The effect of bilingualism on the use of manual gestures

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ABSTRACT

Gestures are often used while speaking to aid in the speaker’s packaging of the verbal message and/or to aid the listener in decoding the message. The ways in which bilinguals use gestures are reviewed in this article. Researchers have predicted that bilinguals’ gesture use is related to bilinguals’ language proficiency. However, no clear pattern of a link between proficiency and gesture use has been observed across studies, probably because gestures rarely compensate for weak language proficiency, functioning instead to facilitate speech production in both first and second language use. Researchers have reported bilinguals using language-specific gestures in the other language. In addition, bilinguals have been shown to use gestures at a higher rate than monolinguals. These results suggest that cross-linguistic transfer can apply to gestures, as well as to other linguistic units. In conclusion, gestures play an important role in accessing language in the process of speech production. This conclusion has implications for second-language teaching; teaching through gestures and speech might be more effective than teaching the spoken component alone.

Some manual gestures can convey meaning in ways that seem transparently accessible to interpretation. Unlike language, in which there is often an arbitrary link between symbol and referent (Hockett, 1960), gestures can link symbol and referent in a nonarbitrary way. For example, a person who wished to gesturally convey the concept of “turtle” could place one flat hand over the other fist with the second hand’s thumb sticking out. The potential nonarbitrary link between gestures and meaning has led some researchers to argue that language may have evolved from gestures (e.g., Armstrong, Stokoe, & Wilcox, 1995; Donald, 1991; Kendon, 1991). Similarly, some researchers have argued that young children may find nonarbitrary links between symbol and referent easier to learn than arbitrary ones (e.g., Brown, 1979; Dromi, 1987; Werner & Kaplan, 1984). In support of this argument, one study showed that children as young as 18 months show an advantage of learning gestures that resembled the referent (like the turtle gesture described above) over arbitrary gestures as labels of objects (Namy, Campbell, & Tomasello, 2004). There is also some evidence that young children can use gestures to stand in for words. For example, some children start producing symbolic gestures (like the turtle gesture) before words and then stop producing
these gestures when they learn words for the referents (Acredolo & Goodwyn, 1985, 1988). Similarly, young children use gesture + word combinations a few months before they use two-word combinations, as if the early use of a gesture supports or stands in for later word use (Butcher & Goldin-Meadow, 2000). These results suggest that gestures convey meaning in a more basic or transparent way than words with an arbitrary connection between symbol and referent. It stands to reason, then, that if a person’s language skills are weak or nonexistent, then he or she might fall back on gestural modes of communication.

Research has not consistently supported the conclusion that when language skills are weak or nonexistent that gestures are used to communicate. In favor of that conclusion, some studies with Broca aphasics have shown that they can still use gestures (Broca, 1861; Hanlon, Brown, & Gerstman, 1990). For example, Broca (1861) reported that an aphasic could produce only one number word (i.e., the word for three) but could accurately convey number concepts (such as his age) through gestures. However, other studies have shown that aphasics can have deficits with both gesture and speech (see review in McNeill, 1992) and, in some cases when people might use gestures to compensate for weak speaking abilities, they do not. For example, deaf children who have been trained to speak rather than sign (and have poor speaking skills relative to hearing children of the same age) use few gestures in communicating, relying instead on the few words they know (González, 1996). Further evidence against a compensatory role of gestures comes from studies with elderly people, whose spoken proficiency often becomes weaker with increasing age, who use fewer gestures than younger people (Cohen & Borsoi, 1996).

