

Autobiographical Memory and Language in Bicultural Bilinguals

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1. Introduction

The relationship between language and thought has been studied most frequently through the prism of the Sapir-Whorf Hypothesis (Whorf, 1956). The Sapir-Whorf hypothesis suggests that language plays an important role in determining cognitive processes (The Linguistic Determinism Hypothesis) and that cognitive processes may vary across languages (The Linguistic Relativity Hypothesis). In its broader form, the Sapir-Whorf hypothesis proposes that the language we speak may influence the way we see the world, the way we cut out ‘reality’ around us, the way we see action (e.g., Gentner 1982), entities (e.g., Boroditsky, in press a,b), and other people (e.g., Asuti, 1995). In this paper, we argue that the language we speak influences not only the way we see the world around us, but also the way we see and think about ourselves, our self-perception, identity, autobiographical life narrative, in sum, our *self*. In fact, many a bilingual will tell you that they feel like different people when they are functioning in their different languages. Consider this quote from an autobiography by a Polish-English bilingual, *Lost in Translation* (Hoffman, 1989, p. 199):

“-Should you marry him? the question comes in English.

-Yes.

-Should you marry him? the question echoes in Polish.

-No.

-Should you become a pianist? the question comes in English.

-No, you mustn't. You can't.

-Should you become a pianist? the question echoes in Polish.

-Yes, you must. At all costs.”

One may think and feel differently when speaking two languages associated with different backgrounds; decisions may be reached in a different manner and factors may be weighed differently depending upon the language spoken and the culture this language is tied to. Empirical research focusing on bilinguals supports this argument. Studies on autobiographical memory in bilingual speakers have revealed different patterns of memory retrieval depending upon the language in which memories are being accessed (e.g., Marian & Neisser, 2000; Conway, 2003; Javier, Barroso & Munoz, 1993; Koven, 2001; Larsen, Schrauf, Fromholt, & Rubin, 2002; Schrauf, 2000; Schrauf & Rubin, 1998, 2000, 2001, in press; Otoy, 1987). Applied research with bilinguals suggests that services such as psychotherapy for bilinguals may be more effective when the language of retrieval matches the language of encoding than when the two do not match (e.g., Aragno & Schlachet, 1996; Gutfreund, 1990; Marcos, 1976; Santiago-Rivera & Altarriba, 2002; Oquendo, 1996). In cross-cultural studies, patterns of differences on a number of variables related to self-construal and emotion have been reported across groups of monolingual speakers from different cultures (e.g., Markus & Kitayama, 1991; Kitayama, Markus, & Kurokawa, 2000; Bagozzi, Wong, & Youjae, 1999; Matsumoto, Consolacion, Yamada, Suzuki, Franklin, Paul, Ray, & Uchida, 2002; Schimmack, Oishi, & Diener, 2002; Oyserman, Coon, & Kimmelmeier, 2002). Moreover, differences in self-identity measures such as self-esteem, self-descriptions, and cultural views were reported in bicultural Chinese-English bilinguals depending upon language tested in (Ross, Xun, & Wilson, 1992).

Similar to Ross, Xun, and Wilson (1992), we propose that differences in self-construal can be found not only across two different groups (as in the Markus & Kitayama 1991 study, for example), but also within the same group if that group consists of bicultural bilinguals. Specifically, in the present study, we predict that language mediates self-construal in bilinguals and that bilinguals'

