

## Developing the BIO Questionnaire: A Bilingual Parent Report Tool for Prekindergarten English Learners of Latino Heritage

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### **Abstract:**

With the increasing number of preschool-age children of Latino heritage entering U.S. schools comes a growing need to accurately determine children's individual needs and identify potential disabilities, beginning with the screening process. Unfortunately, teachers face many challenges when screening English language learners. Often, parents have important information that can contribute to teachers' understanding of children's development, but there are limited tools available to collect information from parents. The Formulario Familiar Bilingue de Información Formulario y Observación/Family Bilingual Information & Observation (BIO) Questionnaire is a new parent report tool that can be used to collect information from parents of Latino heritage concerning their child's language development history, current language usage, and exposure to Spanish and English. A multiphase research study was conducted to collect formative data and to establish construct validity for the questionnaire. Results from a focus group, pilot study, and face validity review provided numerous suggestions to improve the tool, and established that the BIO is a viable means to collect parent perspectives on their own children's language development.

**Keywords:** early care and education | English language learners | culturally diverse students | parent participation

### **Article:**

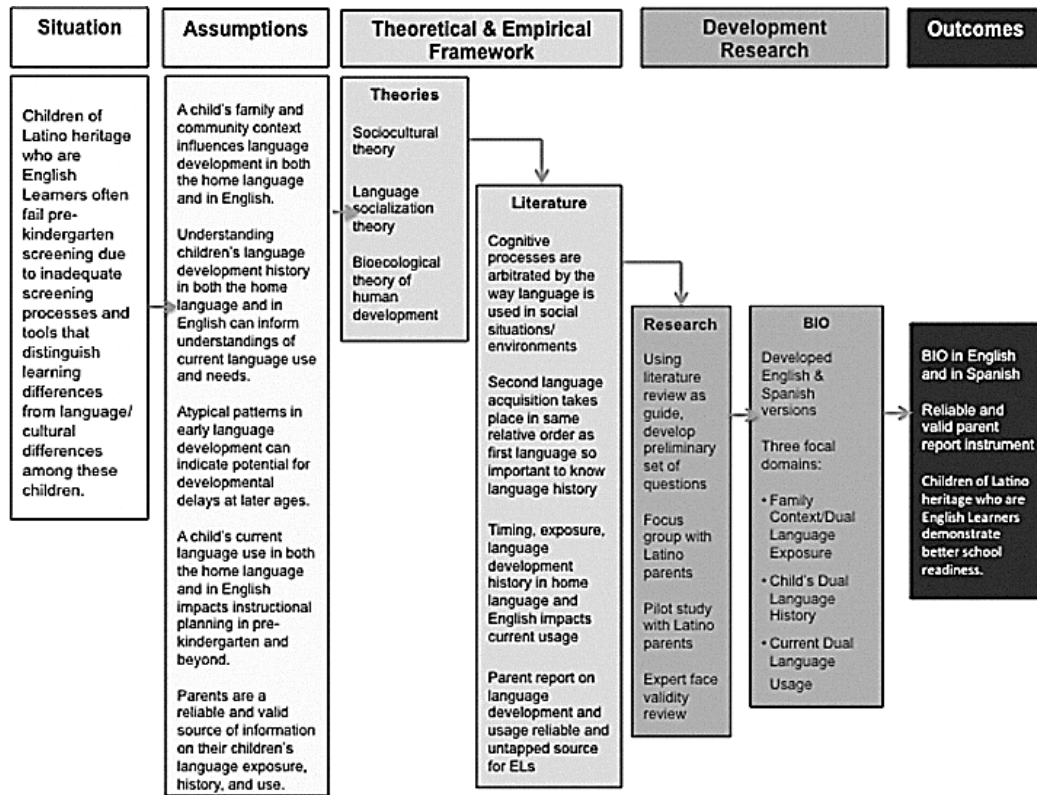
More than 1.2 million children in the United States were enrolled in state-funded prekindergarten programs in the 2009 to 2010 school year (Barnett et al., 2010), and 425,388 preschool age children were served in Individuals with Disabilities Education Improvement Act (IDEA) Part B programs in the same year (U.S. Department of Education, 2011). It is projected that by 2020, one of four children in the United States will be of Hispanic origin (Federal Interagency Forum on Child & Family Statistics, 2008). These statistics suggest that large numbers of preschool-age children of Latino heritage may be enrolled in early education programs. Prekindergarten and Part B programs typically require that children are screened to identify specific needs and

appropriate instructional strategies. However, recent research indicates that screening and referral policies of state-funded prekindergarten and Part B programs provide limited guidance for screening English language learners (ELLs) and limited options for appropriate screening tools for ELLs (Hardin, Scott-Little, & Mimms, 2010). The purpose of this article is to describe the process for developing the Formulario Familiar Bilingue de Información Formulario y Observación/Family Bilingual Information & Observation (BIO) Questionnaire and to share the results of research conducted to refine and pilot the questionnaire.

### **The Need to Improve Screening for ELLs**

Most programs serving prekindergarten children administer developmental, auditory, vision, and behavior screenings to new enrollees to identify risk factors and help determine appropriate instructional services (Appl, 2000). However, teachers conducting screenings with ELLs often have limited information about their language history and development (Bevan-Brown, 2001; Hardin, Mereoiu, Hung, & Roach-Scott, 2009; Hardin et al., 2010; Rolstad, Mahoney, & Glass, 2005). As a result, ELLs fail initial screenings all too often and are incorrectly referred for special education or receive less effective classroom instruction (Artiles, Rueda, Salazar, & Higareda, 2005; De Valenzuela, Copeland, Qi, & Park, 2006; Hardin, Roach-Scott, & Peisner-Feinberg, 2007). The gravity of this situation was reflected in the reauthorization of the IDEA (2004), which now requires states to develop policies and procedures to prevent overidentification or disproportionate representation of children by race/ethnicity in special education programs (IDEA, 2004). Conversely, teachers may mistakenly not refer a child who fails a screening, assuming that the child simply did not answer questions or follow directions because of limited proficiency in English, and that she or he will “get it” over time if enrolled in a preschool classroom. Sadly, ELLs not referred for diagnostic evaluations when they do have a disability lose precious time for interventions that could promote their optimal development and learning. This situation, depicted in the far lefthand box of Figure 1, is the problem the BIO questionnaire is designed to address.

**Figure 1. BIO Development**



Teachers do not have to rely solely on screening results to understand young children's development. Parents can provide critical information to improve the screening process. Unfortunately, although studies show that parental reporting, in combination with other screening and assessment instruments, provides a more comprehensive picture of ELLs' language development (Espinosa & López, 2007; Gutiérrez-Clellen & Kreiter, 2003), there is no consistent process for gathering language development information from parents. When parent-report instruments are used, they are often a hodgepodge of checklists and questionnaires that have no research to test their reliability and validity. This lack of psychometrically sound parental reporting tools may result in ineffective early education services for ELL children (Goldstein, 2006).

