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Author manuscript

*Sign Lang Stud.* Author manuscript; available in PMC 2017 July 20.

Published in final edited form as:

*Sign Lang Stud.* 2016 ; 16(3): 361–388. doi:10.1353/sls.2016.0007.

## Best Practices for Building a Bimodal/Bilingual Child Language Corpus

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### Abstract

This article addresses the special challenges associated with collecting longitudinal samples of the spontaneous sign language and spoken language production by young bimodal bilingual children. We discuss the methods used in our study of children in the United States and Brazil. Since one of our goals is to observe both sign language and speech, as well as any language mixing, it is important for us to address issues of language choice and techniques for directing the child participant toward primary use of the target language in each session. Suggestions and guidelines for achieving this in effective yet respectful ways are presented. We are especially dependent on the participation, flexibility, and direction of our participant children's parents, who work with us to elicit samples that are genuinely representative of their children's linguistic abilities. We illustrate our procedures for training parents and other interlocutors in data-collection sessions. In return for their generous participation in our research, we address parents' questions and concerns about language development, especially in bimodal bilingual contexts. We take very seriously the need to negotiate with participants regarding their expectations for the use of the data they provide, and we abide by their wishes in this matter. The strategies presented here improve the quality of the investigations we can conduct by making the experiences of the participant families as pleasant as possible.

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This article presents an overview of methods developed for a longitudinal corpus of child data under the project Development of Bimodal Bilingualism (Lillo-Martin, Chen Pichler, and Quadros, 2009–2014), a research project jointly conducted in the United States and Brazil, investigating children's simultaneous acquisition of one of two pairs of languages: Brazilian Sign Language (Libras) and Brazilian Portuguese (BP), or American Sign Language (ASL) and English. We follow the language development of two groups of bimodal bilingual children: hearing children of Deaf parents (known as Coda children or simply Kodas [kids of Deaf adults]) and signing Deaf children with a cochlear implant (CI) of either Deaf or hearing parents. Our goals are to describe the process by which a sign language and a spoken language develop together; theoretically, this project helps us to understand the conditions on cross-language influence, the mechanisms by which two separate grammars interact, and the feasibility of accounting for bilingual phenomena without appealing to any special machinery.

In previous reports, we have described the notational conventions we use for transcribing speech and sign (Chen Pichler et al. 2010) and the test battery we designed for investigating

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children's development of speech and signs to elicit experimental data to complement our longitudinal study (Quadros et al. 2015). In this article we discuss our project practices for optimizing the longitudinal collection of spontaneous bimodal bilingual data. Some of these practices are common in studies of Deaf signing children (see Baker, van den Bogaerde, and Woll 2009; Lillo-Martin and Chen Pichler 2008). Many are extendable to longitudinal studies of any language pair, while others, which we focus on here, are specifically relevant to contexts of bimodal bilingualism and were born out of the unique challenges of studying children prone to simultaneous articulation in the signed and spoken modalities. These aspects of our research are less technical than our transcription practices and test development, and they are also more fluid and difficult to quantify. Yet being sensitive to these factors can greatly improve the quality of bimodal bilingual data, and for this reason we wish to document them for future researchers interested in the longitudinal observation of bimodal bilingual children.

We begin by addressing the vexing issue of language choice, discussing strategies for encouraging child production in one target language or the other and suggesting how to respond when the child uses a nontarget language. Researchers must bear in mind that language choice for children from Deaf families is affected by many factors (Lillo-Martin et al. 2014), including complex issues of developing Coda identity, a process that begins at an early age. After this discussion we focus on interactions with the families of participant children. Like most longitudinal corpora of child language, ours owes a tremendous debt to the participating parents for the privilege of studying their children. In return, our goal is to partner with them to make data collection as enjoyable and effective as possible, to offer guidance and tips for optimizing their children's language production during filming, and to share the project findings with them at regular intervals. Finally, we conclude our discussion by addressing several important issues related to the confidentiality of research participants. These issues are particularly critical with respect to cochlear implanted Deaf children from Deaf families, a relatively rare and highly sensitive population within the Deaf community. As research interest in this group of children increases, we must confront the question of how to responsibly mediate requests from other researchers to contact our participant families, given the highly controversial nature of cochlear implantation in the Deaf community.

## Issues Surrounding Language Choice

The availability of two languages creates rich potential for language mixing and cross-language influence. This is especially true for spontaneous production data from bimodal bilinguals, who have the option of producing two general types of code mixing. *Code switching* is commonly noted in the bilingual literature, where it is defined as a switch from one language to another (e.g., Quadros et al. in press; Poplack 1980). *Code blending* (Bishop and Hicks 2005; Emmorey et al. 2008) is a phenomenon unique to bimodal bilingualism, entailing the simultaneous production of signs and speech.<sup>1</sup> Previous studies of Coda children and adults report a strong tendency toward code blending in general (Petitto et al.

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<sup>1</sup>We consider code blending to be distinct from simultaneous communication (SimCom) in that the former occurs spontaneously in mixed Deaf-hearing households or among bimodal bilinguals, is generally accessible to all parties, and is used in low-stake, informal

2001; van den Bogaerde 2000; Emmorey et al. 2008), and even unimodal utterances (those articulated in only one modality or the other) often display structural influence from the other language (e.g., an English *wh*-question produced with doubling of the *wh*-word, normally found in ASL but not in English) (Quadros, Lillo-Martin, and Chen Pichler 2013; Lillo-Martin et al. 2012). Thus, a major focus of our project is to understand the types of structural influence that occur at different stages of children's development and in different contexts. At the same time, bimodal bilingual children are developing a sign language grammar and a spoken language grammar, and our data should ideally allow for in-depth analysis of these grammars as autonomous systems. We consider both of these factors as we examine aspects of the children's language choice during our data-collection sessions.

