process. For one participant who had expressed he had not dominated English, the level of automaticity as he decided what to write about, selected a language, chose whether or not to edit and revise, and typed the text was nearly the same in each language; however, when he converted his thoughts to text, he used more effort and the process was less automatic. This may suggest that for individuals in this study, higher levels of language proficiency resulted in increased automaticity when communicating through Facebook status updates.

## **Research Questions**

The following questions guided the study:

1. What cognitive processes do Hispanic, English-Spanish bilingual college students and college graduates experience when converting thoughts into nonstandard text while communicating through Facebook status updates?
2. What are commonalities and differences in the cognitive processes Hispanic, English-Spanish bilingual college students and college graduates experience as they convert thoughts to online writing in each language?

## **Methods and Analysis**

### **Participants**

Participants were required to be Hispanic college students and college graduates between the ages of 18 and 30. Each participant was also required to frequently post status updates in English and Spanish. To obtain participants, the researcher emailed her Facebook friends asking those that met the mentioned criteria to volunteer. She then employed what Goetz and LeCompte (1994) refer to as network selection in which the initial volunteers provide the researcher with names and contact information of other people they know that fit the sampling criteria. Participants were given a \$30 gift card at the end of the study. Ultimately, three male and three female native Spanish speakers were selected. Each of the six participants were born in Mexico, but had moved to the United States between the ages of six and 15. Additionally, all participants claimed to be relatively balanced bilinguals meaning that they were “approximately fluent in two languages across various contexts” (Baker, 2006, p. 9). At the time of the study, five were

college students and one was a recent college graduate. To maintain anonymity, each participant was assigned a pseudonym. See Table 1 for additional information about participants.

Table 1  
*Participants' Background Information*

Participant	Age	Age of Arrival to U.S.	ESL/ bilingual education (grade)	Age of first online comm. <sup>a</sup>	Age of first Facebook account	Dominant language(s)
Elena	18	11	Bilingual education (K-4)	10	14	English and Spanish
Marco	19	6	Bilingual education (1-2)	7	16	English and Spanish
Lydia	19	9	Spanish support (4)	10	15	English and Spanish
Daniel	19	14	Bilingual education K-3, 6-8	7-8	16	English and Spanish
Felix	20	12	ESL (7)	11	15	Slightly dominant in Spanish
Isabel	24	15	ESL (9)	12	22	English and Spanish

Notes. <sup>a</sup> comm. = communication

Data was obtained sequentially from the following three sources: 1) Facebook status updates, 2) one-on-one interviews and 3) a group interview.

### Facebook Status Updates

Facebook friends can stay connected is by posting status updates, also known as news feeds that are made public to users' online friends. Status updates can help users stay connected by telling Facebook friends anything the user is thinking or feeling; or informing others of things they may need to know (Abram & Pearlman, 2008; Kraynak & Belicove, 2010). During the first stage of data collection, the researcher randomly selected 50 English and 50 Spanish status updates from each of the participants' walls<sup>1</sup>. Additionally, depending on availability, up to ten status updates which contained a mixture of English and Spanish were also selected from each participant. The researcher looked for instances of nonstandard writing. Based on these instances, categories were

<sup>1</sup> The wall is a term used to describe the place in which, among other things, users are able to view the status updates of their Facebook friends.

created and refined until the following six categories of nonstandard writing emerged: pictograms/logogram, initialisms, invented spelling, nonstandard capitalization, nonstandard punctuation and non-words. Within each category, subcategories were established. For instance, within the category of "invented spelling", the following subcategories were added: repeated letters, written as pronounced, letters omitted within word, clipped word, possible typo, added space, English letter substitutions, and Spanish spelling substitutions. The status updates were then reviewed again to ensure that all instances of nonstandard language use could be placed in a category and/or subcategory. Each participant's instances of nonstandard writing was then placed in a chart under the appropriate categories and subcategories. See Riley (2013) for a complete description and analysis of the ways in which participants used nonstandard writing in English and Spanish.