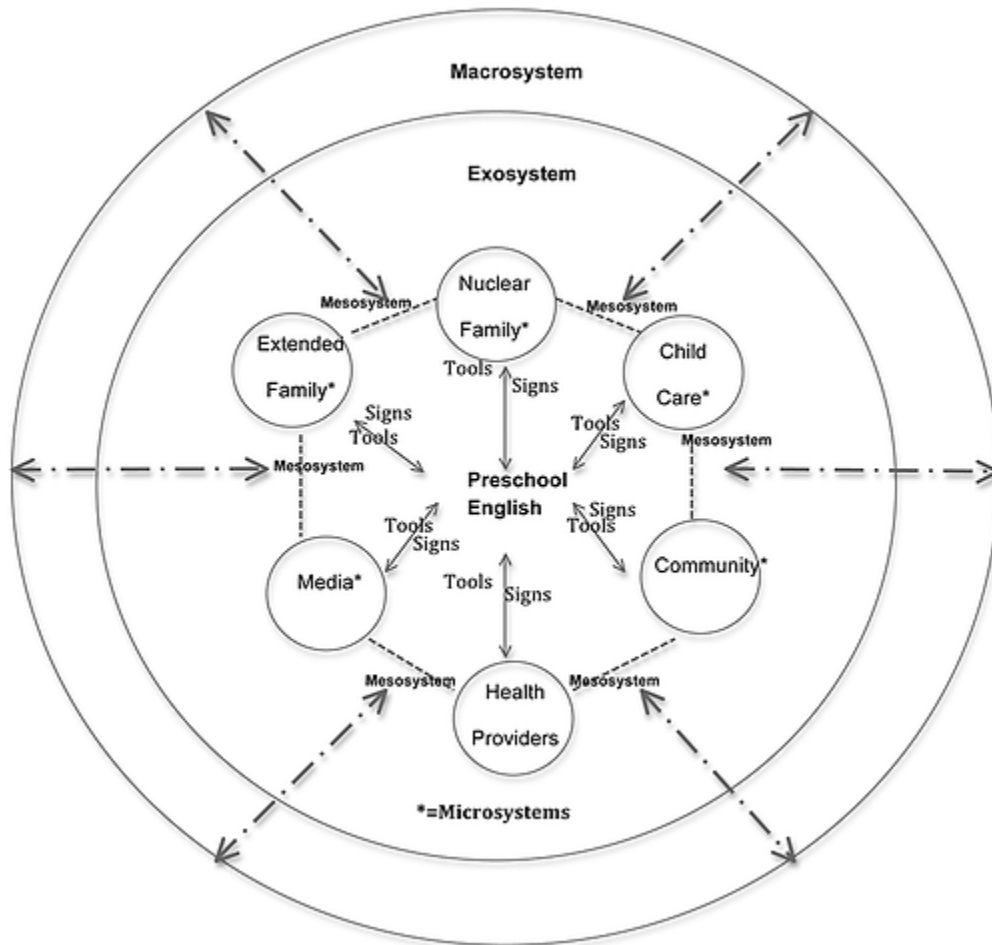
The BIO was developed in response to this need to maximize the likelihood that ELL children of Latino heritage are successfully included in preschool classrooms in the United States and to affirm the important role parents play in the education of their children. Figure 1 presents the BIO development model and summarizes the activities completed to develop the BIO, including an extensive theoretical and empirical literature review and three development studies. Based on the assumptions shown in Figure 1, the purpose of the BIO is to provide teachers with a more complete picture of ELLs' language development in Spanish and English by tapping into parent information about co-occurring factors (e.g., family history, exposure in both languages, and

patterns of language skill development). This information can be used with other screening results to make decisions about whether to refer a child for further evaluation.

### Theoretical and Empirical Framework of BIO

The theoretical approach and the literature review used to develop the BIO are described below. Figure 2 shows how relevant parts of these three theories fit together as the theoretical base of the BIO.

**Figure 2.** BIO theoretical approach



### Theoretical approach

The BIO constructs are based on principles from the following theories: social constructivism, language socialization, and bioecological systems theory. The belief that knowledge is personally constructed but socially negotiated through relationships across multiple sociocultural contexts is common to all three theories and a central premise of the BIO (Bronfenbrenner, 1979; Bronfenbrenner & Morris, 1998; Lantolf, 2000; Schieffelin & Ochs, 1986; Valsiner, 1988, 1995, 1998, 2007; Vygotsky, 1978; Wertsch, 1985, 1995). Understanding the impact of these

interwoven relationships on young children's language development can inform practices that lead to more effective instruction for ELL children.

Social constructivists postulate that mental processes have social origins mediated by physical and symbolic tools and can only be fully understood in relation to their sociocultural context (Valsiner, 1988, 2007; Vygotsky, 1978; Wertsch, 1985, 1995). Vygotsky (1978), for example, believed the construction of new knowledge is an active process mediated by tools (e.g., physical artifacts, such as classroom materials) and signs (e.g., psychological artifacts, such as language concepts) that act as shaping mechanisms. These tools and signs are bounded by cultural beliefs, values, and practices. Thus, cultural factors organize and mediate how individuals perceive and interact in their external and internal worlds (Lantolf & Thorne, 2006; Wertsch, 1985). Also, Vygotsky (1978) emphasized dialogue and language (e.g., social and inner speech) as essential to promoting cognitive development. As Rogoff (1995) points out, “For Vygotsky, children's cognitive development had to be understood as taking place through their interaction with other members of society who are more conversant with the society's intellectual practices and tools (especially language) for mediating intellectual activity” (p. 141). Thus, it is important to understand the social context within which children have been exposed to language, in conjunction with their observed language usage, to accurately assess whether a child is truly exhibiting a language delay or whether observed concerns about a child's development are actually the result of limited exposure to social language. The arrows (Figure 2) between the ELL and the microsystems represented by the BIO represent the interactive nature of construct development through tools and signs, in particular.

Language socialization, a second theory upon which the BIO is based, is a theoretical approach used to understand the interwoven relationship of language and culture (Lantolf, 2000, 2006; Lantolf & Poehner, 2008; Ochs, 1986; Smith, 2007). Language socialization means “socialization through language and socialization to use language” (Ochs, 1986, p. 2). From this perspective, children must understand the cultural meaning of language-mediated interactions to be active members of society by knowing the societal rules for using language and, in turn, using language to be social change agents with others in their environment. Language socialization is especially complex for ELLs because they are navigating two or more cultures (Genesee, Paradis, & Crago, 2004; Gutiérrez-Clellen & Kreiter, 2003; Lantolf, 2000, 2006; Lantolf & Poehner, 2008). Therefore, understanding environmental factors during a child's first and second language development process can help educators filter through the amount and type of exposure they experienced in both the home language and English (Gonzalez, 2001). These multiple, two-way interactions are represented by arrows across all levels of the model.

Bronfenbrenner's (1979; Bronfenbrenner & Morris, 1998) bioecological systems framework provides a third dimension of the theoretical model for the BIO, including interactions, activities, and roles (called proximal processes) that engage the developing person and cause lasting changes in his or her behaviors. Bronfenbrenner (1979) suggests that these experiences occur in an environment composed of four nested structures: the microsystem (e.g., systems in which the

child has direct interactions, such as the family or school, and represented by the small circles in Figure 2), the mesosystem (e.g., composite of all microsystems in which the child has direct interaction, represented by the dotted lines between microsystems), the exosystem (social settings that the child does not have direct contact with but indirectly influence the child's experiences, represented by the large circle surrounding the microsystems in Figure 2, e.g., teacher's training to work with ELLs), and the macrosystem (the broader cultural context represented by the outermost circle, e.g., society's ideological stance on bilingual education).

Taken together, these three theories provide the basis for the BIO—the specific aspects of language that are assessed to provide an indication of the signs and tools used by the child (social constructivist theory), the information collected on language-related experiences a child has been exposed to (language socialization), and information collected on the contexts within which a child lives (bioecological framework). For prekindergarten ELLs, knowing the type of language, the frequency with which each language is used, and the conditions or context of the environment across all of these systems can provide a clearer picture of the child's language strengths and needs.