An interesting test case for whether or not gestures can compensate for weak speaking abilities comes from bilinguals. Bilinguals often know one language better than the other. For simultaneous bilinguals (i.e., bilinguals who acquire both languages at the same time), the language they know better is often the language they spend more time using (e.g., Pearson, Fernández, Lewedag, & Oller, 1997). For sequential bilinguals, the second language is often weaker than the first (e.g., Nicoladis, Pika, Yin, & Marentette, 2007). If gestures were used to compensate for their weaker proficiency in one language, bilinguals might use more gestures in their weaker language than in their stronger language. The primary purpose of this paper is to review the evidence for and against this hypothesis. As will be seen, there is no consistent evidence that bilinguals use gestures to compensate for weaker language proficiency in one language. The reason for the inconsistent results might be because gestures rarely compensate for poor speaking abilities (unless speaking abilities are nonexistent; see Goldin-Meadow, 2003a).

A secondary purpose of this paper is to review results from the few studies exploring the issue of cross-linguistic transfer of bilinguals’ gestures. Bilinguals sometimes show signs of cross-linguistic transfer, or the use of the linguistic structure of one language while speaking the other (Meisel, 1983; Nicoladis, 2006). Cross-linguistic transfer can be identified when bilinguals behave differently from monolinguals in such a way that can be attributed to knowledge of their other language (Nicoladis, 2006). For example, a Chinese–English bilingual who did not mark English verbs for tense could be transferring his knowledge of Chinese (in which verbs are not marked for tense) to English. Some particular gestures
are associated with a specific language or culture, and it is possible that cross-linguistic transfer will be observed in the choice of gestures. Another possible manifestation of gestural transfer could be in the rate of gesture use. Some languages or cultures are associated with a higher frequency of gesture use (such as Italian) than others (such as English; Graham & Agyle, 1975). It is possible that bilinguals might transfer a particular rate of gesture use from one language to another.

Another way in which bilinguals could be of interest to researchers is in terms of identifying how people use gestures. As will be discussed in more detail below, gestures play a role in accessing language, particularly when speakers have choices about how to package the verbal information. Bilinguals usually have both languages activated at all times (Grosjean, 2001), which could lead to more choices than monolinguals in how to package a verbal message (Nicoladis, 2006) and/or greater difficulty in accessing particular words or phrases (Gollan & Silverberg, 2001). If so, then bilinguals might gesture more than monolinguals.

Speakers may not use all kinds of gestures in the same way (Nicoladis, 2002). Consider the example presented above of the Broca aphasic using appropriate number gestures. Number gestures differ from culture to culture, and are sometimes referred to as conventional gestures. Many conventional gestures can be used in the absence of speech and still adequately convey their meaning (McNeill, 1992). Other kinds of gestures rely more heavily on the co-occurring speech for interpretation (e.g., the turtle gesture described at the outset of this article could convey a snake sticking its head out from underneath a blanket). Different kinds of gestures might be related to speech processing in different ways. The functions of different kinds of gestures will allow us to refine our predictions about how bilinguals might use gestures.

FUNCTIONS OF DIFFERENT KINDS OF GESTURES

Speakers’ gestures are often produced at approximately the same time as similar-meaning speech (Krauss, Morrel-Samuels, & Colasante, 1991; McNeill, 1992). For example, someone talking about “sliding down” might make a flat-handed gesture that moves slightly downward at about the same time as saying the words (Kita & Özyürek, 2003). The close timing between the production of speech and gesture suggests that the meaning of both the spoken words and the gestures might be related in the process of speech production (e.g., Beattie & Shovelton, 2000; Kita, 2000; Krauss et al., 1991; McNeill, 1992). There is some debate as to whether gestures function primarily to help the listener decode the message (Beattie & Shovelton, 2000; see also Goldin-Meadow, 2003b; Kendon, 1994) or to help the speaker encode the message (e.g., Butterworth & Beattie, 1978; Freedman, 1977; Goldin-Meadow, Nusbaum, Kelly, & Wagner, 2001; Kita, 2000; Krauss, 1998; Krauss et al., 1991; Ravizza, 2003; Saltz & Donnenwerth-Nolan, 1981). Goldin-Meadow (2000) has pointed out that gestures can serve both to help the speaker encode and the listener decode the message.

