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Gender effects on Mexican-descent parents' questions and scaffolding during toy play: a sequential analysis*

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ABSTRACT

Parental responses following children's answers to parental questions (Parent Question → Child Answer → Parent Response) were examined during play between Mexican-descent children and their parents. Nineteen boys and 18 girls were videotaped playing separately with each of their parents with a toy zoo set. Patterns of parental responses following children's answers to parental questions indicated that mothers provided more scaffolding responses than did fathers. Furthermore, mothers were more scaffolding in their responses even when sequences were analysed separately for child gender. The results support past research with European-American families which has found that mothers may be more aware of children's cognitive capabilities than are fathers. Suggestions for future research that investigate scaffolding versus cognitive demand strategies are included.

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Certain types of speech that parents direct towards their children may facilitate children's later school readiness (Davidson & Snow 1996) and academic success (Sigel, Stinson & Flaughner 1991). For instance, parents' questions may stimulate children's cognitive growth (Sigel 1982, Sigel *et al.* 1991). The present study addresses some of the potential moderating influences on parents' question-asking with their young preschool-aged children. First, we considered the extent to which mothers and fathers varied in their child-directed speech. We also examined how the children's gender and behaviour influence the parents' behaviour. Finally, in order to extend the study of child-directed speech to an under-represented population, our study focused on a sample of Mexican-descent families.

Researchers differ somewhat in the types of child-directed speech that are believed to foster children's conceptual development. Sigel (1982) and others (McGillicuddy-DeLisi 1988, Moreno 1991) have emphasized the role of 'distancing strategies', which correlate with children's future success in mathematics and abstract reasoning (Sigel, Stinson & Flaughner 1991). Distancing refers to some forms of child-directed speech that require children to distance themselves from the immediate physical context in order to think about an abstract concept. This type of child-directed speech entails a reconstruction of ideas as well as the ability to think about the past and future. Thus, language is viewed as a vehicle for increasing certain cognitively advanced abilities (Clark 1997).

One of the most common means of engaging children in distancing is through requests for information or questions (Sigel 1982). Furthermore, researchers divide questions into *conceptual* and *perceptual* queries based on the amount of representational thought they require of the responder (Sigel 1982) and their presumed potential for fostering intellectual development (Moreno 1991). For example, in reference to a toy zoo set, a conceptual question might be 'Which animals here are fierce?' In order to answer this type of question, a child must access and manipulate existing representations because this characteristic (fierceness) of animals is not present in their plastic, inanimate form (Clark 1997). Thus, children must distance themselves to access qualities of these animals that they have encoded in the past. In this way, engagement in representational thought forms the basis for abstract thought. In contrast, perceptual questions are more directive and usually involve simple labelling (McGillicuddy-DeLisi 1988). For example, in reference to the same toy zebra a perceptual question might be 'What colour is the horse?' The appropriate answer to this question can be found in the immediate physical context and does not involve as much representational thought as does a conceptual question.

Whereas the distancing hypothesis focuses on the *content* of parents' speech (i.e., the use of abstractions), the scaffolding hypothesis focuses on the *process* of parent-child interactions. For instance, Wood & Middleton (1975) argue that simply maintaining high-level interactions does not help children learn. Instead, they maintain that optimal learning occurs when parents modify their interactional patterns to gradually guide children's thought and development. In support of their proposal, Wood & Middleton found that task-oriented achievement occurred most often when mothers asked a more difficult question or made a more complicated request following children's successful performance in an easier task. However, when the questions or demands proved too challenging, mothers simplified them and, thus, were still able to promote learning. The process by which these mothers aided their children is known as scaffolding, whereby a more advanced individual provides external support to a learner (Clark 1997). Scaffolding is most effective when the teacher is sensitive to the level at which a learner is unable to complete a task individually, but may do so with the help of a more advanced other (Brown & Palincsar 1989, Wertsch 1991). As learners become more advanced, teachers provide less guidance, that is, they withdraw the scaffold (Greenfield 1984). The learner's active participation is thought to change the learners' ability to engage in the task (Rogoff 1995).