narratives are more individualistic when speaking a language associated with an individualistic culture and more collectivist when speaking a language associated with a collectivist culture. Individualism and collectivism measures reflect the extent to which the self is defined in relation to others (e.g., Gardner, Gabriel, & Lee, 1999). Individualism is associated with the Western culture, where the locus of behavior is thought to lie in attributes of the person, such as attitudes, preferences and motives (e.g., Choi, Nisbett, & Norenzayan, 1999), and the self is defined as an autonomous and unique individual. Collectivism is associated with the Eastern culture, where an individual is seen as an entity embedded within a larger social structure, and where behavior is explained by interactions between the individual and the society. In this experiment, we tested Russian-English bicultural bilinguals, born in the former Soviet Union, who immigrated to the United States in their teens and were undergraduate and graduate students at an American University at the time of testing. For these bilinguals, Russian is associated with the culture of former Soviet Union, a collectivist culture, and English is associated with the culture of the United States, an individualistic culture. We predicted that bicultural Russian-English bilinguals will produce more individualistic narratives when speaking English than when speaking Russian, and more collectivist narratives when speaking Russian than when speaking English. Autobiographical life narratives were collected and compared on a number of variables intended to capture the linguistic correlates of individualism and collectivism, such as first-person singular pronouns (individualism measure), first-person plural pronouns (collectivism measure), and the main agent of the narrative (self - individualistic or other - collectivist).

Autobiographical narratives also provide a fertile ground for studying language interaction, such as code-switches and transfers. Code-switches are active borrowings from the other language, overt use of vocabulary of the other language by switching from one language to another at the lexical production level, such as “This is my *babushka*.” Transfer denotes use of representations that exist in one language but not the other (or are different in the other) without overtly switching to the other language at the lexical level. For example, a Russian-English bilingual speaking English may call a desk ‘table’ because Russian does not distinguish between desk and table at the lexical level. It has been suggested that code-switching is a result of both failure to retrieve a correct word as well as a strategy to facilitate the communication process (Heredia & Altarriba, 2001). Literature on code-switching suggests that proficiency in one language versus the other does not account completely for the code-switching behaviors observed in bilinguals, and that bilinguals do not always code-switch from their most proficient language to their less proficient language (Heredia & Altarriba, 2001). In fact, it has been observed that Spanish-English bilinguals with Spanish as their first and more proficient language code-switch more from English into Spanish, than they do from Spanish into English (Heredia & Altarriba, 2001). We were interested in whether language of the interview, language of encoding, and interaction between encoding and interview played a role in bilingual code-switching and transfer. We predicted that language interaction (both code-switches and cross-linguistic transfers) is more likely to take place when there is a mismatch between language spoken at retrieval and language of event. We also suggest that transfers are indicative of differences in conceptual representation between bilinguals and monolinguals.

The present study used autobiographical memories collected in a naturalistic setting in order to gain a better understanding of cognitive processes in real-world environments and in an effort to maintain the ecological validity of the study and contribute to a better understanding of everyday memory phenomena (Neisser, 1978, 1991).

2. Methods

2.1 Participants

Forty-seven Russian-English bilinguals, 23 males and 24 females were tested. Their mean age at the time of the experiment was 21 years ($SD=2.6$ years) and their mean age at the time of immigration to the United States was 14 years ($SD=3.4$ years). Ten participants indicated that Russian was their preferred language of communication (21.3%), 26 participants indicated that English was their preferred language of communication (55.3%), and 11 participants stated no language preference (23.4%).

In addition, two raters rated bilinguals' proficiency and accent; disagreements were discussed until a consensus was reached for a final reliability score of 100%. Proficiency was rated on a scale from 1 to 5, with 1 being fair ability (defined by poor grammar, limited vocabulary, and minimal fluency), and 5 being excellent ability (defined by native-like grammar, extensive and diverse vocabulary, use of figurative language, and high fluency). Results suggest that bilinguals were more proficient in Russian (mean=3.98, SE=0.67) than in English (mean=3.43; SE=0.69), paired-samples $t(46)=3.33$, $p<0.005$. On a scale of 1 (extremely heavy accent, poor intelligibility) to 5 (native-like, no perceivable accent), raters rated bilinguals as having a heavier accent when speaking English (mean=3.23, SE=0.66) than when speaking Russian (mean=4.72, SE=0.29), paired-samples $t(46)=9.11$, $p<0.00001$. Moreover, the number of disfluencies produced by Russian-English bilinguals was computed. Results indicate that more disfluencies were produced when bilinguals spoke English (mean=0.098, SE=0.02) than when they spoke Russian (mean=0.05, SE=0.02), paired-samples $t(46)=5.97$, $p<0.001$. Based on results of the disfluency analyses, accent analyses, and proficiency ratings, it is suggested that the participants in this experiment were more proficient in Russian, their first language, than in English, their second language.