There are a number of different gesture taxonomies (e.g., compare McNeill, 1992; Krauss & Hadar, 1999). This paper will rely heavily on the gesture categories recognized by McNeill (1992), as his taxonomy is one of the more widely used:
iconic gestures, beats, deictic gestures, and conventional gestures. In this section, the way in which different kinds of gestures might function relative to speech is discussed.

Iconic gestures might show the tightest link to linguistic access for the speaker or the listener. Iconic gestures resemble the referent in some way (McNeill, 1992). For example, a speaker might gesture the form of a beak opening and closing to refer to a bird or a bird’s singing. Iconic gestures are the most frequent kind of gesture produced in a storytelling context and seem to illustrate what the speaker is talking about (McNeill, 1992). Iconic gestures may be particularly helpful in accessing conceptual or linguistic information that has a visuospatial component, such as concrete concepts and/or concepts associated with a high degree of imagery (Bub, Masson, & Bukach, 2003; Hadar & Butterworth, 1997; Krauss & Hadar, 1999; McNeill, 1992; Wesp, Hesse, Keutmann, & Wheaton, 2001). Iconic gestures might show a particularly strong link in accessing language because creating a concrete representation of the referent could activate the concept (in either the speaker’s or the listener’s mind), which could, in turn, activate the word or words associated with that concept (see also Barsalou, 2003, for a theory about conceptual activation that could underlie such a rationale). In support of a special role for iconic gestures, Frick-Horbury and Guttentag (1998) found that most of the gestures produced by speakers in a tip-of-the-tongue state were iconic gestures and that those allowed to gesture resolved more tip-of-the-tongues states than those who were prohibited from gesturing. Further evidence comes from a study showing that preschool children produced longer utterances with iconic gestures than with other kinds of gestures or no gestures at all (Nicoladis, 2002; see also Nicoladis, Mayberry, & Genesee, 1999). These results suggest that the use of iconic gestures might allow speakers to put a message to words more effectively than the use of other kinds of gestures.

There is, however, some evidence that it is not only iconic gestures that aid in linguistic access. Other kinds of manual movement have been linked to aiding language access, including pointing (see Alibali, Kita, & Young, 2000) and tapping (Ravizza, 2003). Furthermore, even when the freedom to gesture in general has been linked to tip-of-the-tongue recovery, speakers do not necessarily retrieve words for which they gesture on each individual item (Frick-Horbury & Guttentag, 1998). A recent study showed that speakers produced more iconic gestures with low-frequency words (words that were presumed to be hard to access) than with high-imagery words (Nicoladis, Pika, & Marentette, 2007). These results point to the possibility that it is not only through the creation of a concrete representation that gestures aid in accessing language. It is possible that there is also something about the movement of the hands that also helps accessing language. There is no consensus (and, in fact, little discussion thus far) about how movement might facilitate language access. One possibility is that the procedural memory required to put words together in grammatical ways (Ullman et al., 1997) is also required to chunk ideas together through gestures (see discussion in Wagner, Nusbaum, & Goldin-Meadow, 2004, who argue that gestures can serve to facilitate working memory through the creation of holistic chunks of information to be represented; see also Alibali & DiRusso, 1999, for an interesting test case).
If movement in general is linked to language access, then gestures other than iconic gestures might also help speakers encode and listeners decode messages. Few studies have focused specifically on gestures other than iconic gestures. Nevertheless, some hints are emerging that other kinds of gestures might also be linked to language access, perhaps more indirectly than with iconic gestures. Three other kinds of gestures are considered next: beats, deictic gestures, and conventional gestures.