### **Empirical evidence**

The BIO is designed to collect data on three areas related to children's language development: their exposure to language (Spanish and English), their language development history, and their current language usage. Empirical research suggests that information related to each of these areas is important to understanding a child's learning and language development (Castilla, Restrepo, & Perez-Leroux, 2009; Hammer, Lawrence, & Miccio, 2007; Peña, Gillam, Bedore, & Bohman, 2011). This section summarizes the empirical evidence that provides the rationale for areas examined on the BIO.

Cognitive processes are arbitrated by the way language is used in social activities in current or culturally inherited contexts (Lantolf, 2000, 2006). For example, studies have demonstrated strong correlations between family history and oral language development, as well as later literacy performance, for ELLs. Pease-Alvarez (1993) found a close association between the immigration history of parents of 55 3rd-graders and home language development. More specifically, variables related to home environment, such as socioeconomic status (SES), type and timing of language input, and literacy skills of caregivers, are all variables related to children's language development (Gathercole & Thomas, 2006; Hammer et al., 2007).

Researchers also found correlations between parent reports of children's English vocabulary and the amount of English and Spanish used at home, as well as a relationship between the home language (Spanish) and English by culture and socioeconomic variables (Pease-Alvarez, 1993; Umbel & Oller, 1994). The interactions within the home and social contexts result in cultural literacy, a dynamic compound of “funds of knowledge” acquired through everyday living and learning experiences (Clark & Flores, 2007; Moll, Amanti, Neff, & Gonzalez, 1992).

Thus, data on contextual factors related to language exposure in Spanish and English may contribute valuable information during the screening and referral process.

Tapping into ELL children's language development history is also important. Research shows that strategies used by preschool ELLs to learn a second language occur in the same relative order as first-language acquisition, although there are variations in rates and time (Fenson et al., 1993; Genesee, Lindholm-Leary, Saunders, & Christian, 2006; Hammer et al., 2007). If a child's history of first-language acquisition is known, it can help teachers understand how the child's second-language development may take place and whether the development of the first language was typical or atypical. Moreover, research findings indicate that the amount and timing of exposure to English relative to school entry is important to understand the language development and current language usage of bilingual children, as they will present receptive vocabulary and language comprehensive abilities significantly higher in the language they have used prior to school (Butler & Hakuta, 2004; Genesee et al., 2004; Hammer et al., 2007; Oller & Eilers, 2002). The BIO, therefore, collects information on children's early language milestones (preverbal and verbal) in the child's first and second language.

The BIO also collects data on children's current language usage, by asking parents to report the relative number of words the child uses in Spanish and English, which language the child uses more often, whether the child's speech is easily understood in Spanish and English, and so on. Children entering preschool who are ELLs may not yet have important language mediation skills in English, causing confusion among professionals about their language and cognitive development, as well as other skills as demonstrated on measures used during the screening and referral process. For example, in their study on English speech acquisition by 33 typically developing preschoolers with monolingual English backgrounds compared to preschoolers with bilingual English-Spanish backgrounds, Gildersleeve-Neumann, Kester, Davis, and Peña (2008) found that language-specific error patterns could be typically occurring for bilingual development transfers to English as a second language. The authors caution specialists and speech professionals that these error patterns are not an indicator of speech disorders or delays but rather are typical patterns for bilingual language development. Therefore, it is important to collect information on the child's current language usage in Spanish and English.

Finally, the BIO is based on empirical evidence that parent reports are reliable and credible sources of information about children's language development (Dale, 1991; Dale, Bates, Reznick, & Morisset, 1989; Gutiérrez-Clellen & Kreiter, 2003; Thal, Jackson-Maldonado, & Acosta, 2000). For instance, the MacArthur Communicative Development Inventories (CDI) is a parent report assessment for infants' and toddlers' language (CDI Advisory Board, 2008). Dale et al. (1989), Dale (1991), and Thal et al. (2000) found significant correlations between vocabulary scores on the CDI and other measures of children's vocabulary. Similarly, in a study of 57 bilingual 2nd-graders and their families, Gutiérrez-Clellen and Kreiter (2003) found moderate correlations between parent and teacher ratings of language usage and proficiency with grammatical performance in English and Spanish. The high correlations (.75) between parents'

ratings and the use of and grammatical performance of the children's Spanish were of particular note. In sum, the BIO is a theoretically and empirically sound approach to collecting data on ELLs' language.

## **DEVELOPMENT OF THE BIO**

Each of the four phases completed as part of the BIO development process is described below and depicted in Figure 1. The four phases are (1) literature review, (2) focus group study, (3) pilot study, and (4) expert face validity review.

### **Phase 1: Literature Review**

The first step in the development process was to conduct an in-depth literature review to identify evidence-based constructs for the BIO. The process for identifying the constructs, adapted from a methodology developed by Trivette and Dunst (2007), included developing a set of criteria used to identify the key features of the constructs, examining theoretical and empirical literature, and comparing results to identify key constructs. Three constructs emerged from this process that formed the main sections of the BIO: (1) ELL children's language exposure in the home and community environments, (2) their language development history, and (3) their current language usage.

Once the three constructs that formed the basis for each section of the BIO were identified, an extensive literature search was conducted to identify key concepts within each of the three constructs. Literature in databases, the worldwide web, key journals and books, reference lists, and other documents were reviewed. Criteria (e.g., target audiences of studies, age range of children included in studies, methodologies, etc.) for inclusion of a study in the literature used to develop the concepts were established and detailed records of search activities were kept. The information about the studies located through this literature search process was entered into a matrix by construct area. For each of the three construct areas, literature was listed on the matrix that provided theoretical and empirical support of the constructs as well as key topics within each construct. This evidence was further divided into intrinsic (e.g., mental processes have social origins and must be understood across multiple dimensions of society) and extrinsic (e.g., the impact of children's family and community context on first and second language development) categories to ensure that the theoretical and empirical connections were maintained throughout the development process. Last, this evidence was operationalized by developing individual items to create the first draft of the BIO.

### **Spanish translation**

After the draft of BIO items and instructions was completed in English, a Spanish translation was developed using the consensus method (Geisinger, 1994). The lead translator holds a doctorate degree in Romance languages and is a full-time lecturer who has translated numerous publications in early childhood education. The consensus method is a multistep process in which



the lead translator completes an initial translation of the document, in this case the BIO. Native speakers from three other Spanish speaking countries reviewed this initial translation. Differences among the reviewers and lead translator were examined, and a consensus was reached among the group to achieve the best possible translation/adaptation that maintains the fidelity of the items and is culturally appropriate. The result was a draft BIO questionnaire that included items in English and Spanish. Table 1 provides a summary of the main types of data collected on the BIO. Each section—language exposure, language development history, and current language usage—and the specific questions within each section were developed based on results from the literature review.