**Individual Interviews**

During the second stage, the researcher conducted an hour long one-on-one Skype interview with each of the six participants. All participants were asked the same general questions regarding their background and the processes they used when converting their thoughts to Facebook status updates. The participants were also asked to review selected status updates which contained a sample (See Table 2 for example) of their nonstandard language use in each of the six categories mentioned above and in both language. Participants were asked to comment on what they were thinking as they wrote the text. This approach was selected, since reviewing writing with the author has been found to be more rhetorically informative and arguable more ethical (DePew, 2011). Specific questions varied from participant to participant based on the content of each status update. For instance, the researcher made statements such as, "I noticed in these status updates (referring to specific examples provided) you used smiley faces at the end of status updates in English and in Spanish." These questions were followed up with additional questions, such as, "Why did you do this?" and "What was your goal in using these smiley faces?" The interviews were then transcribed verbatim. Using descriptive and interpretive coding, the interview responses were coded until overarching themes could be identified.

Table 2  
*Sample Facebook Status Updates for Participant Reflection*

Digitalk Category	Examples from your English FB status updates	Examples from your Spanish FB status updates	Reason(s) for digitalk in each language and comments
<b>I. PICTOGRAMS/ LOGOGRAMS</b>			
A. Emoticons (smiley faces/computer art)	No work today at my second job :) I think im guna take a long nap after school :)	En la fila...se acabaron las vacaciones ninios!!!! :) los espero maniana en el salon de clases	
A1			

## **Group Interview**

The third stage consisted of an hour long group Skype audio interview which included questions based on the content of the status updates and the responses during individual interviews. Of the six participants, four were available to participate. The researcher mentioned experiences of the cognitive online writing process that were common to several participants, and allowed participants to elaborate on these experiences as well as share any additional insights. The group interview responses were coded in a similar manner to one-on-one interviews, in which descriptive and interpretive coding was used and themes were identified.

## **Findings**

In the following section, the researcher discusses the cognitive process of converting thoughts to Facebook status updates. However, this is not to say that participants engaged in each of these processes every time they posted status updates, nor is it to imply that they followed the processes in the order listed below. The data suggests that during the Facebook status writing process, participants made decisions as they engaged in the following: deciding what to write, selecting a language, choosing whether or not to edit and revise, converting thoughts to text and typing the status update.

### **Deciding What to Write About**

All participants maintained that the purpose of writing status updates in each language was to achieve at least one of the following goals: 1) to express themselves, 2) to share information and 3) to entertain others.

Participants wrote status updates to achieve at least one of the three purposes mentioned above. Elena discussed the type of status updates she posted, stating, “I think it’s more like something interesting or something affects me or is important to me or that I want to give my opinion about or communicate something to my friends.” Felix and Marco both mentioned that they shared information they found humorous. With the exception of Isabel, all participants included song lyrics and/or quotes in their status updates. Participants explained that at times, lyrics and quotes were posted simply because participants liked them and wanted to share them with their online friends. Other times, they suggested lyrics and quotes were posted because respondents felt they could identify with them. In one status update, Lydia wrote, “Normalmente no rezo, pero si estás ahí, por favor, sálvame Superman!! - Homero Simpson :) (Normally I don’t pray, but if you are there, please save me Superman!! - Homer Simpson :)). She explained her reason for sharing the quote: “Whenever I find something that I think is witty or funny or that people will like to know about it or hear about it, I just put it up.”

### **Screening/Editing Thoughts and Text**

Most participants (5 out of 6) asserted that they mentally screened their English and Spanish status updates for language and/or content.

Each of the individuals in this study indicated that the information they wrote in their status updates accurately represented their thoughts, but for some, certain words and information were not included in their status updates. When conveying their thoughts, some participants chose not



to use language that could be offensive to others. For instance, Elena stated that when writing on Facebook, she did not want to set a bad example for younger family members by using vulgar language; while Marco did not use curse words, because he did not want his family members and teachers to think poorly of him. Daniel, Felix, and Lydia all noted that they would not post information that was too personal. Marco explained how when it came to finding out the boundaries of what was appropriate, he looked to his friends' writing. He stated, "So, I just started reading other peoples' statuses. What was like the right stuff to put and what was too far."