Studies of unimodal bilingual language development have found that, even at a very young age, children are able to keep their growing languages relatively distinct (Genesee 1989; Pearson, Fernández, and Oller 1995). Several authors emphasize the need for researchers to record in separate language contexts to show children's ability to separate their languages. However, even at very young ages, children seem able to adjust their own usage to that of their interlocutor. For example, Deuchar and Quay (1999) studied a Spanish-English bilingual child, filmed while interacting with her (bilingual) father in Spanish and her (monolingual) grandmother in English. The researchers found that, as early as 1;07, the language of the context significantly matched that used by the child [ $X^2 = 38.76, p < .001$ ]. The authors describe the recording contexts as including some bilingual strategies, such as when the bilingual mother participated and occasionally produced translations for the child. They also observed that the child showed a preference for using English outside the home with other monolingual speakers. They argue that "the language used by the interlocutor is not the only important factor influencing the child's language choice, but the location or setting also plays its part" (ibid., 472). In addition, language choice may be affected by the extent to which a child's interlocutor negotiates a monolingual or a bilingual context (Lanza 1997).

Some studies suggest that children's use of code switching at an early age may be related to a lack of translation equivalents. For example, 90 percent of a Brazilian Portuguese-English bilingual boy's code mixing between the ages of 1;00 and 1;06 can be accounted for by lexical gaps in his weaker language (Nicoladis and Secco [2000]). However, it is clear that children are also sensitive to contextual variables, including the interlocutor's language choices and pragmatic functions (see Genesee and Nicoladis 2006 for a review). Comeau et al. (2003) found that six French-English bilingual children, ages 2;00–2;07, were highly sensitive to the code mixing of the adults interacting with them and adjusted their own code mixing accordingly. Yet the effects of language dominance, at both the individual and the societal level, interact in complex ways with children's developing interlocutor sensitivity. A comparison of French-English bilingual children in an English-dominant region of Canada found that French-dominant children produced very little code mixing in their English production, while English-dominant children code-mixed frequently in their French

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contexts. The latter, however, is essentially sign-supported English and is noted for being largely inaccessible to Deaf addressees, particularly in high-stake contexts such as classroom lectures, meetings, and so on (Johnson, Liddell, and Erting 1989; Tevenal and Villanueva 2009).

production (Paradis and Nicoladis 2007). The authors proposed that children's awareness of English as the dominant language of the greater community, coupled with their experience that "virtually all francophones are bilingual, but few anglophones are" (ibid., 294), led to the observed asymmetries in children's code-mixing behavior.

The development of interlocutor sensitivity among bimodal bilinguals is similarly complex, influenced by a variety of factors. Petitto et al. (2001) studied three bimodal bilinguals acquiring Langue des Signes Québécoise (LSQ) and French and three acquiring French and English. The researchers found that both sets of bilinguals displayed early interlocutor sensitivity. Although the children did not exclusively use a single language per interlocutor, they tended to reflect their parents' language patterns. The degree to which they did so was related to their parents' own mixing rates, as well as to the child's emerging preference for one language or the other. Similar correlations between child and parental mixing rates have been reported for Dutch bimodal bilingual children (van den Bogaerde and Baker 2005, 2009).

However, researchers agree that input patterns and language dominance of bimodal bilingual children are not the only factors influencing children's language choice. Lillo-Martin et al. (2014) compared the language choices of four bimodal bilingual children between 1;04 and 3;07 to those of Deaf and hearing interlocutors. Although all four children demonstrated early sensitivity to their interlocutors' language preferences, using more speech with hearing interlocutors and more sign with Deaf interlocutors, the children's overall language patterns diverged significantly from those of the adults around them. Notably, when interacting with Deaf interlocutors producing predominantly sign-only utterances, the bimodal bilingual children produced a much greater proportion of speech, either as speech-only or code-blended utterances. This pattern echoes that observed by Paradis and Nicoladis (2007) for their English-dominant bilinguals described earlier and may reflect young bimodal bilinguals' awareness that signing Deaf adults are generally bilingual, whereas hearing adults generally are not. Additionally, the frequent occurrence of code blending by bimodal children, even in the presence of Deaf interlocutors, may reflect the difficulty of inhibiting English, a language that is dominant in both the children's developing grammars and the greater sociolinguistic context (Lillo-Martin et al. 2014). A high cost of inhibition has been cited as an underlying factor in frequent code blending by Coda adults, mentioned earlier (e.g., Emmorey et al. 2008). Furthermore, Deaf parents vary in the degree to which they accept code blending by their bimodal bilingual children, and several research groups have reported correlations between this variation and children's developing language choice (van den Bogaerde and Baker 2009; Lillo-Martin et al. 2014) or their development of sign language in general (Kanto, Huttunen, and Laakso 2013).

Bearing in mind that children begin to differentiate their languages and show sensitivity to their interlocutors at an early age, we wanted our longitudinal data collection to alternate in target language and also allow for bimodal mixing. At the same time, the children's emerging patterns of language dominance are of interest to us as well, so we have also adopted strategies for eliciting interactions in the children's less preferred language. In the following subsections, we describe the practices we have developed for obtaining

representative samples of each child's signed language, spoken language, and language mixing.

### **Directing the Child toward the Session's Target Language**

We begin with the assumption that bilingual children differentiate between their two developing grammars very early on (Genesee 1989). We have thus designed our data-collection methodology to provide optimal environments for eliciting representative samples of each child's spoken language and signed language separately, with the understanding that episodes of mixing naturally occur. We do this by alternating between speech-target and sign-target filming sessions. During speech-target sessions, the child interacts with a hearing parent or a familiar hearing researcher, with a hearing person behind the camera. The adults set the tone of the session by speaking without signing, thereby encouraging the child to do the same. This is not to say that signing is forbidden during speech-target sessions, just that we try to model unimodal speech during speech-target sessions in order to maximize the opportunities for observing the child's English or BP development.

In the same way, sign-target sessions are generally conducted in voice-off signing, signaling to the child that it is time to use ASL or Libras. Parents and researchers interacting with the child are either Deaf or native signer hearing Codas. Here the dynamics of language choice are often more complicated than in speech-target sessions for several reasons. First, parent-child interactions at home are often bimodal, and many Deaf parents report that they sometimes address their children in speech (with or without signing), and their children respond in kind (van den Bogaerde 2000; van den Bogaerde and Baker 2005). Second, most of the children we studied will eventually become dominant in their spoken language, which is not surprising, given that many of them spend a relatively small percentage of their day in a signing environment, particularly after the first few years of life. They may have a difficult time transitioning to voice-off signing, especially after a long day at a hearing preschool. Third, children who are interacting with a Coda adult whom they know is hearing may insist on speaking instead of signing. On more than one occasion, participant children have asked our Coda researchers outright whether they were hearing or Deaf, and on learning that they were hearing, declared, "Then you should talk." In the next subsection, we discuss several strategies for addressing changes in language choice during filming in a way that maintains a natural, comfortable environment for the child.