**Table 1.** Item Focus for Each of the BIO Sections

<b>Section 1: Family Context and Language Exposure</b>	<b>Section 2: Child's Language Development History</b>	<b>Section 3: Child's Language Now</b>
<i>Child information</i>	<i>Language development history</i>	<i>Current language usage</i>
Demographics Length of stay in U.S. Languages spoken	Preverbal development (e.g., gesturing) Verbal language development in Spanish and English (e.g., cooing, syllables, early words) Receptive language development for Spanish and English (e.g., following directions)	Word usage in Spanish and English Receptive language in Spanish and English (e.g., follows multistep directions, points to objects) More complex expressive language in Spanish and English (e.g., use of pronouns, sentences, telling stories)
<i>Family information</i>		
Demographics		
<i>Home information</i>		
Adults and children residing in the household		
Languages spoken by members residing in the household		
Language exposure during home activities		
Language exposure during activities outside the home		

## **Phase 2: Focus Group**

The next step in the BIO development process was a focus group. The focus group was conducted to collect data on parent perspectives related to the first draft of the BIO.

## **Participants**

Six Latino mothers participated in the focus group. Two were from Mexico and one was of Cuban heritage. Three mothers did not report their country of origin. Spanish was the first language of all participants. One mother was bilingual, and the others were Spanish speakers. The mothers reported that their annual family income ranged from less than \$10,000 to more than \$75,000, with the majority (three of the five who reported income) reporting family income at or below \$25,000. Each of the mothers had a preschool-age child (plus other children). When asked about the country of origin for their preschool-age child, all but one parent reported the birth country was the United States. One child was born in Mexico. The preschoolers of two participants were identified as having disabilities, including autism and speech/language delays.

## **Procedures**

The focus group was conducted by the authors, who are researchers with knowledge and expertise highly relevant to the BIO development process. One team member has extensive experience developing assessments for young children, expertise in dual language development as well as cross-cultural research, and early childhood special education. A second team member has extensive expertise in the area of child assessments and early childhood education, and the third team member's background is in special education, dual-language learning, and parent engagement. Also, the third member of the team is an ELL. The BIO research team was joined by a professional translator and a parent/community advocate from the Latino community, who assisted with the recruitment of participants.

The focus group was held in the evening, at a time convenient for participants. Informed consent was obtained from participants at the beginning of the focus group. A semistructured focus group protocol was used to collect parent feedback on three aspects of the BIO: (1) appropriateness and relevance of the items' content, (2) clarity of the items, and (3) format of the BIO questionnaire. Participants were provided a copy of the BIO and asked to review and comment on each section of the questionnaire. The interpreter translated questions regarding what participants thought about the wording of the questions, whether the content addressed in the questions was important/something that would be helpful for teachers, whether parents would be able to respond to the items, and whether the format of the questions would be easy for parents to complete. The interpreter translated parent responses and the one bilingual participant occasionally provided clarifications regarding the translations. Two additional members of the research team took extensive notes, and the session was audio recorded. At the conclusion of the session, participants received a small gift card as an incentive for their participation.

## **Data analyses**

The notes and audio recording of the focus group were reviewed and studied for issues and suggestions raised by participants. The three researchers who conducted the focus group each individually reviewed the data from the focus group and then met to cross validate the analyses of participants' comments, and to discuss the extent to which there appeared to be consensus

among participants regarding the issues and suggestions that emerged during the meeting. Comments on the section and item content of the BIO were examined to determine participants' views about the validity of constructs. Participant comments on the format of the BIO were analyzed to determine possible revisions in the wording of questions and the format of the questionnaire. The research team reached consensus regarding the comments on each section and each item described in the results section below, and then used the results to make revisions to the BIO.

## **Results**

All focus group participants expressed support for a parent report tool that would give them an opportunity to provide teachers and school officials with specific information about their child's language development and usage in Spanish and English. They did, however, provide suggestions for improvements.

The participants were first asked to comment on the BIO format. Two different versions of the BIO were presented, one with Spanish printed on one side of each page and English on the other side, and another version that stated each item in Spanish followed by English. Participants unanimously indicated that the version with Spanish on one side and English on the other would be most appropriate since Spanish speaking communities in the United States are accustomed to this format.

Next, the participants were asked for feedback on the content of each item. The first group of items in Section 1 focused on information about the child's family context to understand the child's exposure to Spanish and English. The first set of items pertained to the country of origin and length of time in the United States for the preschool-age child, the child's mother, and the child's father, and their Spanish and English proficiency, age, and education level. The majority of participants felt it was important to understand both parents' language proficiency in Spanish and English, and one parent suggested that an item be added to ask what type of Spanish each parent spoke (e.g., Mexican Spanish, Colombian Spanish, etc.). The other parents agreed this would be a good addition to the BIO.

The next group of items in Section 1 focused on the number of children and adults in the home, the ages of siblings, languages spoken in the home during a variety of activities and the frequency with which their children were exposed to these activities, languages spoken to the child during a variety of activities outside the home, and how important it was to the parents for their child to speak Spanish, English, or both languages. Several participants suggested that this section should include questions about the language(s) spoken by each sibling, and the other parents agreed, pointing out that children often are exposed to English through their siblings. The majority of the participants felt that items requesting information about language usage and frequency for the list of in-home activities could be combined, and that the same modification would be helpful for the out-of-home activities. Also, one participant suggested adding "singing"

to the list of in-home activities, and others suggested “park,” “movies,” and “zoo” be added to the out-of-home activities list.

Section 2 is concerned with the child's language history prior to age 4. The first group of questions pertains to preverbal behaviors, followed by a group of items for verbal language development, and a third group focused on the child's language interaction history. All participants felt the instructions for this section needed additional information to clearly distinguish it from the third section that collects information on the child's current language usage. For example, they suggested adding “before your child was 1 year old” to the description of this section. Participants also suggested adding ratings when possible, such as, “some, moderately, frequently,” instead of fill-in-the-blank type of items. One participant suggested the words *for example* be added when examples were given in parentheses to help ensure the person completing the form would understand the child did not have to demonstrate that particular behavior. The remaining participants agreed that this would be a helpful revision. The parents also all agreed that additional examples should be added when possible. Last, one parent of a child with autism suggested adding response options such as, “If the child did not speak any words, write ‘none,’ and make a note on how your child communicated at age 1” to provide an option for parents of children who were nonverbal at the specified age.

Items in Section 3 relate to the child's current language usage. The participants all agreed with a suggestion to add “at age 4” to the instructions to help distinguish this section from the previous one. Other suggestions offered by individual participants and confirmed by the group included replacing some examples with terms they felt were more culturally appropriate, and adding an option to indicate which language(s) the child used during specific interactions.

In conclusion, all focus group participants felt the BIO could help teachers better understand their children's Spanish and English language development. Suggestions for improving the BIO included wording changes, additional items, and more specific instructions. All of the suggested improvements were incorporated into the next iteration of the BIO for the pilot study.

### **Phase 3: Pilot Test**

A pilot test was conducted to evaluate the administration procedures, collect data to examine the extent to which respondents from the target group appear to be able to answer the questions accurately and completely, and to evaluate the validity of the instrument from the perspective of members of the target group. Two types of data from the pilot test were used to evaluate the questionnaire—parent responses to a feedback form about the BIO and parent responses on the BIO form itself. The methodology and results from this phase of the BIO project are described below.

### **Participants**

A group of 23 Latino mothers and one father participated in the pilot test for the BIO. Twelve lived in a small rural town and 12 were from a medium-sized city in the Southeast. The majority of the participants (18) were between age 25 and 44, with 12.5% slightly younger (20–24) and 12.5% older (45+). Most participants (66.7%) indicated that they had completed high school, whereas some (16.7%) indicated their highest level of education was primary school, and the remaining participants (16.7%) reported they had completed at least some college. Most participants (79.2%) were born in Mexico. The others indicated they were born in the United States (12.5%), Nicaragua (4.2%), and El Salvador (4.2%). All of the participants reported that they spoke Spanish. Nearly 20% reported speaking no English, 50% indicated they spoke some English, 8.3% reported speaking English pretty well, and 26.0% indicated they were fluent in English. Each participant was the parent of a minimum of one preschool-age child, 13 of whom were boys and 11 of whom were girls. One half of the parents reported that their preschool-age child spoke only Spanish, and one half reported that the child spoke Spanish and English. Almost all (95.7%) of the preschool-age children were born in the United States. One was born in Mexico.