### **Choosing a Language**

Most participants (4 out of 6) indicated that at times the language in which they wrote was dependent on their intended audience.

**Language of the readers.** The majority of status updates were written in English or Spanish, with only one to 10 written in a combination of the two languages. Most of the participants expressed that the language in which they chose to write their status updates was chosen based on what they were writing about and consequently for whom the updates were intended. Several respondents indicated that there were three groups of individuals with whom they communicated on Facebook: 1) Family members, 2) school friends from the United States, and 3) friends from Mexico. Since all participants learned Spanish as their first language and came from Spanish speaking families, it came as no surprise that when communicating with family members, Elena, Felix, and Isabel explained that they generally wrote in Spanish. Elena commented, "If it's something important in my life or something that I would want my family to understand what I'm writing, I would pick Spanish instead of English."

Elena, Felix, and Isabel commented that if they posted a status update related to classes, it was generally written in English. This was evidenced in one of the several status updates Felix posted that was related to classes: "Mechatronics test in about 1.5 hours =/." In fact, it was common for participants to write about homework assignments, going to class and school related functions in English. When communicating with friends both in the United States and in Mexico, English or Spanish could be used depending on the language the target audience generally used.

**Language one is thinking in at the time.** Some participants expressed that sometimes they wrote status updates in the language in which they were thinking at that given moment. Daniel explained, "I can't really be like, I'm going to post in English today. If I thought of something clever, or I thought of anything, it has to be like oh I thought about this in Spanish or I thought about this in English."

**Language that best expresses the status update.** Most participants included song lyrics and/or quotes in their status updates that were almost always in the same language in which they had originally been written. In doing so, it was likely that they were able to preserve the authenticity, and at times, maintain the rhythm and/or rhyme of lyrics and quotes. Daniel explained that the language in which he wrote status updates was, in part, dependent on the language in which the message made more sense or the language in which the message's humor could best be conveyed.

Daniel's assertion was supported by participants' inclusion of phrases that were better expressed in one language over the other. For instance, Felix included a well-known Spanish tongue twister in his status update: "Pablito clavo un clavito!! Cuantos clavitos clavo Pablito???? 2!!!! Gooooooooooooooooo!" (Pablito nailed a nail!! How many nails did Pablito nail???? 2!!!! Gooooooooooooooooo! ). In its English translation, it loses its rhyme as well as some of its alliteration. Furthermore, Felix's Spanish speaking Facebook friends would likely understand the tongue twister in its original form, while his monolingual English speaking Facebook friends would not.

**Language in which one feels more comfortable writing.** Isabel and Felix felt that sometimes it was easier for them to express themselves in their first language, Spanish. Felix suggested that if he was tired and not thinking straight, he would write in Spanish, since it came more naturally and was therefore easier for him. Isabel agreed that, at times, it was easier to express herself in Spanish. She stated, "Don't get me wrong, I know how to express myself also in English. I prefer to express myself in Spanish, because I was so used to doing that, expressing myself in Spanish for so long when I was little."

### **Formulating the Text**

The five bilinguals who claimed to have mastered both languages expressed that the process of converting thoughts to text was an effortless process. Daniel explained, "I don't really think about it like how am I going to write this. It just fluently goes. Lydia and Isabel agreed that they had developed certain habits when writing online, and thus, the process was automatic. Isabel asserted, "I always use the same words, like over and over." Lydia added, "Like the smiley faces, I've noticed it's mostly an automatic thing I do. I put smiley faces over everything." Isabel and Lydia's status updates supported their assertions that they regularly used similar creative spellings of words and emoticons. In contrast, Felix, who stated that he had not yet mastered English, expressed that this step of the process was different. He noted that in Spanish he was able to convert his thoughts to text automatically, but needed to put forth more effort to do so in English. He remarked, "In Spanish, it's really simpler for me, because again, this comes natural. When writing something in English, first I have to think in Spanish and then do the translation and make sure that it's correctly spelled, but sometimes if it's a phrase that I heard from someone else, I don't have to translate or think it in Spanish and do all the translations."