Regression analyses were performed in order to detect possible relationships among the measures of proficiency, amount of perceivable accent, and immigration age for each subject. A step-wise regression with degree of perceivable accent in English as a dependent variable, and absolute proficiency in English and immigration age as independent variables revealed that the degree of perceivable accent in English was associated with absolute proficiency in English, $F(2, 44)=14.44$, $p<0.0001$, but not with age at immigration. A step-wise regression with degree of perceivable accent in Russian as a dependent variable, and absolute proficiency in Russian and age at immigration as independent variables was significant, $F(2, 44)=16.46$, $p<0.0001$, indicating that degree of perceivable accent in Russian is significantly associated with both absolute proficiency in Russian, $t(44)=3.71$, $p<0.005$, and with age at immigration, $t(44)=2.73$, $p<0.005$. These results suggest that higher proficiency is associated with a lighter accent and that a younger immigration age is associated with a heavier accent in L1, but not in L2. Self-reported language preference did not correlate with any of the observed measures (e.g., ratings of proficiency, perceivable accent, or age at immigration) and was not a good predictor of proficiency as judged by independent raters, suggesting that self-reports of language preference are not a reliable proficiency index.

2.2 Design and procedure

Participants were interviewed individually; all interviews were tape-recorded. Each interview consisted of two parts, an English part and a Russian part, with the order of languages counterbalanced across participants. Both the experimenter and the participant spoke only in the language appropriate for that part; the participant was explicitly instructed to not switch into the other language. In each part, participants were told that the purpose of the study was to understand how people tell stories in different languages. Sixteen Russian-English pairs of prompt words were selected, such that each member of a pair was the direct translation of the other. The following sixteen cue words and their Russian translations were used: Summer, neighbors, birthday, cat, doctor, getting lost, frightened, bride, snow, friends, holiday, dog, blood, contest, laughing, and newborn. Participants were asked to describe an event from their life that a particular prompt brought to mind. They were encouraged to respond as quickly as possible and to tell the first story that they thought of when they heard the prompt.

After all memories had been recorded, participants were asked to indicate the language used at the time of each recalled event, and their age at that time. While we were interested in the effect that language of retrieval might have on cognitive processing, it was also important to control for a possible confound of language of encoding, i.e., to ensure that the differences that may be observed across languages are not an artifact of actual differences present in the content of the memory at the time of encoding. Therefore, memories were coded as Russian at Encoding, English at Encoding, or Mixed Russian and English at Encoding, depending upon where the memories were encoded (e.g., USA or Russia) and who else was present at the time of the event (monolingual Russian speakers,

monolingual English speakers, bilinguals Russian-English speakers, both monolingual Russian and monolingual English speakers).

The study followed a 2 x 3 Repeated Measures factorial design, with Language of Retrieval (Russian or English) and Language of Encoding (Russian, English, or Mixed) as the two within-subject independent variables. Narratives were coded on five dependent variables – number of personal pronouns, number of group pronouns, main agent of the narrative (self/other), number of code-switches from one language to the other, and number of transfers. Variables that were word-count related (personal pronouns, group pronouns, number of code-switches, and number of transfers) were controlled for narrative length (ratio relative to total word count). Proficiency was also taken into account where relevant.

For each bilingual, the mean value for each dependent variable was calculated for each of the six conditions of the 2 x 3 repeated-measures design. Thus, for instance, for subject one, we obtained six values for the number of personal pronouns used - number of personal pronouns used when 1) language of interview was English and language of encoding was English, 2) language of interview was English and language of encoding was Russian, 3) language of interview was Russian and language of encoding was Russian, 4) language of interview was Russian and language of encoding was English, 5) language of interview was English and language of encoding was mixed, and 6) language of interview was Russian and language of encoding was mixed.