## **Procedures**

Two individuals from the local areas of the pilot study assisted the research team with participant recruitment. In the rural site, the person who assisted with recruitment worked within a school system and recruited participants whose children were enrolled in local prekindergarten and Head Start programs. In the urban site, a parent/community advocate assisted with the recruitment. The parent/community advocate described this opportunity to families at a number of community gathering places (e.g., local churches, local meeting focus on Latino issues) and explained the overall purpose of the study. In addition, in both sites, written materials explaining the purpose of the BIO and the pilot study were provided to parents. Informed consent was obtained from participant volunteers who then independently completed the BIO and the feedback form. When participants returned the completed materials, they received a gift card as a small incentive for participation.

Because participants completed the BIO independently for the pilot study, a page was added to the beginning of the instrument that described the purpose of the BIO and a list of instructions for completing it. A feedback form composed of nine open-ended questions was added to the end of the BIO to obtain the participants' views about its format and content.

## **Data analyses**

Descriptive statistics were calculated for all variables, including demographic characteristics, language exposure, language development, and current language usage items. The primary objective for these analyses was to check for distribution patterns among the responses and to assess the extent to which the response options provided on the questionnaire appeared to have captured parent responses adequately. Frequency counts were calculated for all quantitative

items and qualitative responses. Qualitative responses were coded using key words or phrases that emerged from the data and reflected common themes across the data set. Items with missing data and with unusual response patterns were examined closely to check for problems. Participant responses to the feedback form about the BIO were also evaluated to see if parents reported challenges in completing the questionnaire or suggested changes to the instrument. Data collected using the feedback form were analyzed by calculating frequency counts to identify patterns in participants' responses regarding the content and the format of the BIO. Also, responses to the open-ended question were examined for commonalities and differences across the participants.

## **Results**

On the feedback form, each of the parents indicated that she or he felt the instrument was valuable as a method for sharing information with teachers about his or her child's language development. Most parents (92%) reported that the questions were clearly written and the BIO was easy to complete. However, two parents stated that some questions needed to have more explicit/concrete examples to provide a better understanding of what the question is asking, and one parent felt questions about country of origin and length of stay in the United States might worry undocumented parents.

The parent responses on the BIO were reviewed carefully. Each completed questionnaire was examined for missing data, and for responses or comments that might indicate a question was not clearly understood. No problems of this nature were identified.

Descriptive analyses of parent responses were calculated to evaluate the types of responses parents provided when completing the BIO. Select results from the participant responses for each of the three sections are shown in Table 2 to illustrate the types of data collected in the pilot test. In Section 1, parents reported the amount of time in the United States, and their age, birth country, and language usage. Most families were two parent homes with two to three children. Approximately 17% of the respondents reported that more than two adults live in the home. The other adults reported living in the home were typically grandparents. All respondents reported at least two children in the home (the preschooler plus another child), and more than 60% of the families had at least three children. The majority of the other children in the home were bilingual (62.5%), indicating that the preschool child's siblings were more typically bilingual than the parents. When asked what language was spoken at home, 79.2% reported speaking Spanish only, 4.2% English only, 12.5% both Spanish and English, and 4.2% Spanglish. When asked the language used for a variety of activities, parents were evenly divided as to watching television in Spanish only or English and Spanish (41.7% each). However, twice as many parents reported that their child heard stories in the home in Spanish as in English or both languages. More parents reported that English was the primary language used when reading to the children (40.9%), although slightly less than one third of the respondents indicated that Spanish was the primary language used when reading to the child. When asked how much importance they placed

on their child speaking Spanish and English, 81.8% reported it was very important that their child speak Spanish, and 100% indicated it was very important that their child speak English.

**Table 2.** Examples of Pilot Study Results (N = 24)

<b>BIO Pilot Study - Examples of Results</b>		
<b>Section 1: Child's Family Context</b>		
<b>Questions</b>	<b>Responses</b>	<b>Results</b>
Language spoken by other children in home ( <i>n</i> = 23)	Spanish	29.2%
	Both	62.5%
Language used to watch TV ( <i>n</i> = 24)	Spanish	41.7%
	English	16.7%
	Both	41.7%
How often ( <i>n</i> = 21)	Every day	95.2%
	1–3 times/week	4.8%
Language used to tell stories ( <i>n</i> = 24)	Spanish	45.8%
	English	29.2%
	Both	25.0%
How often ( <i>n</i> = 21)	Every day	52.4%
	1–3 times/week	47.6%
Language used to read to child ( <i>n</i> = 22)	Spanish	31.8%
	English	40.9%
	Both	27.3%
How often ( <i>n</i> = 22)	Every day	68.2%
	1–3 times/week	22.7%
Important to speak Spanish ( <i>n</i> = 22)	Not important	4.5%
	Somewhat important	13.6%
	Very important	81.8%
Important to speak English ( <i>n</i> = 22)	Not important	0.0%
	Somewhat important	0.0%
	Very important	100.0%

<i>Section 2: Child's Language History</i>		
Before age 1, gestures used to express wants and needs ( <i>n</i> = 24)	During play	100.0%
	During routines	100.0%
	During interactions with others	95.8%
Age of first ( <i>n</i> = 23) word	5–11 months	60.9%
	12–18 months	34.8%
	24 months	4.3%
	36 months	4.3%
Language of first word ( <i>n</i> = 23)	Spanish	95.7%
	English	8.7%
Language spoken at age 1 ( <i>n</i> = 24)	Spanish	87%
	English	12.5%
Language spoken at age 3 ( <i>n</i> = 24)	Spanish	66.7%
	English	4.2%
	Both	29.2%
As infant/toddler, language used when playing alone ( <i>n</i> = 24)	Spanish	78.2%
	English	4.2%
	Both	16.7%

**Table 2.** (Continued)

<b>BIO Pilot Study - Examples of Results</b>		
<b>Section 2: Child's Language History</b>		
<b>Questions</b>	<b>Responses</b>	<b>Results</b>
As infant/toddler, language used when playing with other children ( <i>n</i> = 24)	Spanish	66.7%
	English	12.5%
	Both	20.8%
As infant/toddler, language used when playing with adults ( <i>n</i> = 24)	Spanish	83.3%
	English	8.3%
	Both	8.3%



As infant/toddler, language used in routine activities ( $n = 23$ )	Spanish	73.9%
	English	0.0%
	Both	26.1%
<i>Section 3: Child's Language Now</i>		
Current number words spoken in Spanish ( $n = 24$ )	A few	8.3%
	About average	20.8%
	A lot	70.8%
Current number words spoken in English ( $n = 24$ )	A few	45.8%
	About average	25.0%
	A lot	29.2%
Number of words used when talking with other children ( $n = 24$ )	A few	12.5%
	About average	29.2%
	A lot	58.3%
Number of words used when talking with brothers/sisters ( $n = 23$ )	A few	21.7%
	About average	8.7%
	A lot	75.0%
Child points to object when asked in Spanish ( $n = 22$ )	Yes	100.0%
Child points to object when asked in English ( $n = 20$ )	Yes	90.0%
	No	5.0%
	Sometimes	5.0%
Child follows directions in Spanish ( $n = 23$ )	Yes	100.0%
	No	0.0%
Child follows directions in English ( $n = 17$ )	Yes	76.5%
	No	17.6%
Child answers questions in Spanish ( $n = 24$ )	Yes	100.0%
	No	0.0%
Child answers questions in English ( $n = 15$ )	Yes	75.0%
	No	18.8%