Beats are usually repetitive gestures with no symbolic referent, and often serve to emphasize a particular point that a speaker is making (McNeill, 1992). For example, a speaker who wished to emphasize “No new taxes” might make a downward movement with the first syllable of each word. Preschoolers use beats infrequently (McNeill, 1992). Nevertheless, one study showed that preschoolers’ use of beats was correlated with creating longer utterances than when they used no gestures (Nicoladis et al., 1999). This result suggests that the fact of moving their hands helped the preschoolers create longer utterances. The role of beats in adults’ language access has not been considered explicitly. However, Ravizza (2003) found that finger tapping could help resolve adult speakers’ tip-of-the-tongue states, suggesting that the link between beats and language access might hold for adults.

Deictic gestures are gestures that pick out an object, a person, or a location in the environment or indicate a stable location rather than referring to a referent symbolically (McNeill, 1992). Pointing with an index finger is probably the most frequent realization of a deictic gesture. It is possible to point to nonpresent objects or people (i.e., abstract pointing; McNeill, 1992). In the context of telling a story, deictic gestures might include something like a flat hand to indicate a location (e.g., Sherman & Nicoladis, 2004). Children often start producing deictic gestures before they start speaking, usually timed with a meaningless vocalization (Masur, 1983). Deictic gestures can be used in combination with words as a precursor to word + word combinations (Butcher & Goldin-Meadow, 2000). When preschoolers use deictic gestures at the same time as they speak, those utterances are no longer on average than utterances that are produced without gestures (Nicoladis, 2002; Nicoladis et al., 1999). Furthermore, Nicoladis (2002) found that bilingual preschoolers used more deictic gestures without speaking when trying to communicate with an adult who spoke only their weaker language than with an adult who spoke only their stronger language. These results might suggest an important role for deictic gestures in communication but not necessarily a strong link between deictic gestures and language access. However, Alibali et al. (2000) included deictic gestures in their analysis of young children’s use of gestures while solving a Piagetian task and found that the children used more gestures in general in that task than when describing the experimental setup. The researchers did not report any analyses of whether or not the gestures were timed with speech, so it remains possible that deictic gestures are somewhat more separable from language than iconic gestures (Nicoladis, 2002). If deictic gestures play an important role in language access, it may not be at all ages, with deictic gestures playing an important role in the process of the learning of language.

Conventional gestures are gestures that are common to a particular cultural group and can often be recognized without speech within that cultural group.
(Kendon, 1995). For example, German speakers typically refer to the number one by showing just their thumb, whereas English speakers are more likely to show their index finger (Pika, Nicoladis, & Marentette, 2006). Children can produce conventional gestures, like the gesture for hi or bye, before they start speaking (Guidetti, 2001). In studies with preschool children, conventional gestures tend to pattern like deictic gestures (Nicoladis, 2002; Nicoladis et al., 1999). That is, children’s utterances with conventional gestures are no longer than utterances with no gestures and bilingual children are more likely to produce conventional gestures without speech when in communication with someone who speaks their weaker language than with someone who speaks their stronger language. In addition, preschool children are more accurate at producing and understanding number words than number gestures (Nicoladis, Pika, & Marentette, 2006), suggesting that there is no gesture advantage in accessing number concepts. This study did not address whether the number gestures could help activate the number words.

In sum, researchers have often assumed that the link between gestures and language access is through the activation of a concrete representation and have focused on the role of iconic gestures. However, there is some evidence pointing to the possibility that beats could also help with language access. Deictic gestures might play a temporary role in development, particularly in the early stages of language acquisition, in accessing language. Conventional gestures seem to be the least likely to play an important role in accessing language among the gestures considered here and can sometimes play a compensatory role in communication (see Broca, 1861).

**BILINGUALS’ LANGUAGE PROFICIENCY AND GESTURE USE**

Researchers have hypothesized that bilinguals’ gesture use would be linked to their language proficiency, or degree of knowledge of a particular language. Different researchers have made two completely contrary predictions about how proficiency might be linked to gesture use. One prediction is that bilinguals will use more gestures in their weaker language than their stronger language because accessing words or conceptualizing a message in a weaker language is presumably more difficult than in a stronger language (see Krauss & Hadar, 1999). Another prediction is that bilinguals will produce more gestures in their stronger language than their weaker language (see Nicoladis et al., 1999) because they attempt to convey more complex messages in their stronger language. As this section will show, the results of studies with bilinguals do not show an unambiguous link between gesture use and bilinguals’ language proficiency in either direction.