Rogoff (1990) maintains that scaffolding is ubiquitous and occurs within informal, everyday conversations. From a Vygotskian perspective (Vygotsky 1987, Wertsch 1991), everyday conversations may allow for scaffolding because learning first occurs on the social plane and is later transferred to the individual plane. Children learn in social interaction by internalizing parental speech; this speech guides children's future behaviour. Evidence is available to show that this process of internalization occurs frequently; for example, it has been found that European-American grade school children internalize math instruction to guide their computations (Bivens & Berk 1990) and increase reading comprehension (Brown & Palincsar 1989). Thus, language is used to guide and direct thought.

Many past studies investigating differences in child-directed speech have indicated that fathers are more likely than mothers to place higher levels of cognitive demand on children by using more exact vocabulary, especially during unstructured play (Gleason 1987). Gleason argues that fathers place more cognitive demand on children because they are less aware than mothers of their children's cognitive abilities and, as a result, do not talk to children in ways congruent with children's cognitive abilities. However, Mandle & Tomasello (1987) maintain that

fathers' tendency not to adjust to children's cognitive level may be beneficial for children. According to their 'bridge hypothesis', younger preschool children are challenged linguistically when interacting with fathers. Consequently, these children might become better prepared to interact with members outside of their immediate families who will not meet children at their communicative level (Tomasello, Conti-Ramsden & Ewert 1990). Thus, fathers' higher cognitive demand may prepare children for interacting with unfamiliar adults in outside environments such as school.

The relationship between parent gender and input may be more complicated than previously thought. In some ways, mothers may use more complex speech with children than do fathers. For example, Davidson & Snow (1996) found that European-American mothers spoke more complexly (longer MLUs, rare words, etc.) with their kindergarten-aged children than did fathers. Similarly, in research with Mexican-descent families, Tenenbaum & Leaper (1997) found that mothers asked a higher proportion of conceptual questions than fathers.

Although mothers may place more cognitive demand on children than fathers, it remains unclear if mothers and fathers differ in their contingent behaviour. For instance, mothers may use more cognitively demanding strategies, but only after children demonstrate an ability to interact at a higher cognitive-linguistic level. In order to investigate this possibility in the current study, parental questions were analysed in their conversational context, that is, in relation to children's answers. It was predicted that mothers would have more scaffolding responses (see Table 1) than fathers.

In addition to parent gender, child gender has been found to be another moderator of parental discourse (for a review, see Leaper, Anderson & Sanders 1998). However, not many studies have investigated *fathers'* didactic behaviours with sons and daughters; instead, most studies have focused on mothers. In a study that looked specifically at European-American mothers' and fathers' questions of their preschool-aged children, McGillicuddy-DeLisi (1988) found that parents used more 'high-level' statements and asked more 'high-level' (i.e., conceptual) questions of other-gender children than same-gender children. In other words, fathers were more likely to use conceptual strategies with daughters than with sons. In contrast, mothers tended to use more conceptual strategies with sons than daughters. McGillicuddy-DeLisi (1988) noted that parents' higher cognitive demand with a child of the other gender contrasts with parental discipline styles in which parents are more demanding with same-gender children. She suggested that parents are more cognitively demanding but otherwise more lenient

TABLE 1. *Scaffolding and non-scaffolding sequences, their rationale and examples*

Scaffolding sequences	Rationale
Correct → Conceptual Question	High cognitive demand
Correct → Elaboration	Expands child's idea and knowledge
Incorrect → Perceptual Question	Low cognitive demand
Incorrect → Tell	Provides information
Counter-question → Tell	Provides information
Counter-question → Elaboration	Expands child's idea
Non-scaffolding sequences	Rationale
Correct → Perceptual Question	Low cognitive demand after child shows ability that he/she could succeed at a question with higher cognitive demand
Correct → Negative	Does not provide feedback
Correct → Tell	Ignores child's answer
Incorrect → Conceptual Question	High cognitive demand and ignores need for assistance
Incorrect → Negative	Ignores need for assistance and lack of feedback
Incorrect → Elaboration	Ignores need for assistance and lack of feedback
Incorrect → Continuation	Ignores need for assistance and lack of feedback
Counter-question → Conceptual Question	Ignores need for information
Counter-question → Perceptual Question	Ignores need for information
Counter-question → Negative	Ignores need for information

in behaviour management with children of the other gender. Therefore, we hypothesized that when conversational interactions were analysed separately for girls and boys, parents would have more scaffolding responses with cross-gender than same-gender children.