### **Typing the Status Update**

While half of participants (3 out of 6) noted that the devices they used influenced the text they wrote in each language, the other half did not.

Each of the participants posted status updates from their laptop computers and cellphones, though Daniel and Felix noted that they rarely wrote from their cellphones (see Table 3). When writing from the computer, all participants used browsers which spellchecked their text in English, but not in Spanish. While Elena, Felix, and sometimes Lydia edited their spelling when the spellchecker indicated it was incorrect, the rest of the participants generally chose to ignore the spellchecker and not to proofread their status updates.

Table 3  
*Participants' Devices Information*

Participant	Laptop Computer <sup>a</sup>		Cellphone	
	Model	Internet Browser	Operating System	Application/ Browser
Daniel	Samsung	Google Chrome	IOS (iPhone)	Application
Elena	Mac	Safari	Android	Application
Felix	Sony	Google Chrome/ Internet Explorer	Android	Application
Isabel	HP	Google Chrome	Android	Application
Lydia	Acer	Google Chrome/Mozilla Firefox	Unknown	Application
Marco	HP	Mozilla Firefox	Android	Application

*Note.* <sup>a</sup> All participants indicated that they wrote from a laptop, rather than a desktop computer.

Daniel, Elena, Marco, and Isabel mentioned that when using their phones, they would write out the entire word rather than selecting words suggested by their phones. Those with Android phones explained that their devices would autocorrect misspelled words in both languages; however, Isabel stated that her phone did not do so, since she had disabled this feature. Lydia mentioned that her phone did not have autocorrect options. While some participants believed the device from which they wrote influenced the text itself, others did not feel that was the case.

### **Same Process Different Language**

Participants maintained that the processes paralleled one another, because they made the same decisions, but in different languages. For instance, Marco expressed that regardless of the language in which he wrote his status updates, his decision to proofread and edit or not to do so was dependent on how much time he had. Regarding the process, Elena stated, “I think it’s very similar because just by knowing the language you can come up with the ideas in each language. You don’t have to either convert your thoughts from Spanish to English or from English to Spanish.”

### **Discussion and Conclusion**

The findings suggest that there were similarities amongst the cognitive process each participant experienced between one another regardless of the language in which they wrote. When writing the Facebook updates, most participants made choices including deciding what to write about, what language(s) to write in, whether or not to edit and revise; how to formulate and how to write the status updates. While there were some similarities between the thought processes of the

participants in the present study and Flower and Hayes (1981), further information is needed to offer a more complete explanation of the processes of bilingual writers.

Analysis of the data indicated that the purpose of the status updates influenced the language in which the text was written. For instance, if the goal of the status updates were for participants' to express themselves, then they may have chosen the language they felt more comfortable writing in or the language which best conveyed their thoughts. However, if the purpose was to share information with others or entertain Facebook friends, it is probable that participants chose the language the majority of their intended audience understood. Depew (2011) and Carroll (2008) also noted that when sharing information online, bilinguals' language preferences may be based on their intended audience. Furthermore, some topics may also be associated with either English or Spanish. For example, when discussing school related matters, some participants chose to write in English, and when referring to topics related to the family, they chose to write in Spanish.