Some studies have found that gestures can bolster learning or using a second or weaker language. For example, teaching young second-language learners words in their second language with accompanying gestures led to better word learning than teaching words with no accompanying gestures (Tellier, 2006; see also Asher, 1969). One study with intermediate French–Swedish and Swedish–French bilinguals showed that they used more deictic gestures in their second language (Gullberg, 1999). Two studies with advanced Spanish–English and English–Spanish adults showed that they used more deictic gestures in their second language, even though they were highly fluent in both languages (Marcos, 1979;
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Sherman & Nicoladis, 2004). In these three studies, the bilinguals did not use more iconic gestures in their second language. However, in yet another study of Chinese–English bilingual adults, the researchers found that the bilinguals used more gestures (i.e., iconic, conventional and deictic) in their second and weaker language than in their first (Nicoladis, Pika, Yin, et al., 2007).

Other studies have shown a link between bilinguals’ use of their first or stronger language and a greater use of gestures. For example, a study with intermediate bilinguals showed that more iconic gestures were used with their first language than their second language (Gullberg, 1999). Two studies with simultaneous French–English bilingual preschoolers showed that they used more iconic gestures with their stronger language than with their weaker language (Nicoladis, 2002; Nicoladis et al., 1999), as well as more beats (Nicoladis et al., 1999).

Still other studies have found no differences between bilinguals’ rates of gestures in their two languages (Nicoladis, Pika, & Marentette, 2005; Sherman & Nicoladis, 2004). These two studies focused on bilinguals with relatively equal proficiency in their two languages so it could be argued that their rate of gestures did not differ because their proficiency in their two languages did not differ. However, one study showed no difference in the use of iconic gestures in Spanish–English bilinguals, even though a clear stronger language could be identified (Marcos, 1979).

To sum up the review of the literature thus far, there are no consistent findings across all studies (or even most studies) relating language proficiency to gesture use. There is a reasonably consistent finding across many studies that bilingual adults use deictic gestures more often with their weaker language (e.g., Gullberg, 1999; Marcos, 1979; Nicoladis, Pika, Yin, et al., 2007; Sherman & Nicoladis, 2004). However, as noted in the previous section, there is no general agreement that deictic gestures are related to language access in adult monolinguals. Note that the bilinguals were most often observed in the context of telling a story, so their deictic gestures were not simply pointing to present objects; most of their deictic gestures were abstract. Therefore, it is not clear why bilingual adults might be using more deictic gestures with their weaker or second language (although see discussion in Gullberg, 1999). Iconic gestures have been linked more closely with language access in monolinguals and show no consistent pattern across studies relative to proficiency in bilinguals (see Krauss & Hadar, 1999). In any case, taken together, these results suggest that gestures rarely play a compensatory role in bilinguals’ communication.

One possible reason for the lack of consistent findings linking gesture use to language proficiency is that bilinguals’ gesture use depends not only on their proficiency but how difficult the task is that they have undertaken (Nicoladis, Pika, Yin, et al., 2007). To date, researchers have not yet attempted to test this possibility directly, but one study may show indirect support for an interaction between proficiency and task difficulty (Nicoladis, Pika, Yin, et al., 2007). Citing previous research showing a female advantage in many second-language production tasks, Nicoladis, Pika, Yin, et al. compared the stories told by Chinese–English bilingual women and men. The women tended to include more scenes in an English (their second language) retelling of a cartoon than the men. The women also tended to gesture more than the men in English. The researchers argued that the more scenes they included, the harder task they had taken on, particularly in their second
language. Although the researchers did not know why the women had chosen to take on a more difficult production task than the men, they argued that this interpretation was consistent with previous literature showing a female advantage in production tasks. They concluded that there might be an interaction between language proficiency and task difficulty. This conclusion has yet to be tested by systematically varying the task difficulty given to participants. Until such a study is done, this conclusion must remain preliminary.