Although many of the studies reviewed in this paper support the hypothesis that mothers and fathers differ in child-directed speech, past research has been based mainly on middle-class European and European-American families. Research devoted to parents in different cultural contexts, which has tended not to investigate parent gender differences, has suggested that parents' teaching behaviours may differ with socio-cultural background (Greenfield 1994, Rogoff 1990). To complement the research on parent differences in child-directed speech,

we specifically targeted a sample of Mexican-descent families. Mexican-descent families are the fastest growing ethnic minority in California (Vega 1990) and yet remain a largely under-investigated population. The few studies investigating parental didactic behaviours in Mexican-descent families (Laosa 1980, Moreno 1991, Tenenbaum & Leaper 1997) have examined parents' question-asking rather than their scaffolding behaviours in particular. Thus, researchers do not know if findings related to parent differences in scaffolding behaviour occur in other populations.

In summary, the present study investigated the use of parental scaffolding strategies. There were two main hypotheses. First, it was predicted that when child gender was collapsed, mothers would be more likely than fathers to provide scaffolding responses. Second, when boys and girls were analysed separately, it was predicted that parents would employ scaffolding more with cross-gender than same-gender children.

METHOD

Participants

Participants were recruited from commercial mailing lists and from daycare centres along the central coast of California. The sample consisted of 37 Mexican-American children and their parents. Of the 37 children, 18 were girls and 19 were boys ($M = 51.35$ months, $SD = 11.05$). Daughters and sons did not differ significantly in age. To be included in the sample, at least one of the parents had to be of Mexican descent. Except for 2 mothers of European descent and one mother of Cuban descent, all of the remaining parents were of Mexican descent.

Demographic information indicated that the mean education for mothers and fathers was between a high school degree and some college. More specifically, 39% of the mothers and 29% of the fathers did not have a high school degree; 19% of the mothers and 15% of the fathers had a high school degree; 42% of the mothers and 50% of the fathers had some college or beyond. Of the mothers without a high school education, the lowest grade completed was fifth and the highest completed was eleventh ($M = 7.36$, $SD = 1.69$). The lowest grade completed for fathers without a high school degree was third grade and the highest was eleventh grade ($M = 6.86$, $SD = 2.59$). Educational level was missing for 3 mothers.

Most of the parents were bilingual. Specifically, 68% of the mothers were bilingual and 70% of the fathers were bilingual. Nineteen percent of the mothers indicated that they were monolingual Spanish speakers

and 16% of the fathers indicated that they were monolingual Spanish speakers. Thirteen percent of the mothers indicated that they were monolingual English speakers and 14% of the fathers indicated that they were monolingual English speakers. During the videotaped recordings, 68% of the mothers spoke primarily Spanish and 32% spoke primarily English. Seventy percent of the fathers spoke primarily Spanish and 30% spoke primarily English.

Procedure

Three research assistants visited families in their homes. Mothers and fathers were visited separately within approximately one month of each other. The order of the parental visits was counter-balanced. Upon arrival, one of the research assistants interviewed the parent to collect demographic information. Next, the parent was instructed to play individually with the child in the language in which the parent and child usually conversed (i.e., English or Spanish). Although there were differences in the language in which parents conversed, it was believed that comfort of participants was more important than using language as a control, especially considering the lack of evidence for cross-linguistic differences in thought (see Glucksberg 1988, for a review). Each parent and child were videotaped for 8 minutes playing with a toy zoo set consisting of a plastic fence and some common zoo animals. Parents were subsequently asked to play with two other toy sets for 8 minutes each: a toy track with cars and a toy food and plate set. The latter two toy sets were used in a different study that investigated the effects of gendered toys (see Tenenbaum & Leaper 1997).

Coding

The present study analysed three-part speech act sequences beginning with parent didactic questions (Parent Question → Child Answer → Parent Response). Thus, assistants coded the three-part series that began with a didactic question. Didactic questions, which could be focused on the myriad of possible things to be learned while playing, consisted of both conceptual and perceptual teaching questions. In contrast, non-didactic questions included tag questions ('You know all your animals, don't you?') and questions related to other behaviours (e.g., 'Do you have to go to the bathroom?'), and were not included in the analyses.