In addition to choosing what language to write in, participants also had to decide whether or not to edit and revise status updates for language or content. Some respondents indicated that they did not use curse words or talk about personal information because they did not want to be perceived negatively by others and thus revised written or unwritten text. Writing can become interrupted when writers see they are no longer conforming to their goal (Hacker, Keener, & Kircher, 2009). Thus, in the present study, the goal was originally to convey a message, but some participants developed the additional goal of presenting themselves in a favorable way. In online settings, where writers' identities are known, it is likely that one goal of writers is to present themselves in a positive way or as the person they wish they were (Walther, 1996; Zhao, Grasmuck, & Martin, 2008). Similarly El-daly (2012) noted instances in which Spanish speaking participants had expressed concern for how others may perceive them based on writing in their second language. Furthermore, in the present study, participants did not report that they had edited the content in a sequential manner, but rather did so if and when they felt it was necessary to do so, thus supporting the idea that revisions can be made at any time in the writing process (Flower & Hayes, 1981).

When it came to what Flower and Hayes (1981) refer to as translating images and ideas into a visual representation, the present study found that the level of automaticity appeared to be dependent on participants' mastery of the language. For the five individuals who had likely fully developed their English abilities, it was probable that they wrote their English status updates with little effort; however, for Felix who expressed he had not dominated the English language, more mental effort was expended in his attempts to use correct spelling and grammar.

Finally, in each language, the device from which participants wrote their status updates may have influenced decisions regarding what type of text to use. While each of the digital writers had web browsers that enabled Facebook to spellcheck their status updates as they wrote, half of the participants claimed to regularly ignore the spellchecker's suggestions. Similarly, most of the participants had phones with auto correction features, but often chose to not accept the phone's correction, and to instead write the words out themselves.

Based on analysis of the data, it is likely that participants engaged in similar cognitive processes as they decided what to write about, what language to write in, whether or not to edit and revise

text, and how to type their status updates in each language, even if participants had not mastered both languages. The findings in this study may lend support to Cummins’ (1991) common underlying proficiency in which bilinguals rely on a single processing system and are able to transfer knowledge and skills between languages. It was only at the stage in which participants actually converted their thoughts to text that language proficiencies came into play. During this stage, the automaticity with which participants converted their thoughts to writing was dependent on their proficiency in the language in which they wrote (See Table 4). It was during this time that Felix, the participant who expressed that he had mastered Spanish, but not English writing, felt a difference in the processes. Although his writing in English and Spanish were stylistically similar, he believed that the process required more effort when writing in English to ensure that he had written the status update correctly. This lends support to Thorson (2000) and Chenoweth and Hayes (2001) finding that writers will spend more time revising in a language in which they are less proficient, than their dominant language. Thus, with higher levels of expertise, some processes may become more implicit and automated (Flower, 1994).

Table 4  
*Steps in Converting Thoughts to Status Updates Based on Bilinguals’ Proficiencies*

Steps in Converting Thoughts to Facebook Status Updates	Bilinguals who have Mastered L1 and L2		Bilinguals who have Mastered L1, but not L2	
	L1	L2	L1	L2
Deciding What to Write About	Same	Same	Same	Same
Editing/Revising Thoughts and Text <sup>a</sup>	Same	Same	Same	Same
Choosing the Language	Same	Same	Same	Same
Mentally Formulating the Text	Same	Same	Same	Different
Writing the Text	Same	Same	Same	Same

*Note.* L1 = first language. L2 = second language.

<sup>a</sup> This refers to mentally screening the text for language which may be offensive to others or content that may be too personal to include in Facebook status updates.

### Implications

The research consisted of six case studies. Thus, more data is needed to generalize the findings to a larger number of bilinguals. While the researcher does not offer implications for bilinguals at large, she does offer the following two implications for the bilinguals in the study:

1. The cognitive process participants engaged in shared many similarities with Flower and Hayes’ Cognitive Process Model (1981). Thus, it is possible participants could build on these processes when writing for other purposes.
2. The finding that the participant who had not dominated the English language engaged in most of the Facebook writing process with ease, except when converting his thoughts to

English text may have additional implications. It may suggest that he would be able to still perform many of the cognitive tasks surrounding writing (e.g., deciding what to write about, editing and revising) with ease, but may experience greater difficulty and less automaticity when actually converting his thoughts to text.

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