**BILINGUALS’ USE OF GESTURES ACROSS LANGUAGES**

Different languages and/or cultures are associated with using gestures differently, either in terms of the specific choice of gestures or the frequency of gestures. Researchers have been interested in whether bilinguals use the gesture style from one language or culture, even while speaking the other. In this section, the language specificity of gestures is discussed, even though the choice of gestures might be more culturally than linguistically determined. For example, European French speakers tend to use their thumb to indicate the number one, whereas Canadian French speakers tend to use their index finger, like Canadian English speakers (S. Pika, personal communication).

In terms of the choice of gestures, Efron (1941) cited anecdotal evidence of speakers using a conventional gesture from one language while speaking the other language. Pika et al. (2006) found that bilinguals’ choice of number gestures was not necessarily determined by the language that was spoken. For example, Cantonese–English bilinguals produced some Cantonese-specific number gestures even though speaking in English with the researcher (who did not speak Cantonese). Bilinguals’ use of language-specific gestures may not only be limited to conventional gestures, but also the style of presentation of gestures (e.g., Brown, 2006).

In terms of the rate of gestures, some studies have cited differences in the frequency of gestures across languages and cultures. Italian, for instance, is said to be a high gesture frequency language (Barzini, 1964; Kendon, 1992, 1995), as opposed to English, a low gesture frequency language (Graham & Argyle, 1975). There is some anecdotal evidence that bilinguals whose first language is a high gesture frequency language continue to gesture a lot even when speaking English (Efron, 1941; Scheflen, 1972). Pika, Nicoladis, and Marentette (2006) showed that French–English and English–Spanish bilingual adults used more gestures than English monolinguals when telling a story. They did not have French and Spanish monolinguals as control groups, but assumed that both French and Spanish, like Italian, would be high gesture frequency languages relative to English. They interpreted their results to mean that the knowledge of a high gesture frequency language led to a high rate of gesture use, regardless of the language being spoken. However, because they could not compare the bilinguals’ gesture rate to that of French and Spanish monolinguals, they could not rule out the possibility that bilinguals tend to use more gestures than monolinguals overall.

A recent study points to the possibility that the latter interpretation might be more appropriate. Nicoladis et al. (2005) found that French–English bilingual preschoolers gestured more in telling a story than either English monolinguals or
French monolinguals. There was no difference between the rate of gestures in the two monolingual groups. These results suggest that bilinguals might simply use more gestures than monolinguals. One possible reason is that bilinguals might have more choices in how to word their message than monolinguals (Nicoladis, 2006). The use of gestures might help bilinguals package their message in words, as has been argued for monolinguals (e.g., Kita, 2000). The greater choices of potential verbal packaging could lead to a higher rate of gestures as bilinguals search for how to package their message.

In sum, bilinguals’ choice of gestures can be influenced by knowledge of a particular language. That is, bilinguals at least sometimes use gestures associated with one language while speaking the other. To date, it is not yet clear how frequently this kind of gestural transfer occurs or if it is more likely to occur at some particular stages of second-language acquisition. In terms of the rate of gestures, bilinguals use more gestures than monolinguals, but it is more likely that this greater use is because of bilingualism alone rather than the knowledge of at least one high gesture frequency language.

CONCLUSION

The primary purpose of this paper was to review the evidence for the hypothesis that bilinguals’ gesture use would be related to their language proficiency, particularly by using more gestures in their weaker language to compensate for their weaker abilities to put words to concepts. In fact, the results of empirical studies do not support a consistent link between gesture use and language proficiency. However, some interesting trends have emerged across studies, suggesting that researchers may have to attend to the kinds of gestures bilinguals are using and what kind of task bilinguals are trying to accomplish in the discourse context.