### **Mediating Language Choice**

As noted earlier, code switching and code blending are very common in the production of bimodal bilinguals and occur frequently in our longitudinal data. The adults interacting with our child participants are almost always bimodal bilinguals themselves (though not necessarily native), and the environments where we film (e.g., on campus at Gallaudet, in the children's homes) are strongly bilingual. Children growing up in these environments are exposed to language mixing every day, and we anticipate its occurrence in their own production. If children spontaneously begin to blend, regardless of whether the session is targeting sign or speech, we do not stop them. In fact, adults interacting with the child often find themselves blending, too, so compelling is it to respond to bimodal utterances with more bimodal utterances. For instance, change from speech-only to blended sign and speech

often occurs during depiction, a common linguistic strategy in ASL and Libras used to visually represent or show an action or appearance rather than simply telling it (Liddell 2003; Dudis 2007). Although depictive structures exist for spoken languages (intonation and co-speech gesture often express depictive content, for instance, in spoken narratives), sign languages are particularly rich in depictive structures. In the following interaction, a hearing researcher (Res) is interacting with two young bimodal bilingual boys, Lex (age 6;08) and Ben (age 6;10) during an English-target session. They are discussing the headgear of a Transformers action figure that flips up and down, prompting the use of ASL depiction in a code switch by Ben, then code blends by both child participants. In the transcript, depicting verbs are notated with the label DV, followed by a general description in parentheses. Also, in this and future examples, signs produced during code blends are enclosed in square brackets, indicating the scope of the overlap between signs and speech.

**Example 1**

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Ben: No, this is, like, a shield for his head so he looks like a master.  
 Res: A master?  
 Ben: Yeah. No. This is actually a shield for his face so when, like, a  
 [missile's coming            ]  
 [DV(missile-toward-head)]  
 Ben: [he can do this.            ]  
 [DV(turn-on-shield)]  
*BEN flips up the figure's headpiece*  
 Ben: And like . . .  
 Res: Oh, special, like, missile blocker.  
 Ben: DV(missile-bounce-off)  
 Lex: And he gets . . . and it just [bounces off            ]  
                                                   [DV(missile-bounce-off)]  
 Ben: And it [bounces            ].  
                                                   [DV(missile-bounce-off)]

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Typically, once the blending has served its purpose, the child eventually returns to the target language on his or her own, although in rare instances, blending becomes the child's default mode for the rest of the session (these sessions are noted in our filming log as being primarily blended).

In contrast, unimodal code switching from one language to the other is less common in our data than code blending, a pattern that is consistent with previous studies (Petitto et al. 2001; Emmorey et al. 2008). When switches take place, they are much more likely to occur from sign to speech than from speech to sign for the reasons enumerated in the previous subsection. We have developed a number of strategies that can be applied with children who switch to speech during a sign-target session and resist sign production. The simplest is to always include at least one Deaf person in sign-target sessions. When a child makes an extended code switch to speech without sign, the Deaf adult can gently remind the child that

he or she is Deaf and did not catch what the child just said because it was not signed. If the child persists in using speech only, a hearing adult in the room can model sign-only production while making a comment like the one illustrated in example 2.

### Example 2

Coda researcher to child:

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IX(Deaf adult) WANT KNOW SAY WHAT.

“He or she (pointing to the Deaf adult) wants to know what you’re saying.”

BETTER IDEA ALL IX(us) SIGN, UNDERSTAND CLEAR, MORE FUN!

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“Why don’t we all sign, so that everyone understands clearly? That way it’ll be more fun!”

These types of suggestions echo requests that bimodal bilingual children may often hear from their Deaf parents, and we have found them to be effective in most cases.

When there is no Deaf person present, or if the child is simply too absorbed in looking at toys or books, adults will need to resort to other techniques to coax the child to sign. Sometimes, a simple reminder to the child that today is a signing session and that the child will have a speaking session next time is enough to shift the child’s language to signing. Some children seem to associate sign language very strongly with their Deaf parents, so changing the topic of conversation to something related to the child’s Deaf mother or father can also trigger more sign production. Another effective tactic is to talk about something that is conducive to depiction, as we saw earlier in example 1. In the exchange in figure 1, a twenty-four-month-old Koda is playing with two figures from *Sesame Street*, Cookie Monster and Elmo. The mother draws the child’s attention and exclaims, ELMO KISS COOKIE-MONSTER “Elmo kissed Cookie Monster!” with heavily depictive movements, classifiers, and nonmanual expressions (figure 1).

The child observes this depictive sequence but then resumes playing with his toy figures. Undeterred, his mother continues to engage her son. Each time he makes the figures do something, she repeats their actions through depictive signing, creating an impromptu game, to which the son responds positively. For example, Elmo bounces off the head of Cookie Monster (figure 2), and his mother depicts this using the same hand configurations she used to depict the upright figures in the kissing scene (figure 3).

Sound effects can also be incorporated with depiction to great effect. For instance, the mother could choose to vocalize or simply mouth sound effects such as “boing!” as she hits Cookie Monster’s head. Sound effects can render depictive sequences even more vivid to hearing children, and we find them to be very useful in getting children’s attention and engaging them in sign interaction.

In the exchange illustrated in figures 2 and 3, although the child did not immediately produce any language himself, his mother’s use of depiction successfully drew his attention, and he eventually began signing again. This sort of depiction modeling occurs frequently in this child’s videos, with the child increasingly producing depictive structures himself.

When all else fails, researchers can try to engage children in meta-linguistic activities that explicitly elicit sign language (e.g., by asking them what their signs are for various objects or English words). Regional variation is very common in ASL and Libras, particularly in places such as Gallaudet, which attract Deaf people from all across the country. The children in our study enjoyed comparing signs with the researchers, especially when they encountered signs that they had never seen before or signs that struck them as funny. In the following exchange, a Coda child (Ben, age 6;07) and a Coda researcher (Res) are playing with plastic toy food. Although this is an English-target session, Ben and the researcher very naturally begin to code-blend as they discuss their respective signs for various food items.