Parent's didactic questions Didactic questions were divided into perceptual and conceptual questions. *Perceptual questions* include labelling (e.g., 'What is this animal called?') and take place in the

present (e.g., 'What is next to the man?'). They can typically be answered with one word. In contrast, *conceptual questions* require representational thought and are targeted at concepts that preschool children are beginning to develop (McGillicuddy-De Lisi 1988, Sigel *et al.* 1991). For example, they include causal questions (e.g., 'What would happen if the lion were next to the person?') or comparison questions (e.g., 'In what way is a horse like a zebra?'). Also, conceptual questions do not always occur in the present tense (e.g., 'Which of these animals did we see when we went to the zoo?').

Child's answers to parent questions Children's answers to parental questions (e.g., 'What animal is this?' as the parent points to a toy zebra) were coded as either *correct* (e.g., 'a zebra'), *incorrect* (e.g., 'a lion'), *irrelevant* (e.g., 'I love the zoo'), *indirect* (e.g., 'an animal with stripes'), *counter-question* (e.g., 'Do you know what it is?'), *non-responsive* (for four or more seconds of silence) or *requesting the question to be repeated* (e.g., 'What?'). All codes were mutually exclusive. Irrelevant, indirect, and non-responsive were added to the *incorrect* answer category because of their low frequency of occurrence.

Parent's subsequent response to child The parent's follow-up responses to the child's answer were coded as either questions, statements, or non-responsive (4 or more seconds of silence). Questions were further divided into the conceptual, perceptual or non-didactic categories. Statements were classified as either *correction* (e.g., 'No, it's a zebra'), *giving feedback* (e.g., 'okay'), *answering for the child* (e.g., 'It's a zebra'), *repetition of child's statement* (e.g., 'a zebra'), *elaboration* (e.g., 'It's a zebra because it has stripes'), or *irrelevant* (e.g., 'Lions are dangerous'). Some of these statements were then compiled into larger categories because of their low frequency of occurrence and to reduce the number of statistics computed. Non-responsive and unrelated information were collapsed into a category called *negative responses*. Corrections and answering were collapsed into a category called *telling*. Giving feedback and repetition were collapsed into a category called *continuation* of the interaction.

Scaffolding and non-scaffolding sequences

To investigate parental sequences in context, we analysed the probability that parents used scaffolding or non-scaffolding responses. Sequences were selected as scaffolding or non-scaffolding sequences based on their expected effect on task-oriented success or learning (see Table 1). The most common child answers were correct, incorrect, and

TABLE 2. *Examples of scaffolding and non-scaffolding sequences*

Sequence	Example	Code
Correct Scaffolding	Mother: Where does the boy go, in the centre with the animals?	[<i>perceptual question</i>]
	Daughter: No. Mother: Why not?	[<i>correct</i>] [<i>conceptual question</i>]
Incorrect Scaffolding	Mother: What is this?	[<i>perceptual question</i>]
	Son: A horse. Mother: No, no, because look, horses don't have stripes. It's a zebra.	[<i>incorrect</i>] [<i>tell</i>]
Counter-question Scaffolding	Mother: What's the difference between a camel and a giraffe?	[<i>conceptual question</i>]
	Daughter: Which is the giraffe? Mother: This one, what's the difference?	[<i>counter-question</i>] [<i>tell</i>]
Correct Non-scaffolding	Father: What is this?	[<i>perceptual question</i>]
	Son: A baby. Father: Is this a baby?	[<i>correct</i>] [<i>perceptual question</i>]
Incorrect Non-scaffolding	Father: And what is this?	[<i>perceptual question</i>]
	Son: To sit Father: To sit. At best they are tired. They want to sit.	[<i>incorrect</i>] [<i>elaboration</i>]
Counter-question Non-scaffolding	Father: What other animal goes in there?	[<i>perceptual question</i>]
	Son: Where's the animal? Father: Where's there another animal?	[<i>counter-question</i>] [<i>perceptual question</i>]

counter-question. A short explanation of these sequences follows and examples of each type of sequence may be found in Table 2.