In terms of the importance of kinds of gestures, there are fairly consistent results that bilinguals produce more deictic and conventional gestures in the second or weaker language than the first (e.g., Sherman & Nicoladis, 2004). Note that the greater use of deictic gestures in the weaker language cannot be accounted for solely by bilinguals pointing at objects for which they do not know a label. In fact, in many of the studies reviewed, the bilinguals were observed in the context of telling a story and used abstract deictic gestures, sometimes encoding abstract concepts such as time (Gullberg, 1999). The developmental onset of deictic and conventional gestures in monolingual children is often before children start speaking (Guidetti, 2001; Masur, 1983). It is possible that even adults, perhaps associating deictic and conventional gestures as child-appropriate knowledge, conceptualize deictic and conventional gestures as simple conveyers of meaning, so a fall-back strategy when they feel their verbal skills are weak (see Nicoladis, 2002). If so, then monolingual adults might use more deictic and conventional gestures when communicating with adults who are obviously speaking their second language or children than they do with adults who speak their language fluently. Although we know that adults use a lot of deictic gestures with young children (Masur, 1982), researchers have not yet tested how gesture rate changes with different interlocutors with differing degrees or contents of knowledge.
No consistent results have been reported across studies with bilinguals’ use of iconic gestures relative to language proficiency. One possible reason for the inconsistent results is that researchers have not systematically controlled for how difficult a task their study participants are given. That is, although it is presumably harder for a bilingual to convey a similar message in his/her weaker language, studies have not systematically controlled for the difficulty of the message. Gestures (and particularly iconic gestures) have been linked to bearing some of the cognitive load when people perform a difficult linguistic task (e.g., Kita, 2000). In many studies, bilinguals are asked to tell back a story and are free to tell back as much or as little of the story as they would like (e.g., Gullberg, 1999). In one such study, the researchers counted the number of scenes that the bilinguals included in their retellings, assuming that the greater number of scenes they included, the harder task they had taken on (Nicoladis, Pika, Yin, et al., 2007). One result from that study was a positive correlation between the rate of iconic gesture use and the number of scenes the bilinguals included in their weaker language version of the story. If the task demands are held constant in the two languages, then bilinguals with a mismatch in language proficiency should produce more gestures in their weaker language. Bilinguals who are highly proficient in both their languages might show no differences between their languages in their rate of gesture use when performing an equivalent linguistic task.

Implicit in the above reasoning is that gestures only rarely serve a compensatory function for bilinguals’ weak language proficiency (see also Nicoladis & Genesee, 1996). Instead, gestures may more commonly function to lighten the cognitive load of choosing among possible ways to package a message and/or accessing words (as has been found for monolinguals; e.g., Kita, 2000; Krauss & Hadar, 1999). This function would hold both within a language and between languages. In support of this line of reasoning, bilingual children have been found to produce more gestures when producing longer utterances within a language (Nicoladis, 2002; Nicoladis et al., 1999). Between languages, bilinguals have more choices of how to package verbal messages relative to monolinguals (see Gollan & Silverberg, 2001) and bilinguals gesture more than monolinguals (Pika et al., 2006). The use of gestures may help hold information in working memory while speakers prepare the rest of their message for production (Wagner et al., 2004). If so, then the encouragement of gesture use in a second language teaching setting could help learners communicate more effectively (Tellier, 2006).