### Example 3

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- Res: (pointing to a plastic hotdog) Do you like hotdogs?  
 Ben: Yeah. [This is my sign for *hotdogs*.]  
           [HOT-DOG            ]  
 Res: Do you know what mine was? Mine is, well . . . I know all  
       the same signs that you use, but when I go back home, I use  
       my old signs.  
 Res: [This is mine. ]  
       [SAUSAGE        ]  
 Ben: Wow.  
 Res: Is that your sign for “sausage”?  
 Ben: (nods his head)  
 Res: Yeah.  
 Ben: [*Sausage*.        ]  
       [SAUSAGE]  
 Res: [That’s my *hotdog*.]  
       [SAUSAGE        ]
- 

The most challenging cases of language switches are those in which the child stubbornly refuses to sign with a hearing researcher on the grounds that hearing people talk and Deaf people sign. As an extreme example, one of our Koda participants at a recent data-collection event insisted that the Deaf researcher interacting with her was really hearing. When we asked what made her think this, she responded, “Because I can hear her talking when she signs.” In fact, this researcher vocalized very little, but the child could still make out unvoiced English words that the researcher mouthed, which was apparently enough to count as talking and, by extension, proof of the researcher’s hearing status. Bimodal bilingual children navigate complex interactions between Deafness and language as they develop their own cultural identity, and their understanding of what it means for a person to be Deaf or hearing may pass through several different stages. Some young Kodas may reason that, because they know that Deaf people sign, the fact that they themselves sign must mean that they are Deaf, too. Others may conclude, as did the Koda described earlier, that vocalization and mouthing is an indication that someone is hearing because only hearing people talk. In particular, our Deaf children with cochlear implants seemed stymied by the question of



whether they were Deaf or hearing since they had been told that they are Deaf, yet they talk and hear very well. When this topic arose during filming, our Coda researchers took the opportunity to explicitly discuss the relationship between Deafness and language, often referencing their own experiences growing up, as illustrated in the following spoken English exchange between a Coda researcher (Res), a Deaf child with a cochlear implant (Gia, age 5;11), and her Koda brother (Bro, age 8;08).

#### Example 4

- 
- Gia: (referring to her friend with a CI) She is Deaf and hearing.  
 ...
- Bro: You can't be Deaf and hearing.  
 ...
- Gia: Yes ...
- Bro: She has total loss of hearing.
- Gia: Then why am I Deaf and hearing!?
- Res: You are both ... Okay, I think she is right, and I think you are both, too. I think ... So like, [Gia's friend], her parents are Deaf, so our heart is Deaf, but we are actually hearing.  
 Because we grow up and we see all these Deaf people, and we sign, and we even do the same things that Deaf people do, we like to talk and talk and talk ...
- Bro: (laughing) Yeah.
- Res: They love that, and we love that too! So it's like we are Deaf inside, but on the outside, we are hearing. So we are both, and she is both, too. And that is cooler than being just hearing or Deaf.
- 

Identity is “the linguistic construction of membership in one or more social groups or categories” (Kroskrity 2001, 106). Under this view, one’s identity is primarily ascribed not by ethnicity, class, or gender but rather by how one uses language, in addition to nonlinguistic communicative practices. The notion of a hybridized or dual Coda identity (i.e., both Deaf and hearing) is thus a logical extension, given the prevalence of code blending that Codas typically produce (Preston 1994). Enthusiastically reaffirming to a child who is reluctant to sign that “you can sign, and you can also talk . . . You can do both, wow!” is a positive, encouraging way to coax the child to produce more signs and reaffirms to the bimodal bilingual child that he or she can be a signer as well as a speaker.

#### Working with Participant Families

Our longitudinal corpus focuses on early linguistic development, mainly between the ages of 1;0 and about 7;0, so the families of our participant children were very involved in the data-collection process; thus our subject recruitment is more accurately characterized as family recruitment. Because input is such an important part of the acquisition puzzle, particularly in bilingual situations, we asked all of the parents of the participant children to be involved in the sign language filming sessions, and we suggested some effective techniques for encouraging their children to sign with them. We alternated between speech-target and sign-target filming sessions, and in many cases we conducted the sign-target sessions in the child’s home. We aimed for parents to be involved in filming at least one sign-target session a month since all of our participant children have at least one Deaf parent who provides the bulk of their sign input.

**Basic Parent Training for Data Collection**—Although we filmed many of our longitudinal data-collection sessions on campus, at times we asked parents to film at home on their own (e.g., during vacations and holidays when researcher and family schedules might not coincide). For these sessions, we provided parents with a camera and a tripod, as well as a list of important tips for filming, summarized as follows:

- Remember that we are filming your child for the purpose of documenting his or her language development over time. This is our sole focus as we view your videos. We ignore extraneous aspects of your videos, such as how clean your home is, so please do not put off filming just because you are worried that your house looks messy!
- Filming in a small, constrained space encourages the child to stay in one place, which results in a higher quality video. Sitting at a table during part or all of the filming session is a good way to achieve this. Possible activities that you can do at a table with your child include putting puzzles together, playing with Play-Doh (modeling clay), looking at books, eating lunch, or playing a board game.
- We want your child to enjoy filming and produce a natural language sample that is representative of his or her everyday language use. It is not necessary to push your child to sign throughout the filming session. We expect that a good portion of each video session will be silence, as your child examines new objects, processes information, or simply plays. This is perfectly normal, so try to resist the urge to interrupt your child during these silences and allow him or her to initiate talk when he or she is ready.
- It may take your child time to settle into a filming session, so try to film when you have at least a twenty-minute block of available time rather than stitching together a series of short, disjointed video segments.
- If you have been supplied a cordless microphone with your video camera, try to use it consistently. Although the video camera is equipped with an internal microphone, the cordless microphone results in a much higher quality sound. However, the batteries in the cordless microphone must be fully charged before you use it. If they are not, the camera's internal microphone is better than losing the audio completely.
- Turn off any televisions, fans, air conditioning, or other noise sources that can make it hard to hear your child's voice on the video.
- Turn on the lights and make sure there is adequate lighting for filming. This will ensure a higher quality video.