Correct response scaffolding strategies Following a child's correct answer, a parental scaffolding response would either be a conceptual question or an elaboration of the child's answer, because these parental responses would increase the cognitive demand placed on the child. In contrast, following a child's correct answer, a non-scaffolding parental response would be a perceptual question, telling the child the answer or being non-responsive. The first two responses would not increase the cognitive demand despite the child's verbal indication that she or he was ready for this increase, whereas the third response fails to provide feedback.

Incorrect response scaffolding strategies Following a child's incorrect answer, a parental scaffolding response would either be a perceptual question or telling the child the correct answer. A perceptual question

scaffolds by lowering the cognitive demand, whereas correcting a child provides accurate feedback, which has been correlated with improved performance (Spiker, Cantor & Klouda 1985). In contrast, following a child's incorrect answer, a non-scaffolding parental response could be, variously, a conceptual question, an elaboration of the child's incorrect answer, feedback that tells the child that she or he is correct, or simply a non-response.

Although an elaboration may seem to be providing assistance, the parent is not providing accurate feedback to the child. The following is an example of such a non-scaffolding sequence with the coding classifications italicized in brackets:

Mother: (pointing to a zebra): What is this? [*perceptual question*]

Daughter: A horse. [*incorrect answer*]

Mother: Horses are such nice animals. I once went horseback riding. [*elaboration*]

In this example, the parent's lack of accurate feedback does not provide enough information for the child to learn the name of the animal.

Counter-question response scaffolding strategies Following a child's counter-question, a parental scaffolding response would be either to tell the child the answer or to elaborate the child's question, because these parental responses would be responding to the child's request for assistance or information. In contrast, following a child's counter-question, a non-scaffolding parental response would be a perceptual or conceptual question or being non-responsive, because these responses do not provide the child with the requested information.

Reliability

Three female researchers worked together for a period of one month. All three were fluent Spanish speakers. During the training procedure, the coders met for an average of ten hours a week to code videotapes and discuss the speech codes. In addition, coders separately coded three parent-child videotapes (each videotape included both a mother-child and a father-child interaction of 8 minutes duration). Coded videotapes were discussed and compared. After the training sessions, coders separately coded 12 videotapes, which consisted of both 12 mother-child and 12 father-child play sessions. High reliability was found with Cronbach alpha's ranging from 0.74 to 0.99 for individual codes (e.g., perceptual questions, correct child responses, parental elaboration).

TABLE 3. *Mean and standard deviations of questions and responses by parent gender*

Parental behaviour	Mothers		Fathers	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Conceptual questions	3.62	4.70	4.62	5.20
Perceptual questions	16.0	8.52	17.22	8.95
Follow-up conceptual	1.38	2.23	1.46	2.42
Follow-up perceptual	4.30	3.64	5.19	4.27
Continuation	7.27	5.80	7.08	4.41
Tell	2.65	2.03	3.03	2.39
Negative	1.92	1.64	2.43	2.70
Elaboration	1.43	1.90	1.84	1.90

RESULTS

Two types of statistical analyses were performed. First, descriptive statistics were computed to allow the examination of the frequencies of selected behaviours. Second, sequential analyses were performed to analyse contingent behaviour between parents and children.

Descriptive statistics

Analyses were performed to calculate the mean number of times that parental questions (e.g., conceptual, perceptual, follow-up conceptual, and follow-up perceptual questions) and scaffolding and non-scaffolding responses (e.g., continuations, ignorings, and tellings) occurred. This information is contained in Table 3. In addition, analyses were conducted to calculate the mean number of times that parents asked these types of questions and used these specific responses with sons and of daughters. This information is presented in Table 4. Finally, the mean number of children's responses (correct, incorrect, and counter-questions) for boys and girls combined and separately is summarized in Table 5. From the tables, it is apparent that mothers and fathers used similar numbers of these types of questions and responses.