Uses complete sentences in Spanish ( <i>n</i> = 23)	Yes	78.3%
	No	21.7%
Uses complete sentences in English ( <i>n</i> = 16)	Yes	37.5%
	No	62.5%
Understand child's speech in Spanish ( <i>n</i> = 23)	Yes	91.3%
	A little	4.3%
	Mostly	4.3%
Understand child's speech in English ( <i>n</i> = 16)	Yes	50.0%
	No	43.8%
	Mostly	6.3%

Section 2 items pertained to the child's language development prior to age 4. Each of the parents reported their child used gestures in a variety of activities. There was a wider distribution of the amount of babbling and cooing parents reported. Although the majority of parents (60.9%) indicated that their child spoke his/her first word by 11 months, and another 34.8% indicated their child spoke the first word by 18 months, one parent reported his or her child did not speak until 24 months and another not until 36 months—far older than typical. Nearly all (95.7%) parents reported their child spoke his/her first word in Spanish. Eighty-seven percent of the parents reported their child used Spanish as the primary language as an infant and toddler. However, when parents reported on their child at age 3, this figure dropped to 66.7%. When asked if their child spoke Spanish, English, or both languages in a variety of situations as an infant and toddler (e.g., when playing alone, with children, with adults), Spanish was the language typically used, although the percentage of parents who reported that their child used Spanish varied across the activities.

In Section 3, parents were asked about their child's current language usage. Most parents (70.8%) reported that their child currently spoke a lot of Spanish. However, more than one half (54.2%) also indicated their child spoke English an average amount or a lot. When asked the amount of words used in a variety of situations, respondents indicated that their child spoke the most words with siblings. When asked about receptive language skills (e.g., point to objects when asked in Spanish or English), all of the parents reported that their child could respond in Spanish, and most indicated that their child responds in English, although the reported use of English for more complex requests (e.g., answering questions) was lower. There was a particularly large difference in the parent reports of their child's usage of the two languages for complete sentences, with 78.3% indicating that their child uses complete sentence in Spanish but only 37.5% reporting that their child uses complete sentences in English.

In summary, the results of the pilot study demonstrated that parents of Latino heritage found the BIO to be easy to complete and felt it was a useful tool for sharing information about their child's language history and usage in Spanish and English. Also, as a whole, the results of the BIOs completed by the 24 parents appeared to reflect patterns of information that could inform referral decisions and instructional practices.

#### **Phase 4: Face Validity Review**

The next step in the development process was to revise the BIO based on the pilot study results and submit the next revision to three national experts for a face validity review. The methods and results from the review process are described in this section.

#### **Participants**

Each of the three experts who reviewed the questionnaire was bilingual in Spanish and English and had expertise in the areas of second-language development and early childhood education. One reviewer was a nationally known expert in the area of speech and language pathology whose research addresses cultural and environmental influences on young children's language and literacy development, with an emphasis on bilingual populations. She also has developed a test that can be used to assess the phonological development of Spanish-English bilinguals. A second reviewer was a well-known researcher whose recent work focused on effective curriculum and assessment practices for young children from low-income families who are dual-language learners. She has served on numerous national task forces and committees that have addressed early childhood education and the needs of dual language learners. The third reviewer was an expert on the language acquisition of bilingual learners with typical and atypical development across cognitive and linguistic domains. She has also developed clinical assessment and intervention protocols for dual language learners. Together, the reviewers had considerable knowledge and expertise to draw upon when reviewing the BIO.

#### **Review protocol**

Face validity provides an initial impression of whether an instrument appears to measure the intended constructs in an acceptable manner and addresses issues such as appropriateness of content, sequence of items, overall format, and other features. To this end, the reviewers were asked to complete two forms to provide feedback on the BIO. One was an Excel spreadsheet with a list of each individual item number from the questionnaire. A summary of issues identified during the pilot study was also provided to the reviewers so they could consider the specific issues identified through the pilot study as they completed their review. Potential problems with individual items were described and reviewers were asked to comment on whether to make additional changes to the BIO, as well as their recommendations for how best to improve the tool. Specifically, reviewers were asked to respond to the following questions about each item:

1. Is the item appropriate for a family report tool? If not, please explain why and make suggestions for making the item more appropriate.
2. Is the item clearly written? If not, please note any changes.
3. Do you feel the item on the English and Spanish versions convey the same information? If not, please suggest rewording in Spanish, English, or both languages that would have comparable meaning.
4. Is the subscale assignment appropriate? If not, please suggest changes to make it more appropriate?
5. Is the formatting clear and easy to follow? If not, please suggest changes.

The second form, the Reviewer Feedback Form, asked each reviewer to comment on the construct validity of the questionnaire as a whole (the extent to which the questionnaire collects information on important aspects of language development for children whose home language is Spanish), and whether there are additional constructs that should be addressed on the questionnaire. They were also asked for their ideas about the uses of the BIO and whether they would recommend converting it into a normed screening instrument.

### **Procedures**

The research team identified potential reviewers based on their previous research in the area of second language development for very young children and held a conference call with each individual to explain the purpose of the BIO and the review process. Each of the three individuals originally selected as reviewers agreed to participate. A copy of the revised family BIO questionnaire, the Excel spreadsheet for feedback on individual items, and the Reviewer Feedback Form were e-mailed to each reviewer, along with a letter explaining the review process. Reviewers returned the review materials approximately five weeks later via e-mail. Each reviewer received a small stipend for participating.

### **Data analyses**

The research team carefully studied the reviewers' responses to the review forms to look for convergent and divergent feedback. Reviewer comments for each individual item were compared to determine if the reviewers had similar responses regarding the appropriateness and wording/format of the item. Reviewers' responses to the questions on the Reviewer Feedback

Form were also compared. The research team looked for common themes across the responses, with particular emphasis on suggestions for improving the instrument.

## **Results**

In general, all three reviewers felt the BIO would help teachers and other professionals learn about the language abilities of the children in Spanish and English. One reviewer pointed out that research has shown “parents and teachers are reliable informants when their reports are correlated to the child’s language performance. Evidence of parent and/or teacher concern has been found to have good sensitivity to differentiate typical and atypical language development in preschool.” The reviewers, therefore, affirmed that parent reports in general, and the BIO specifically, are a valid means of collecting data related to ELL children’s language development.

All three reviewers voiced several overall concerns with the BIO and provided suggestions for improving the instrument. First, one reviewer suggested separating the demographic information from the language development history/language usage sections so the information was gathered in a two-step process. A second concern was related to how the BIO would be completed: independently by parents or through an interview with a professional. This reviewer was also concerned about the length of the instrument. By contrast, another reviewer suggested adding more questions about children’s experiences with the two languages as well as their current abilities in both languages. This reviewer felt that children’s abilities in Spanish would likely be higher than their English abilities so there might be a need for more advanced language items in Spanish. Finally, all three reviewers felt teachers would need specific training on language development of bilingual children, how to interpret the BIO results, and how the children’s knowledge of their home language could help them learn English.