Before home filming begins, a project researcher meets with parents briefly to drop off a camera, teach parents how to use it, and go over the tips for filming listed earlier. If parents express concern that their children have not been interested in signing lately, we also offer practical suggestions for engaging children in conversation, summarized in the next subsection.

**Parent Training for Elicitation Techniques**—Although parents are in many ways experts on their children’s language abilities, they vary widely in their ability to elicit a rich language sample from their children. Many initially assume that the goal of filming sessions is to compel their child to produce as many signs as possible to demonstrate the full extent of their vocabulary. Like many child acquisition researchers, we have numerous tapes of parents flipping through picture books, pointing earnestly at pictures of objects and saying to their child, “And what is this? Come on, you know this sign/word! What is it?” Not surprisingly, children quickly lose interest in this activity, and the resulting data tell us little about their actual linguistic abilities.

Fortunately, our early parent-child filming sessions also included many episodes of masterful language elicitation that resulted in wonderfully rich dialogue samples. We recorded a series of such episodes on a DVD and developed them into a video guide for parents,<sup>2</sup> pointing out strategies for creating a relaxing and fun filming environment that encourages children to talk or sign. The following section presents descriptions and illustrations of several strategies that appear in our guide for parents: moving beyond pointing, collaborative storytelling, and “backing-off strategies.”

**Pointing and beyond:** Pointing is a powerful communicative strategy, and children learn early on how to use this tool effectively. In fact, children often use pointing so effectively that it cuts short the potential for further discourse, such as when children point to something they want, the parent immediately fetches it for them, and then the children proceed to play silently with that object. Instead, parents can build on their children’s pointing, perhaps by asking what the children are pointing at or where it is and so on. This is not a simple labeling exercise but one that encourages a conversational exchange, especially when the parent follows up with questions.

**Collaborative storytelling:** We encourage parents to try collaborative storytelling as a strategy for creating comfortable and safe environments for language production. This activity, which engages both child and parent alike, is an entertaining way of helping young storytellers learn how to organize narratives. Parents can build on their child’s prior discourse by repeating child-produced sentences with additional information or adding a follow-up question such as “And then what happens?” Parents can also provide guidance when the child is uncertain how to phrase something or what the appropriate sign is.

The transcript in example 5 is an example of collaborative storytelling from our corpus data, in which the target child, Ben (age 2;07), and his mother create a story about a nice monster, with frequent use of depiction (figure 4). As in earlier examples, depicting verbs are labeled with the prefix DV. Affirmative head nods are coded here as interjections: *i(yes)*.<sup>3</sup>

<sup>2</sup>These materials are currently being prepared for distribution online and will be available at our project website, [bibibi.uconn.edu](http://bibibi.uconn.edu).

<sup>3</sup>In our description of notational conventions for bimodal/bilingual data presented in Chen Pichler et al. (2010), head nods were coded as gestures: *g(yes)*. Our experience since then has prompted several changes to these conventions, notably in the way we notate gestures, emblems, and interjections. See our project website ([bibibi.uconn.edu](http://bibibi.uconn.edu)) for an updated list of notational conventions.

### Example 5

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Ben: see fake monster dv(raises-claws-to-attack-like-monster).  
 "I saw a fake/plastic monster, and it went like this: 'Arrr!' with its claws out."

Mot: SEE FAKE MONSTER  
 "You saw a fake monster?"

Ben: . . . i(yes).  
 "Yes."

Mot: LOOK-LIKE WHAT  
 "What did it look like?"

Ben: WHAT  
 "What?"

Mot: MONSTER PURPLE  
 "Was the monster purple?"

Ben: i(yes)  
 "Yes."

Mot: COLOR MONSTER WHAT  
 "What color was the monster?"

Ben: GREEN[?] CLOTHES SHIRT CLOTHES.  
 "It had on green(?) clothes. A shirt. Clothes."

Mot: USE DRESS  
 "It was wearing a dress?"

Ben: RED[/] BLACK SHIRT. BLACK SHIRT[+].  
 "Yes, it was red . . . uh, black. It had a black shirt on."

Mot: BLACK GOWN SHIRT  
 "Oh, it had a long black shirt on. Oh, wow."

Ben: BLACK IX(shirt).  
 "A black shirt."

Mot: BLACK. DV (indicating-shirt) BLACK. i(yes).  
 "It was black."

Ben: IX(self)[+]. IX(self)[+] MONSTER// MONSTER IX(self) MONSTER.  
 "It's me. It's me, the monster. I'm the monster."

Mot: IX(BEN) MONSTER. NICE MONSTER MEAN MONSTER WHICH IX(BEN).  
 "You? You're the monster. Are you a nice monster or a mean monster? Which one?"

Ben: IX(self)# NICE MONSTER.  
 "Me . . . I'm a nice monster!"

Mot: NICE MONSTER YES.  
 "Oh, you're a nice monster, yes, you are."

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This is only a short excerpt from a much longer exchange that is rich in examples of how collaborative storytelling engages the child and encourages his linguistic development (learning new words, learning how to depict elements for storytelling, learning how to structure his stories and how to relate one part to another part, etc.), all with playful guidance from his mother.

**Backing-off strategies:** Sometimes children are too tired or cranky to respond to the engagement strategies described earlier. At these moments, the more the adults try to engage them, the more uncooperative the children seem to become. If, after several attempts, it becomes clear that the child does not want to participate, we may resort to one of the following “backing-off” techniques as a final attempt to draw the child into interaction before cutting the video session short, as well as to avoid upsetting the child and jeopardizing his or her interest in future video sessions. Because crankiness is often a child’s response to sensing the pressure of adults wanting them to engage, backing-off strategies move the focus of activity away from the child, removing this pressure. For instance, if the child is distracted or acting up, the adult can ignore the child’s behavior and continue to participate in the session without the child (e.g., reading a book aloud to no one in particular or to someone else in the room, or playing a game on their own, without calling on the child to participate). One of our research assistants is particularly skilled at animated conversation with stuffed animals. All of these techniques allow cranky children the leisure of observing the adult’s activity from a safe distance, without being pressured to participate. For many children, this break is enough to allow their frustration to dissipate, and they eventually begin listening or watching what the adult is doing out of curiosity. Then the adult can casually ask, “You see what I’m doing here? Do you want to try?” offering the child the chance to reengage once he or she feels ready.