Sequential analyses

The selected parent-to-child and child-to-parent sequences that are displayed in Table 1 were analysed using lag sequential techniques developed by Bakeman & Quera (1995). These techniques allow researchers to examine temporal contingencies by calculating the

TABLE 4. *Means and standard deviations of questions and responses by parent gender to daughters and sons*

Parental behaviour	Daughters		Sons	
	Mothers	Fathers	Mothers	Fathers
Conceptual questions	3.44 (5.48)	5.56 (5.87)	3.79 (3.97)	4.21 (4.60)
Perceptual questions	15.22 (7.47)	16.11 (8.39)	16.74 (9.56)	18.26 (9.56)
Follow-up conceptual	1.00 (1.78)	1.28 (2.05)	1.74 (2.58)	1.63 (2.77)
Follow-up perceptual	3.61 (2.64)	4.44 (2.91)	4.95 (4.35)	5.89 (5.23)
Continuation	7.78 (7.11)	7.67 (5.13)	6.79 (4.37)	6.53 (3.64)
Tell	2.72 (1.64)	3.06 (2.26)	2.58 (2.39)	3.00 (2.56)
Negative	2.22 (1.86)	1.83 (2.33)	1.63 (1.38)	3.00 (2.94)
Elaboration	0.94 (1.06)	1.72 (1.93)	1.89 (2.40)	1.95 (1.90)

TABLE 5. *Means and standard deviations of child responses*

Child response	Boys and girls		Girls		Boys	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Correct	20.84	11.66	19.72	12.87	21.89	10.66
Incorrect	8.70	5.83	8.61	4.70	8.79	6.86
Counter-question	1.05	1.39	1.17	1.79	0.95	0.91

probability of a particular code following another code or response. This sequential analysis programme employs Pearson chi-squares. Mothers and fathers of sons and daughters had roughly equivalent means of perceptual and conceptual questions and thus would have had equal opportunities to scaffold children.

Additionally, the ratio that a parental code followed a child's response to the total number of times that the parental code occurred is noted in parentheses for significant chi-squares. For example, the ratio of times that mothers or fathers responded with either a conceptual question or an elaboration (scaffolding responses) following a daughter's correct answer to the total number of times that mothers or fathers responded with either a conceptual question or an elaboration is reported.

Overall Child → Parent patterns Parental scaffolding versus non-scaffolding responses following children's correct, incorrect, or

counter-question responses were compared. These data were analysed by collapsing parent gender to examine overall patterns.

As expected, parents were more likely to make scaffolding than non-scaffolding responses following children's correct answers, $\chi^2 (df = 1, n = 37) = 154.34, p < 0.0001$. There was no difference in whether parents provided scaffolding or non-scaffolding responses after children were incorrect, $\chi^2 (df = 1, n = 37) < 1, ns$. Contrary to expectation, parents were more likely to provide non-scaffolding than scaffolding responses after children asked counter-questions, $\chi^2 (df = 1, n = 37) = 8.21, p < 0.01$.

Child → Parent sequences: overall parent differences Mothers' and fathers' scaffolding and other responses following children's correct, incorrect, or counter-question responses were analysed to investigate which parent was more likely to provide scaffolding responses. Some caution is warranted when interpreting the data because multiple tests were computed to look for differences (i.e., nine tests in all). However, differences were always in the same direction, which supports the robustness of the findings.

Following children's correct responses, there was no parent gender difference in the likelihood of a scaffolding response, $\chi^2 (df = 1, n = 37) = 1.63, ns$. Similarly, following children's counter-questions, there was no parent gender difference in the likelihood of a scaffolding response, $\chi^2 (df = 1, n = 37) < 1, ns$. In contrast, following children's incorrect answers, mothers (0.36) were more likely to give children a scaffolding response than were fathers (0.27), $\chi^2 (df = 1, n = 37) = 5.00, p < 0.05$.

Child → Parent sequences: parent gender differences by child gender Mothers' and fathers' scaffolding and other responses following children's correct, incorrect, or counter-question responses were analysed separately for sons and daughters. These statistics were computed to determine if mothers or fathers differentially scaffolded sons or daughters.

Correct answers Following daughters' correct answers, mothers (0.69) were more likely than fathers (0.38) to respond with a scaffolding response, $\chi^2 (df = 1, n = 18) = 7.73, p < 0.01$. In contrast, following sons' correct answers, there was no parent gender difference in the likelihood of a scaffolding response, $\chi^2 (df = 1, n = 19) < 1, ns$.