2.3 Coding and analyses

Two raters coded all narratives together, disagreements were discussed until consensus was reached for 100% agreement. In addition, 10% of all data were coded independently by a third rater. Reliability between the third coder and the two original coders was 90%.

The first construct measured was Individualism/Collectivism, operationally defined by three dependent variables – number of personal pronouns, number of group pronouns, and main agent in a narrative. Personal pronouns were defined as all first-person singular pronouns: I, me, my, and mine. Group pronouns were defined as all first-person plural pronouns: We, us, our, and ours. For main agent ratings, a narrative was rated as 1 when it described a completely self-oriented, personal memory, with only the speaker involved in the event. A rating of 2 was given to a mostly self-oriented memory with the speaker as the primary actor, but with other participants also involved. Three was a score given to group memories, where the speaker and other participants were involved in the event to an approximately equal extent. A rating of 4 was given to narratives where the speaker was only marginally involved, with other participants being the main actors, and a rating of 5 was given to completely other-oriented memories, where the narrative described events in which only other participants were involved, without the speaker.

Finally, we examined language interaction, operationally defined by the number of code-switches into the other language and the number of cross-linguistic transfers into the other language. Code-switching was defined as overt switching to/use of another language when speaking, for example by inserting words or phrases spoken in the other language. An example of a code-switch would be using the English word ‘apartment’ when speaking Russian, instead of the Russian word for apartment, *kvartira*. Transfers were defined as using concepts or rules from the other language without overtly switching to the other language at the level of vocabulary. An example of a transfer is the phrase “I think somewhere under Rome” to describe location in the vicinity of Rome. In Russian the word *pod* (as in *pod Rimom*) means “under,” and can be used to express a spatial relationship between a small city located next to a larger city. Therefore, the use of the phrase “under Rome” is a conceptual transfer from Russian into English for representation of space.

Two types of analyses were run in order to determine whether the number of personal pronouns, number of group pronouns, and main agent ratings differed depending on language of retrieval. First, for each dependent variable, two-way ANCOVAs by language of retrieval (Russian or English) and language of encoding (Russian or English), controlled for total word count and with proficiency as a covariate, were performed. Mixed memories were excluded from this analysis, because including mixed memories resulted in too many missing values, rendering the analysis impossible. Next, for

each dependent variable, data were analyzed using a one-way ANCOVA, with language of retrieval as an independent variable, and proficiency as a covariate. Russian-Encoded, English-Encoded, and Mixed-Encoded narratives were collapsed across the language of interview for this analysis. Results from both ANCOVAs are reported. The two-way ANCOVA results are reported because it is theoretically the correct analysis to perform. It includes Language at Encoding as an Independent variable, allowing to control for the possible confound of memory content. The 1-way ANCOVA results are reported because the 1-way ANCOVA made it possible to keep all participants in the analyses, as well as to also include mixed memories. In repeated-measures analyses, every time a value is missing for a subject, all data from that subject are omitted. For example, if a subject did not have any memories in the English interview/Russian encoding cell, s/he was omitted from analyses altogether, even if all the other five cells had valuable data in them. Therefore, the high proportion of missing cases in the 2-way ANCOVA suggests that performing a one-way ANCOVA on the variable that produced a significant main effect is a valuable procedure in ensuring that the results are valid for the entire sample of subjects. Mostly a 'double-check measure', the one-way ANCOVA confirmed the results of the two-way ANCOVA. We also performed analyses by memory in order to control for age at the time of encoding as a confounding variable.

To examine language interaction, we performed a two-way Repeated-measures ANCOVA with language at retrieval and language at encoding as independent variables, and number of code-switches as the dependent variable (controlled for narrative length by using proportion over total word count). Language interaction as expressed in conceptual and grammar transfer is still under analysis.