**Answering Parents’ Questions—**As researchers involved in longitudinal data collection, we enter into a long-term working relationship with parents and their children. Participant parents offer us a valuable opportunity to observe their children’s language development from a privileged vantage point, and in return, we have a responsibility to communicate openly with them about our research plans and findings, responding to their questions, suggestions, or concerns as they arise during the course of the project. Hearing researchers studying bimodal bilingualism, especially Coda researchers, find themselves acting not only as data collectors but also as cultural brokers. Deaf parents are similar to hearing parents raising children adopted from a different ethnicity in that these parents are not members of their children’s “native culture” (Singleton and Tittle 2000, 227). Adoptive parents often seek ways to promote the identity and cultural development of their child, and, similarly, we have found that Deaf parents often seek out hearing or Coda adults in order to access information about hearing culture and the Coda experience. Since parents cannot monitor their children’s speech, we often field questions about their child’s speech development. Additionally, the Deaf parents in our study ask our Coda researchers about their childhood experiences as a way to understand and connect with their children. Their questions cover a wide range of topics such as music, school, friends, dual identity, and communication patterns with Deaf and hearing family members. We believe that we have an obligation to our participant families not only as researchers but also as cultural liaisons who take the time to talk to parents about their concerns, provide them access to related research (e.g., Chen Pichler, Lee, and Lillo-Martin 2014), and share relevant cultural experiences.

## Issues of Consent and Confidentiality

In the United States, much of our recruitment of Coda subjects and Deaf subjects with cochlear implants has occurred around Gallaudet University, which has an unusually high density of both populations. In many ways, being located at such an epicenter of the Deaf community and having ready access to qualified participants is a tremendous asset to our project, but it also raises concerns about confidentiality that would not occur elsewhere. Additionally, the use of video data for sign language studies presents challenges for protecting the confidentiality of project participants since they are readily recognizable on film. Deaf communities tend to be quite small, increasing the likelihood that if we show still shots or video clips of our participants in public, someone will recognize them. Fortunately, the general population seems fairly comfortable with this reality now, thanks to the widespread popularity of free access to online YouTube videos and vlogs, but this is much less the case for Deaf families who have made the controversial decision to seek cochlear implantation for their children. As researchers, we have an important responsibility to ensure that parents (1) clearly understand the goals and procedures of the research, so that they can decide whether the potential benefits of project participation outweigh the potential risk to their own and their children's confidentiality, and (2) are given an opportunity to determine how researchers use their child's video data. Research involving particularly sensitive groups, such as Deaf children with cochlear implants, calls for even more caution than usual, a point that we address at the end of this section.

### Informed Consent and Video Release

In the United States, the institutional review board (IRB) of a researcher's university or college is charged with ensuring that informed consent and video release forms used by researchers meet the requirements stated in (1) and (2) in the preceding paragraph; a similar ethical review board exists for universities in Brazil. Although none of the IRBs at our host universities require sign language translations of these crucial forms, we have recently begun developing sign versions in the interest of accessibility; these will be posted online so that prospective participant families can review them before meeting with us to discuss the study. We have also developed a very explicit video release form featuring a checklist of specific activities for which parents can give permission for us to undertake with their child's data. The list includes transcription by project research assistants (a minimum requirement for project participation) and optional inclusion of photos or short video clips in scientific publications or conference presentations, exposition of more extended sections of video during classes taught by researchers, and analysis by students in such classes or research collaborators outside the original project. For each activity, parents check one of three options, as illustrated in the excerpt from the US video release form in example 6.

#### Example 6

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May we use photos and/or short sections of your video data in presentations and handouts for conferences and workshops on linguistics and/or deaf education?

Yes, you may do so without further approval from me.

Yes, but only with my prior approval of each photo or clip that you plan to share.

\_\_\_ No.

May we use sections of your videotapes for teaching purposes in presentations and handouts during linguistics courses taught by members of the research team?

\_\_\_ Yes, you may do so without further approval from me.

Yes, but only with my prior approval of any video data that you plan to use.

\_\_\_ No.

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This level of specificity gives parents flexibility and control over the degree to which their child's data are shared outside of the immediate research team. When parents check the "No" option, their children's digitized data are stored separately from other data on our computers in order to avoid accidental selection of that child's data for illustrations in publications or presentations. In cases where parents choose the option "Yes, but only with prior approval from me," we email them the relevant photo or video clips each time we wish to use them, with a brief description of the purpose each will serve. In many cases, after we have done this a few times, parents inform us that they are now comfortable enough with how we share their children's videos that we need no longer seek approval for specific uses. Further suggestions on how to manage and keep track of parents' varying preferences for data sharing are detailed in Quadros, Lillo-Martin, and Chen Pichler (2014).

It is worth mentioning that longitudinal data tend to be very rich and can be mined for many, many years, long enough that researchers will eventually need to consider obtaining informed consent and video release permission from the participant children themselves. For this reason, it is important to update the contact information on the participant families from year to year. This can be a difficult practice to maintain, especially for projects with numerous participants, unless researchers explicitly integrate this into their calendar of yearly to-do items. Updated contact information is also crucial for longitudinal video data that will be shared (e.g., as part of archived corpora available for download by other sign language researchers). Often, plans to share longitudinal data develop only after data collection is complete, so participants were not initially informed that their videos would be viewed by an audience beyond the original research team. In such cases, researchers must follow up with participants to notify them of plans for data sharing and obtain consent under these new conditions. We are currently communicating with the signing and sign language research communities with the aim of developing a respectful and equitable "reconsenting" protocol that can be adopted by researchers who are considering sharing longitudinal video data (Chen Pichler et al., 2016, forthcoming).