The reviewers were asked whether they felt the original purpose of the BIO as a supplement to typical preschool screening processes was appropriate and if the tool should be normed or remain a questionnaire. There was consensus that the BIO would be most effective when used in conjunction with developmental screening tools during the preschool screening process. Reviewers felt norming the BIO would require significantly more research and affirmed that the current questionnaire format would make a valuable contribution to the screening process. They did, however, have several suggestions for improvements to each section of the BIO.

### **Language exposure (Section 1)**

All three reviewers suggested a number of changes to make the demographic items clearer. For example, one suggestion was to change the wording of the item asking for the birth country of the child and parents. This reviewer suggested asking if the person was born in the United States with the option of checking “yes” or “no,” followed by a question that asked how long the person had been in the United States if s/he was not born in the United States. In the version provided to the reviewers, the term *legal guardian* was included after mother and after father in all items pertaining to the child’s parents. Two reviewers suggested deleting the term *legal*

*guardian* throughout the BIO. Another reviewer suggestion was to combine separate items pertaining to siblings into one item that asked the ages and primary language spoken for all siblings. Regarding the items about the child's exposure to Spanish and English for in-home and out-of-home activities, one of the reviewers suggested simplifying the table and giving parents a range of options about languages used, such as “all Spanish,” “more Spanish than English,” “all English,” and “more English than Spanish.” Last, one reviewer felt items about how important it was to the parents for their child to speak English, Spanish, or both languages should be a 5-point scale.

### **Language history (Section 2)**

In the next section of the BIO, which focused on children's language development history, reviewers provided a number of suggestions. For example, two reviewers felt more examples were needed on preverbal items and that age category options that could be circled or checked would work better than writing in ages for these questions. This same comment was made for items in the verbal development section. One reviewer noted that the item pertaining to care outside of the home would fit better in Section 1.

### **Current language usage (Section 3)**

Overall, all three reviewers felt additional items should be included in this section. One reviewer, in particular, suggested using a 5-point scale related to the frequency of using words and phrases rather than the three categorical response system used in the version that was reviewed. For items pertaining to language usage, this reviewer felt there should be a table with the same category choices of language usage for English and Spanish.

The purpose of this expert review process was to test the face validity of the BIO and to obtain suggestions for further revisions to the questionnaire before moving forward to collect additional data with the BIO. The reviewers affirmed the face validity of the BIO and offered suggestions for improvements in the questionnaire. All of the reviewer suggestions described above were incorporated into the next iteration of the BIO. The revised version of the BIO will be used in a future research study to field test the questionnaire with a larger group of parents. The field test using the revised version will afford the opportunity to address some of the additional questions raised by the reviewers, such as whether the questionnaire should be administered in an interview format, and the amount and type of training teachers need to administer the questionnaire and then use the information collected from parents.

## **DISCUSSION**

### **Significance of the BIO Questionnaire**

Research has shown that the odds are stacked against many Latino children in the United States. High percentages of Latino children in the United States come from families with low parental

education and low incomes (National Task Force on Early Childhood Education for Hispanics [NTFECEH], 2007a, 2007b). For these children to receive the maximum benefit from early childhood services, it is important for their educational needs and potential disabilities to be identified accurately and early. The recent increase of immigrant families has heightened the need for effective screening policies and practices for ELL children. According to Garcia and Jensen (2007), “increasing the percentage of Hispanic children who enter kindergarten ‘ready’ for school constitutes one of the nation's most important current agenda items in education” (p. 25). High-quality prekindergarten education, including effective screening for disabilities, is a key strategy for improving Latino ELL children's chances for school success. However, programs often have difficulties in accurately distinguishing between learning and language differences (e.g., confusion regarding various levels of English proficiency required for specialized education services referral, tendency to automatically refer ELLs for speech/language services, limited reliable assessing tools, etc.). Consequently, ELLs may not receive appropriate instructional services (De Valenzuela et al., 2006; Hardin et al., 2009; Hardin et al., 2010; Klingner & Harry, 2006; Layton & Lock, 2002).

Factors such as the timing of the screening, the instrument used, the qualifications of the person administering the screening, and family participation in the screening process impact the credibility of the screening results. The fact that ELL children's language development is frequently tested in English only may lead teachers to miss crucial information regarding the child's language skills. Family input is critical in the screening process, as family members often bring unique knowledge of the child's development based on their observations at home and can be a reliable and information source for professionals (Dale, 1991; Gutiérrez-Clellen & Kreiter, 2003). However, there is a need for better tools for parents to use when participating in the screening process (Hardin et al., 2010).

The BIO is intended to be used in conjunction with other developmental screenings when teachers make decisions about whether to refer children of Latino heritage who are ELLs to special education. The overarching hypothesis is that teachers who have more specific and accurate information about Latino children's exposure to language (in Spanish and English), language development history, and current language usage will make more informed decisions regarding whether the children's performance on the screening instruments warrants a referral for further evaluation. Families can provide teachers with access to this type of data and share key information on the extent of language exposure and developmental history, which can contribute to establishing validity of the screening results and appropriate referral decisions. In short, the teacher must have some understanding of how the child's language, culture, and experiences are interrelated in order to understand the child's language development and identify potential exceptionalities. The theoretical basis for the BIO, which includes social constructivism, language socialization, and bioecological systems theory, postulates that language and knowledge are constructed through relationships and experiences, and that looking at a child's

language development without an understanding of the child's language history and exposure to language presents an incomplete picture of the child's language development.

Based on these theories, the BIO is intended to provide teachers with a broader understanding of a child's experiences and development that can be used in conjunction with results from formal screenings to make referral decisions. For instance, if results from the BIO indicate that a child's early language development was delayed and/or language usage is limited in either or both languages, but the child has had limited exposure to one or both languages, the child may not have a language delay. Instead, he or she may be exhibiting delayed language development because he or she has had limited exposure to language models and enriched experiences, and perhaps the child would benefit from enriched educational experiences. Conversely, a child whose parents indicate he or she has had extensive exposure to one or both languages on the BIO, and also indicate that the child's language development history or language usage is atypical, may benefit from a referral for further evaluation because the child's language development is not consistent with his/her language exposure. Understanding the impact of these interwoven relationships among experiences, language exposure, and young children's language development can inform practices and lead to more effective screening processes. More effective screening processes will, in turn, contribute to improved school readiness for Latino children who are learning to speak English.

### **The Uniqueness of the BIO**

The BIO is unique from other early childhood screening tools in several ways. First, it is a dual-language instrument that addresses both the child's first and second language. Other screening instruments are available in Spanish but they focus exclusively on the child's language development in Spanish, often ignoring the child's English language development or vice versa. Second, the BIO collects data on three important facets of children's language development—exposure to language models, previous language history, and current language usage. Most screenings only examine the child's current language usage. Other parent questionnaires may collect data on children's previous language development and current language skills, but limited information on the child's family context and, when included, it is used mainly for demographics about the family and not taken into account when screening results are evaluated. Finally, the BIO is a systematic and empirically validated questionnaire for collecting input from parents.