3. Results

A total of 703 narratives were collected, of which 400 were encoded in Russian, 195 were encoded in English, and 108 were encoded as Mixed Russian and English memories.

3.1 Individualism/Collectivism

The number of group and personal pronouns were analyzed using two-way Repeated-measures ANCOVAs with language of interview (Russian or English) and language of encoding (Russian or English) as independent variables, with proficiency as a covariate, and with narrative length controlled for. Results revealed a main effect of language of retrieval, with bilinguals using more personal pronouns when narrating life stories in English (mean=0.09, SE=0.005) than in Russian (mean=0.08, SE=0.005), $F(1, 24) = 6.87, p=0.015$. No effect of language of encoding $F(1, 24) = 0.01, p=0.92$ and no interaction between language of retrieval and language of encoding ($F(2, 24)=0.018, p=0.62$) were observed. Similarly, bilinguals used more group pronouns when narrating autobiographical events in Russian (mean=0.02, SE=0.003) than in English (mean=0.01, SE=0.002), $F(1, 24)=3.93, p=0.045$. No significant main effect for language of encoding ($F(1, 24)=1.44, p=0.24$) and no interaction ($F(2, 24)=0.99, p=0.31$) were observed.

To include all the subjects, we performed analyses by language of retrieval only. The one-way Repeated-measures ANCOVAs controlled for total word count (proportion of personal pronouns relative to total word count) and with proficiency as a covariate reinforced the results of the two-way ANCOVAs. Bilinguals used more personal pronouns when narrating life stories in English ($M=0.009, SE=0.005$) than when narrating life stories in Russian ($M=0.008, SE=0.005$), $F(1, 45)=8.71, p=0.005$. Similarly, bilinguals used more group pronouns when narrating autobiographical events in Russian ($M=0.03, SE=0.001$) than in English ($M=0.02, SE=0.001$), $F(1, 45) = 4.78, p=0.03$.

Analyses on the main agent in a narrative did not need to be controlled for total word count or proficiency. In these analyses, we included a third independent variable, gender, to explore the hypothesis that males and females differ in expressing the main agent of a narrative. A three-way ANOVA, with language at retrieval and language at encoding as within-subject variables and gender as a between-subject variable was performed. Results revealed a main effect of language of retrieval, with bilinguals producing more self-oriented narratives when the language at retrieval was English ($M=2.04, SE=0.09$) than when it was Russian ($M=2.41, SE=0.14$), $F(1, 24)=6.44, p=0.02$, and a main

effect of gender, with males producing narratives that were more self-oriented (mean=2.05, SE=0.11) than those produced by women (mean=2.44, SE=0.12), ($F(1, 24)=5.88, p=0.023$). No effect of language of encoding ($F(1, 24)=0.81, p=0.38$), and no interaction between language at encoding and language at retrieval ($F(2, 24)=0.08, p=0.77$), between language at encoding and gender ($F(2, 24)=0.04, p=0.85$), and between language at retrieval and gender ($F(2, 24)=0.61, p=0.44$) were observed. One-way ANCOVA including data from all 47 participants confirmed these results. The main agent was more self-oriented in English narratives (mean=2.20, SE=0.14) and more other-oriented in Russian narratives (mean=2.48, SE=0.15), $F(1, 46)=20.57, p<0.0001$.

In addition to language of encoding, separate analyses were performed on age at the time of encoding to control for age as a possible confounding factor. Two-way ANCOVAs with age at the time of encoding and language at retrieval as independent variables and proficiency as covariate did not reveal a significant effect of age on retrieval of personal pronouns ($F(3, 697) = 0.56, p=0.45$), group pronouns ($F(3, 697) = 0.94, p=0.61$, or Main Agent, $F(1, 699) = 0.05, p=0.83$).