### **Working with Deaf Families of Children with CIs**

When in doubt on issues of confidentiality and consent, we err on the side of caution, especially with respect to our participating Deaf children with cochlear implants. Cochlear implants are a highly charged and divisive topic in the Deaf community, eliciting strong feelings and impassioned rhetoric on all sides. When recruiting participant families from sensitive populations such as Deaf children of Deaf families with cochlear implants, we ask parents what additional measures we would need to take for them to feel comfortable joining our study, beyond the standard measures required by the IRB. Some requests from parents that we have accommodated include the following:

- releasing to parents the names of all researchers, assistants, transcribers, or other individuals who could potentially have access to their child's data and limiting access to only those individuals with whom the parents feel safe
- filming children with CIs and the research assistant only, with parents remaining off video
- not showing any photo or video of participants with CIs in publications or presentations of any kind
- stressing to research assistants and transcribers during the hiring process that they will be working with Deaf children with CIs and that one of our project requirements is that they be able to approach this group with respect and professionalism regardless of their personal views on cochlear implantation.

The evidence is still very mixed as to how closely spoken language acquisition with a cochlear implant resembles typical acquisition by hearing children, and divergences between the two groups could be due to a host of factors, including delays in spoken language access while the child acclimates to the device. Deaf of Deaf children who receive cochlear implants are crucially different from most implanted children because they receive early, continuous, and high-quality language exposure through their parents' signed input. Indeed, the participants in our project perform very well on standardized tests of English, with no difference in performance between Deaf children from Deaf families with cochlear implants and Koda children (Davidson, Lillo-Martin, and Chen Pichler 2014).

Scientists have increasingly recognized the potential of this group of children to shed light on very interesting and long-standing research questions that have hitherto been impossible to test. As research interest in this very small population grows and we receive invitations for collaboration from outside our project, we proceed with extra caution and open communication with participant families in order to ensure that they are kept informed of the potential risks and benefits of their research participation.

## Conclusions

In this article we have described the general data-collection methodology for our current longitudinal corpus of bimodal bilingual acquisition data. Although this methodology is suitable for adaptation to projects targeting any type of bilingual acquisition, its design reflects challenges specifically related to the collection of bilingual data in two modalities. In particular, we address the challenge of obtaining representative samples of children's signing and speech, both individually and in mixed contexts. Given the long-term nature of longitudinal data collection, our methodology also emphasizes the importance of working with participant families, communicating openly with parents, providing them with useful training for eliciting speech and sign production, and mediating language choice during filming sessions. Through these practices, parents become partners with us in our exploration of their children's developing competencies in sign language and spoken language. The techniques and methods described in this article have yielded rich data for our corpus project, while at the same time creating an enjoyable experience for the participating children and their families.



## Acknowledgments

This research is supported in part by award no. R01DC009263 by the National Institutes of Health (NIH; National Institute on Deafness and Other Communication Disorders, NIDCD). The content is the responsibility of the authors alone and does not necessarily represent the official views of the NIDCD or the NIH. Support is also provided by awards by the Gallaudet Research Institute and the Brazilian National Council of Technological and Scientific Development, grant no. 200031/2009-0 and no. 470111/2007-0.

## References

- Baker, A., van den Bogaerde, B., Woll, B. Methods and Procedures in Sign Language Acquisition Studies. In: Baker, A., Woll, B., editors. Sign Language Acquisition. Amsterdam: Benjamins; 2009. p. 1-49.
- Bishop M, Hicks S. Orange Eyes: Bimodal Bilingualism in Hearing Adults from Deaf Families. Sign Language Studies. 2005; 5(2):188–230.
- Chen Pichler D, Hochgesang J, Lillo-Martin D, Quadros RM. Conventions for Sign and Speech Transcription of Child Bimodal Bilingual Corpora in ELAN. Language, Interaction and Acquisition. 2010; 1(1):11–40.
- Chen Pichler, D., Hochgesang, J., Simons, D., Lillo-Martin, D. Reconsenting for Data Sharing. Poster presented at Theoretical Issues in Sign Language Research 12; Melbourne, Australia. January; 2016.
- Chen Pichler, D. Community Input on Recontesting for Data Sharing. Proceedings of LREC (Language Resources and Evaluation Conference); Forthcoming
- Chen Pichler, D., Lee, J., Lillo-Martin, D. Language Development in ASL-English Bimodal Bilinguals. In: Quinto-Pozos, D., editor. Multilingual Aspects of Signed Language Communication and Disorder. Bristol, UK: Multilingual Matters; 2014. p. 235-60.
- Comeau L, Genesee F, Lapaquette L. The Modeling Hypothesis and Child Bilingual Code-Mixing. International Journal of Bilingualism. 2003; 7:113–26.
- Davidson K, Lillo-Martin D, Chen Pichler D. Spoken English Language Development among Native Signing Children with Cochlear Implants. Journal of Deaf Studies and Deaf Education. 2014; 19(2): 238–50. [PubMed: 24150489]
- Deuchar M, Quay S. Language Choice in the Earliest Utterances: A Case Study with Methodological Implications. Journal of Child Language. 1999; 26(2):461–75. [PubMed: 11706475]
- Dudis, P. Manuscript prepared for the Department of Linguistics. Gallaudet University; 2007. Types of Depiction in ASL. Retrieved December 17, 2015, from <http://www.gallaudet.edu/Documents/Academic/DRL-dudis2007.pdf> and <http://www.gallaudet.edu/Documents/flowchart%20version%204.9.1.pdf>
- Emmorey K, Borinstein HB, Thompson R, Gollan TH. Bimodal Bilingualism. Bilingualism: Language and Cognition. 2008; 11(1):43–61.
- Genesee F. Early Bilingual Development: One Language or Two? Journal of Child Language. 1989; 16:161–79. [PubMed: 2647777]
- Genesee, F., Nicoladis, E. Bilingual Acquisition. In: Hoff, E., Shatz, M., editors. Handbook of Language Development. Oxford: Blackwell; 2006. p. 324-42.
- Johnson, R., Liddell, S., Erting, C. Gallaudet Research Institute Working Paper 89-3. Washington, DC: Gallaudet University; 1989. Unlocking the Curriculum: Principles for Achieving Access in Deaf Education.
- Kanto L, Huttunen K, Laakso ML. Relationship between the Linguistic Environments and Early Bilingual Language Development of Hearing Children in Deaf-Parented Families. Journal of Deaf Studies and Deaf Education. 2013; 18(2):242–60. [PubMed: 23349396]
- Kroskrity, P. Identity. In: Duranti, A., editor. Key Terms in Language and Culture. Oxford: Blackwell; 2001.
- Lanza, E. Language Mixing in Infant Bilingualism: A Sociolinguistic Perspective. Oxford: Oxford University Press; 1997.