### **Results of the Development Research**

This article reports results from research conducted to develop the BIO. Results from a parent focus group, a small pilot study with parents, and an expert review process yielded information that was used to improve the questionnaire. Parents participating in the focus group and the pilot provided suggestions for how to make the BIO more user friendly. They suggested the instrument be formatted on two sides of the paper, with Spanish on one side and English on the other. They also suggested that items be combined so respondents can answer questions about



the frequency and type of language typically used in daily activities in one item rather than two. Parents pointed out that additional instructions were needed to distinguish the questions about the child's language history from questions asking about the child's current usage. They were not sure what the difference was between these two sections. Finally, parents participating in the pilot indicated a need for more examples on some of the questions. In summary, the parents participating in the focus group and the pilot felt that the tool has potential to allow parents to participate and provide useful information for teachers, and they provided suggestions to improve the format and instructions so the questionnaire will be easier for parents to complete.

The parents participating in the development research recognized the importance of parental reporting information on children's exposure to language. They offered suggestions for revisions that would improve the quality and amount of information parents report on their children's language exposure. For instance, the parents suggested that the questionnaire should collect additional information on the child's exposure to Spanish and English by adding items to collect information on the proficiency with which both parents speak Spanish and English and the type of Spanish the parents speak. They also suggested that the BIO should collect additional data on language used by siblings. The parent suggestions affirmed the importance of collecting information on a child's language exposure and expanded the amount and type of information the BIO collects on language exposure.

Parent input was also important in helping the authors ensure that the instrument is inclusive of children with disabilities. Parents with children with disabilities recognized that the response options on the original questionnaire did not provide an option that was appropriate for their child because the response options presumed that the child exhibited language at ages appropriate for typically developing children. The parent participants suggested the questionnaire include response options for respondents to check if the child had not exhibited language at these ages. This suggestion was important because it led the BIO developers to review the entire questionnaire to ensure that the options provided would be inclusive of children with disabilities who might exhibit language development at much later ages than typical.

The pilot test was conducted to determine potential problems with the questionnaire, and also to illustrate the types of data that can be collected with the BIO. Data from the pilot not only suggested that the BIO is functional and can be completed by parents, but also provided interesting information about family context and language development of ELLs. For instance, the data suggest that the majority of participating parents spoke Spanish at home, but their use of Spanish and English varied by type of activity, with English more frequently spoken in activities such as reading books to children. We also can see patterns in children's language history that the parents reported on the BIO. Some of the parents indicated their child spoke his or her first word at a later age than is typical. If the BIO were being used in a screening situation (rather than simply as a pilot test), this would be information the teacher should pay close attention to because it might suggest a language delay. Data from the pilot also indicated that the children's use of English increased with age, and that their use of Spanish and English varied by type of

activity. Data on the current usage section of the BIO indicated that the 4-year-old children use English frequently, but use Spanish more for more advanced language tasks, such as following directions and speaking in complete sentences. In short, these data may provide useful insights into ELL children's language development and also suggest that the BIO includes items that “pick up on” differences between children's language exposure, history, and current usage.

Finally, the face validity reviews confirmed that a parent report questionnaire is a valid means for collecting data on children's language development. The reviewers provided useful suggestions for revisions to make items easier for parents to complete, suggesting that items should be revised from fill-in-the-blank type questions to rating scales. The reviewers also suggested that the content of response options be extended to provide more advanced language development items for parent reports on their child's development and usage in Spanish because ELL children's abilities are likely to be more advanced in home language. The reviewers also suggested additional items for the current language usage section. Taken together, results from the development research conducted with parents and with content experts provided numerous suggestions that were used to improve both the format and the content of the BIO questionnaire. For example, additional and revised answer options regarding children's experiences with the two languages, as well as their current abilities in both languages, were added in three sections of the BIO. All reviewers recommended eliminating the term *legal guardian*. The authors removed this term and replaced the wording with the term *other*. In addition, the range of the answers for questions concerning parents' preferences for their child to speak English, Spanish, or both languages was modified to a 5-point scale as recommended by one reviewer. Additional examples were added on preverbal items and age categories and the item pertaining to care outside of the home was reassigned to Section 1. Finally, to address consistency throughout the BIO, the language usage items were changed so the same category choices were used for response choices in both English and Spanish.

## **STRENGTHS AND LIMITATIONS OF THE BIO DEVELOPMENT PROCESS**

The multiphase process used to develop and pilot the BIO has several strengths. First, the instrument was reviewed by a diverse group of individuals, including members of the target population and experts in the field of dual-language learning. The parent participants included parents who spoke only Spanish, as well as parents who spoke Spanish and English, and parents from different countries of origin. This diversity in language backgrounds allowed the research team to test the instrument with participants who exhibited a range of Spanish and English usage. The sample also intentionally included parents of children with disabilities to ensure that the items are sensitive to the unique experiences and language development of children with disabilities. Finally, the expert reviewer participants were highly knowledgeable of Spanish and English language development, early childhood education, instrument development, and research.

Results from the parent participants and from the expert reviewers suggest that both groups felt that the BIO would provide useful information on individual children. Parents reported that they would value the opportunity to contribute more information regarding their child's language development to the screening process, and the experts commented that the information provided by parents would make an important contribution to the screening process.

Beyond the potential benefits of using the BIO as part of screening decisions, results from the pilot also indicate that data collected with the BIO could be useful to understand Latino children's collective language experiences and language development. Even though the sample was quite small, interesting patterns emerged from the data. In addition to contributing information about an individual child that could be useful for the screening process, more wide-scale use of the BIO could help researchers and educators understand the collective experiences that young Latino children may have prior to school entry.

The BIO and the research conducted on the questionnaire to date do, however, have limitations. First, although the questionnaire has been revised multiple times based on the iterative development process described in this article, results from the expert review indicate that further revisions are necessary. The research team continues to work on the questionnaire, striving to improve the questions and format of the questionnaire. Also, though the completed pilot process yielded useful information about the BIO, the sample was small and, even though the sample included parents living in rural and urban settings, the participants were from the same general geographic location. The two sites were approximately one hour's drive apart. The results, therefore, are not generalizable beyond the state or the southeast region. Furthermore, the data collected in the pilot were from parents' self-reporting of their children's language development, usage, and exposure. No observations or teacher reports related to children's language development were collected in an effort to triangulate the parental reporting data, so we do not have evidence of the extent to which the parent reports were accurate. Finally, although the data collected from parents and experts indicate that they think the BIO will make an important contribution to screening decisions, no data were collected from teachers or other persons who actually screen children and make decisions about referrals to document how data from the BIO is used in the screening process. There is some evidence that the BIO could provide useful data, but the data are speculative at this point.

These limitations suggest that additional research is needed on the BIO. The initial pilot process described in this article must be expanded to collect data from a larger, more geographically diverse group of parents. A larger field test would provide the opportunity to establish the construct validity and reliability of the BIO and to develop a scoring system. A follow-up study would then be needed to confirm the BIO's construct validity, reliability, and scoring system. In addition, data on children's language development and usage should be collected from other sources (such as teacher observations and/or direct child assessments) to triangulate the BIO data and evaluate the extent to which parent reports on their child's language are consistent with data collected from other sources. Once the development work is completed on the BIO, additional

research will be needed to empirically evaluate the BIO's effect on teachers' referral decisions for prekindergarten children of Latino heritage. This type of research would collect data on how teachers use results from the BIO as part of their screening process, and whether teachers who use the BIO make more accurate screening decisions than teachers who do not.

In conclusion, results from the development process suggest that the BIO may be a useful tool to include as part of screening Latino children who are ELLs. Data collected from parents to provide information on the child's exposure, language development, and current language usage in Spanish and English can provide additional information during the screening process. Additional research is needed to field test and validate the instrument, as well as to demonstrate how teachers can use the BIO in their screening process.

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