3.2 Language interaction

To examine language interaction, we focused on two phenomena, code-switching and cross-linguistic transfer. For code-switches, a Repeated-measures ANOVA controlling for total word count revealed a main effect of language of retrieval, $F(1, 26)=13.46, p=0.01$, a main effect of language of encoding, $F(1, 26)=5.47, p=0.03$ and an interaction between the two variables, $F(2, 25)=5.47, p=0.03$. That is, bilinguals produced more code-switches when speaking Russian (mean=0.006, SE=0.002) than when speaking English (mean=0, SE=0) and more code-switches when language at the time of encoding was English (mean=0.004; SE=0.001) than when it was Russian (mean=0.002; SE=0.001). The interaction effect suggests that bilinguals are more likely to code-switch to the other language when the language of encoding does not match the language of retrieval. In this particular case, when speaking Russian, bilinguals code-switched to English more if the language at the time of encoding was English (mean=0.008, SE=0.003) than if it was Russian (mean=0.003; SE=0.001). This suggests that for fluent bilinguals, context and content rather than language proficiency are more likely to influence code-switching. In this population of bilinguals, no correlation between proficiency and number of code-switches was observed.

Although code-switches were observed only when speaking Russian, transfers were observed when speaking both Russian and English. Analyses on transfers are still in progress. Transfers were divided into two types—conceptual transfers and grammatical transfers. Conceptual transfers refer to use of semantic and conceptual constructs that exist in one language, but not the other. Further, Conceptual Transfers can be divided into Entity Transfers, Action Transfers, and Idiom Transfers. An example of Entity Conceptual Transfer is “I was very happy to see the table”, in which the noun ‘table’ is used to refer to ‘food’. This is considered an Entity Transfer because in Russian the noun ‘table’ can denote both the actual table and the dishes/food on the table. In English use of ‘table’ in this manner is inappropriate, suggesting that when speaking English, Russian-English bilinguals continue to use the conceptual representation of the word ‘table’ as Russian speakers would. An example of Action Transfer is “He called my grandma’s doorbell.” Russian does not distinguish between ‘called’ and ‘rang’ lexically, using the same verb, *pozvonil*, to refer to both. A Conceptual Transfer for Action suggests that the conceptual representation of the verb ‘called’ in a Russian-English bilingual may differ from that of an English monolingual. It is predicted that bilinguals will show more Conceptual Transfers for Actions than for Entities, based on the literature on verb/noun distinctions across languages (Gentner, 1981, 1982). Finally, an example of Conceptual Transfers for Idioms is “I will laugh when people show me a finger”, an expression which in Russian refers to “It’s easy to make me laugh” and “I laugh easily.” An idiom transfer is therefore a word-for-word translation of an expression from one language into another that would be inappropriate, meaningless, or carry a different meaning for a monolingual.

Grammatical transfers refer to constructing phrases and sentences that are grammatically incorrect or inappropriate in the language spoken, but are consistent with the grammatical rules of the other language. This can include word order, inappropriate pro-drop, use of determiners, use of inflectional

grammar (e.g., singular/plural), and grammatical classes. However, the distinction between conceptual and grammatical transfers is not always clear. For example, the transfer “trip in the wood” includes both grammatical and conceptual components. In terms of grammar, inflectional grammar was used incorrectly, singular ‘wood’ should have been plural ‘woods.’ In terms of conceptual representation, in Russian the noun for ‘woods’ is singular. A bilingual Russian-English speaker therefore uses inflectional grammar incorrectly probably because his or her conceptual representation of the word may in fact be different from that of a monolingual.

All transfers have been recorded, Conceptual and Grammar transfers have been observed from and into both languages. The transfers are currently in the coding process (classification into Entity, Action, Idiom, and Grammar transfers). Results will be analyzed and interpreted upon completion of coding. Number of transfers will be compared across languages and across types of transfers.

4. Conclusions and discussion

*“But since you are probing into my ambivalent psyche, I can tell you
that I believe I am left-handed in French and right-handed in English.”*
(Federman, 1996, p. 2)

The results of this study are interpreted in terms of the interplay among language, memory, and self in bilinguals and in terms of language interaction.