- Liddell, SK. Grammar, Gesture and Meaning in American Sign Language. Cambridge: Cambridge University Press; 2003.
- Lillo-Martin, D., Chen Picher, D. Development of Sign Language Acquisition Corpora. In: Crasborn, O.Efthimiou, E.Hanke, T.Thoutenhoofd, ED., Zwitserlood, I., editors. Proceedings of the 3rd Workshop on the Representation and Processing of Sign Languages: Construction and Exploitation of Sign Language Corpora; 6th Language Resources and Evaluation Conference; 2008. p. 129-33.[http://www.lrec-conf.org/proceedings/lrec2008/workshops/W25\\_Proceedings.pdf](http://www.lrec-conf.org/proceedings/lrec2008/workshops/W25_Proceedings.pdf)
- Lillo-Martin, D., Koulidobrova, DE., Quadros, RM., Chen Pichler, D. Bilingual Language Synthesis: Evidence from *Wh*-Questions in Bimodal Bilinguals. In: Biller, AK.Chung, EY., Kimball, AE., editors. Proceedings of the 36th Annual Boston University Conference on Language Development. Somerville, MA: Cascadilla; 2012. p. 302-14.
- Lillo-Martin D, Quadros DR, Chen Pichler D, Fieldsteel Z. Language Choice in Bimodal Bilingual Development. *Frontiers in Psychology*. 2014; 5:1163. <http://journal.frontiersin.org/Journal/10.3389/fpsyg.2014.01163/abstract>. doi: 10.3389/fpsyg.2014.01163 [PubMed: 25368591]
- Nicoladis E, Secco G. The Role of a Child's Productive Vocabulary in the Language Choice of a Bilingual Family. *First Language*. 2000; 58:3–28.
- Paradis J, Nicoladis E. The Influence of Dominance and Sociolinguistic Context on Bilingual Preschoolers' Language Choice. *International Journal of Bilingual Education and Bilingualism*. 2007; 10(3):277–97.
- Pearson BZ, Fernández S, Oller DK. Cross-Language Synonyms in the Lexicons of Bilingual Infants: One Language or Two? *Journal of Child Language*. 1995; 22(2):345–68. [PubMed: 8550727]
- Petitto L, Katerelos M, Levy B, Gauna K, Tétreault K, Ferraro V. Bilingual Signed and Spoken Language Acquisition from Birth: Implications for the Mechanisms Underlying Early Bilingual Language Acquisition. *Journal of Child Language*. 2001; 28:453–96. [PubMed: 11449947]
- Poplack S. Sometimes I'll Start a Sentence in Spanish y termino en español: Toward a Typology of Codeswitching. *Linguistics*. 1980; 18:581–618.
- Preston, P. Mother Father Deaf: Living between Sound and Silence. Cambridge, MA: Harvard University Press; 1994.
- Quadros, RM., Lillo-Martin, D., Chen Pichler, D. Early Effects of Bilingualism on *Wh*-Question Structures: Insight from Sign-Speech Bilingualism. In: Stavrakaki, S.Lalioti, M., Konstantinopoulou, P., editors. *Advances in Language Acquisition*. Newcastle upon Tyne: Cambridge Scholars Publishing; 2013. p. 300-308.
- Quadros, RM., Lillo-Martin, D., Chen Pichler, D. Methodological Considerations for the Development and Use of Sign Language Acquisition Corpora. In: Raso, T., Mello, H., editors. *Spoken Corpora and Linguistic Studies*. Amsterdam: Benjamins; 2014. p. 84-102.
- Quadros, RM., Lillo-Martin, D., Chen Pichler, D. Bimodal Bilingualism: Sign Language and Spoken Language. In: Marschark, M., Spencer, PE., editors. *The Oxford Handbook of Deaf Studies in Language: Research, Policy, and Practice*. Oxford: Oxford University Press; In press
- Quadros, RM., Cruz, CR., Kozak, LV., Palmer, JL., Lemos Pizzio, A., Reynolds, W. Methods in Bimodal Bilingualism Research. In: Orfanidou, E.Woll, B., Morgan, G., editors. *The Blackwell Guide to Research Methods in Sign Language Studies: A Practical Guide*. Chichester, UK: Wiley; 2015. p. 250-80.
- Singleton JL, Tittle M. Deaf Parents and Their Hearing Children. *Journal of Deaf Studies and Deaf Education*. 2000; 5(3):221–36. [PubMed: 15454502]
- Tevenal S, Villanueva M. Are You Getting the Message? The Effect of SimCom on the Message Received by Deaf, Hard of Hearing and Hearing Students. *Sign Language Studies*. 2009; 9(3): 266–86.
- Van den Bogaerde B. Input and Interaction in Deaf Families. *Sign Language and Linguistics*. 2000; 3(1):143–51.
- Van den Bogaerde, B., Baker, AE. Are Young Deaf Children Bilingual?. In: Morgan, G., Woll, B., editors. *Directions in Sign Language Acquisition*. Amsterdam: Benjamins; 2001. p. 183-206.
- Van den Bogaerde B, Baker AE. Code Mixing in Mother-Child Interaction in Deaf Families. *Sign Language and Linguistics*. 2005; 8:153–76.

Van den Bogaerde, B., Baker, AE. Bimodal Language Acquisition in Kudas (Kids of Deaf Adults). In: Bishop, M., Hicks, SL., editors. *Hearing, Mother-Father Deaf: Hearing People in Deaf Families*. Washington, DC: Gallaudet University Press; 2009. p. 99-131.

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**Figure 1.**  
 Mother depicts two upright figures. One figure approaches the other and gives it a big kiss.

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**Figure 2.**  
The child makes Elmo bounce off the head of Cookie Monster.



**Figure 3.**  
Mother depicts the series of events just enacted by the child.



**Figure 4.**  
Mother and Ben use depiction in their story about a nice monster.