A secondary purpose of this paper was to review evidence for bilinguals’ use of gestures across languages. Although evidence is scanty at this point, it is safe to conclude that bilinguals sometimes use language-specific gestures even when speaking the other language (e.g., Brown, 2006). This kind of cross-linguistic transfer has been observed in other aspects of bilinguals’ language production (e.g., Meisel, 1983; Nicoladis, 2006). Meisel (1983) argued that transfer might serve as a strategy to more effective communication in a second language than could be obtained if only already well-learned structures from the second language were used. Gestural transfer could serve the same role, that is, a strategy for effective communication, particularly in bolstering the communication when language proficiency is weak. If so, then beginning second-language learners might use more language-specific gestures than advanced second-language learners.
Although there is straightforward evidence that specific gestures can be transferred, it is not clear that there is transfer in terms of the rate of gestures. Some researchers have assumed that speakers of some languages (like French and Spanish) gesture more frequently than in other languages (such as English; e.g., Pika et al., 2006). This is an assumption because there is no systematic empirical evidence for high gesture frequency languages among monolinguals (cf. Graham & Argyle, 1975, who showed language/culture differences between Italians and Britons in using gesture to interpret a speaker’s message). In favor of a transfer of gestural rate, Pika et al. (2006) found that French–English and English–Spanish adults gestured more frequently than English monolinguals in English. However, they did not include French and Spanish monolinguals in their study. Therefore, as noted above, the bilinguals might have gestured more than the monolinguals because of their bilingualism. In contrast, French–English bilingual preschoolers have been found to gesture more frequently than either French or English monolinguals (Nicoladis et al., 2005). These results suggest that bilinguals might gesture more than monolinguals because they are bilingual rather than because they speak at least one high gesture frequency language. Before further research is done on cross-linguistic transfer of gestural rate, it would be important to establish that differences can be found among monolingual speakers of different languages.

Before closing, it is important to note several potential weaknesses in the conclusions presented here. First, and most importantly, the research on bilinguals’ gesture use is still sparse, and with the addition of further research, the present conclusions may have to be modified. Second, the review of the literature here has not distinguished between simultaneous and sequential bilinguals, under the assumption that it is the degree of language proficiency that plays an important role in gesture use rather than the age at which the languages were acquired. However, studies in other linguistic domains have shown effects of age of acquisition (see review in Bialystok, 1997). Third, the task that bilinguals are asked to do could impact significantly on the conclusions about their gesture rate (cf. Alibali et al., 2000). Fourth, the language combinations of bilinguals included in studies thus far have been limited, with most studies focusing on bilinguals who know two Indo-European languages (e.g., Gullberg, 1999; Marcos, 1979; Pika et al., 2006; Sherman & Nicoladis, 2004; cf. Nicoladis, Pika, Yin, et al., 2007). Fifth and finally, this review of the literature has relied on evidence from bilinguals as young as 2 years of age through to adulthood. It is possible that there are developmental changes in gesture use over this lifespan period (McNeill, 1992) that could impact significantly on the conclusions about their gesture rate. This point can be illustrated with the example of the results on gestural rate transfer discussed above. The results with adult bilinguals could have been because of gestural transfer, but the results with child bilinguals were more likely because of bilingualism. If a developmental study showed that bilinguals gestured more than monolinguals in both languages only in the preschool years and showed signs of gestural transfer in later years, it is possible that the high gesture rate in the preschool years has to do with bilinguals’ sensitivity to the conversational needs of others (Comeau, Genesee, & Lapaquette, 2003; Genesee, Boivin, & Nicoladis, 1996; Goetz, 2003). Thus, bilingual preschoolers’ greater use of gestures could be because of a desire to create a vivid story for the benefit of their listener. By adulthood, the desire to create a
vivid story might have become more a question of individual choice than of the number of languages spoken.

Researchers still have a lot to learn about bilinguals’ gesture use. The results to date point to the possibility that bilinguals use gestures primarily as a facilitation strategy to aid more effective communication. Only rarely are gestures used for compensation for weak language proficiency. Instead, gesture use may facilitate speech production in both first- and second-language use. This conclusion could have implications for how a second language is taught; teaching a second language as a whole-body experience might be more effective than teaching the spoken component alone (Asher, 1969).

REFERENCES