Results revealed that Russian-English bilinguals used more personal pronouns when speaking English than when speaking Russian and more group pronouns when speaking Russian than when speaking English, even when narrative length and proficiency in the two languages were taken into account. Moreover, independent judges rated English narratives as more self-oriented than Russian narratives and Russian narratives as more other-oriented than English narratives. These results suggest that a bilingual’s language may influence cognitive styles, so that speaking English, a language associated with a more individualistic culture, resulted in more individualistic narratives, whereas speaking Russian, a language associated with a more collectivist culture, resulted in more collectivist memories.

The use of personal and group pronouns in Russian and English is revealing of self-construal and cultural values placed within cultures. Although both languages use similar patterns as far as pronoun drops (both English and Russian are pro-drop in conjunctives and compound sentences only), first-person singular and first-person plural pronouns tend to be used differently in the two languages. Consider, for example, the sentence “My friends and I went to a party.” A Russian speaker would express this as “We with friends went to a party” (*My s druziami shodili na vecherinku*) or “Our group of friends went to a party” (*Nasha kompania shodila na vecherinku*). It is remarkable how differently the same agent is expressed across the two languages. In English, the emphasis is placed on the individual, with other people included as they relate to the individual. In Russian, the emphasis is placed on the group, with the individual included as s/he relates to the group.

These results suggest that the bilingual self is mediated by language spoken at any given time. We suggest that language functions as a vehicle for culture with cultural differences seeping into language and potentially influencing cognitive styles and the self. These findings and interpretations are consistent with results of several cross-cultural studies on the self (e.g., Markus & Kitayama, 1991; Triandis, 1989) and suggest that differences in self construal can be found not only in cross-cultural comparisons but also within groups that have been socialized in different cultures. Future work may be able to separate the influence of culture and language by testing the two variables independently (e.g., bicultural monolinguals or monocultural bilinguals).

Although we did not set out to examine gender, observations along the way led us to include gender as a possible factor in analyses on main agent in bilinguals’ narratives. Gender was found to influence narrative styles, so that men produced narratives in which the main agent was more likely to be self-oriented, while women produced narratives in which the main agent was more likely to be other-oriented.

In terms of language interaction, code-switching data and analyses in-progress on cross-linguistic transfers suggest that autobiographical narratives provide a rich base for studying language interaction.

This population of bilinguals is more likely to code-switch from the second language into the first language, a result consistent with previously reported code-switching patterns in bilinguals (Heredia & Altarriba, 2001). It is possible that bilinguals with different proficiency levels in their two languages would show different code-switching patterns. In this study, Russian-English bilinguals were highly proficient in their second language; therefore, code-switching results are consistent with the hypothesis that after bilinguals attain a certain level of fluency in their second language, second language becomes more easily accessible than first language, making code-switching from second language to first language more likely (Heredia & Altarriba, 2001). We found that code-switching is more likely to happen when there is a mismatch between language at retrieval and language at encoding. This finding suggests that the language in which the event took place is important to consider when studying code-switching behaviors. The pattern of language transfer differed from the pattern of code switching in that conceptual and grammar transfers were observed from and into both languages, a finding consistent with previous work on transfer in bilingualism (Pavlenko & Jarvis, 2002). In addition, language transfer may differ across types of transfers. We may see more cross-linguistic conceptual transfers for verbs than for nouns, since representation of action is less fixed relative to representation of nouns (e.g., Gentner, 1981). It is clear that the two languages of a bilingual coexist in an active, interactive, mutually enriching way: “*My French and my English play with one another as two children do in a playground*” (Federman, 1996, p. 6). In general, language interaction is a universal phenomenon, one that every bilingual experiences with or without conscious awareness. It can provide insights into the interaction between language and cognition, with conceptual and grammar transfers across languages as another window into cognitive and linguistic processing.

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