Incorrect answers Following daughters' incorrect answers, there was no parent gender difference in the likelihood of a scaffolding response, $\chi^2 (df = 1, n = 18) < 1, ns$. In contrast, following sons' incorrect

answers, mothers (0.65) were more likely than fathers to respond with a scaffolding response (0.36), $\chi^2 (df = 1, n = 19) = 4.80, p < 0.01$.

Counter-questions Following daughters' counter-questions, there was no parent gender difference in the likelihood of a scaffolding response, $\chi^2 (df = 1, n = 18) = 2.30, ns$. In contrast, following sons' counter-questions, mothers (0.08) were more likely than fathers (0.0) to respond with a scaffolding response, $\chi^2 (df = 1, n = 19) = 6.90, p < 0.01$.

DISCUSSION

Recent cultural theorists (e.g., Mahmmud & Armstrong 1992, Phinney 1996) have suggested that no single group of individuals can be true representatives of a culture, especially since there is more diversity than similarity within an ethnic group. The present study is no exception; for example, the educational background and choice of language (Spanish or English) differs across participants. Given this diversity, the participants may have represented a cultural continuum. Furthermore, research has suggested that parent's education level (e.g., Richman, Miller & LeVine 1992) as well as the language spoken in the home (e.g., Hurtado, Gurin & Peng 1994, Mendoza 1989, Rueschenberg & Buriel 1995) may serve as a proxy variable for acculturation. In the current study, the majority of participants spoke Spanish but ranged in years of formal education from fifth grade to graduate degrees, which suggests that the participants may have differed in acculturation. Hence, some care should be taken in generalizing the results of the present study to all Mexican-descent parents.

General patterns in scaffolding With the above caveat in mind, the parents in this study generally provided scaffolding responses following children's correct responses to prior parent questions. For example, scaffolding responses included asking conceptual questions or providing elaborations following a child's correct response. In these ways, parents are believed to contribute to their children's development of representational thought by providing more cognitive demand when the child indicates a readiness to handle it. These findings also support the view that within everyday conversations, parents scaffold their children and may in fact, find it difficult not to do so (Rogoff 1990). Contrary to expectation, however, parents' likelihood of scaffolding or non-scaffolding responses did not differ following children's incorrect answers. In the present study, parents would have to correct or ask a perceptual question of their children in order for their response to be

'scaffolding' as defined in the analyses. To respond in this manner would be implicitly telling a child that her or his answer was incorrect, which could be seen as negative feedback. Parents in this sample did not respond with negative feedback, which is similar to Rome-Flanders, Cronk & Gourde (1995). In their study, Canadian mothers rarely used negative comments with their infants and toddlers during two types of games. Thus, parents' avoidance of negative feedback seems to be fairly robust.

Why might parents be especially likely to provide scaffolding responses following correct child responses but not incorrect child responses? One possible explanation is suggested from a recent study of one-on-one undergraduate tutoring interactions. Person, Kreuz, Zwaan & Graesser (1995) found that tutors typically provided positive feedback following student correct responses but avoided giving direct feedback after an incorrect response. They proposed that politeness norms mitigate against the use of negative feedback during one-on-one interactions even though politeness norms 'may inhibit effective tutoring' (:161). Perhaps in an analogous manner, parents are reluctant to be 'too hard' on their children when errors are made. Given the robustness of the rarity of negative feedback across different interpersonal situations, further empirical research into negative feedback is needed.

Parents were actually more prone to provide non-scaffolding than scaffolding responses following children's counter-questions. Specifically, parents were more likely to ask a question or not respond rather than telling children the answer or elaborating on children's questions. Perhaps, children's counter-questions signal to parents that children are focused on the task, as can be seen in the following interchange between a mother and her four year-old son. (The coding classification for each utterance is italicized in brackets.)

Mother: What is the difference between a camel and a giraffe?
[*conceptual question*]

Son: Which is the giraffe? [*counter-question*]

Mother: Which one do you like better? [*perceptual question*]

Although the child lacks the prerequisite information necessary to answer the mother's question, the mother probably realizes that her question has engaged the child's interest. Additionally, the son's question demonstrates that he is able to formulate a relevant question. Perhaps, this child's mother does not answer his question because she

believes that through continued questioning, her son will figure out the answer to his question without losing interest in the task.

Differences in mothers' and fathers' scaffolding responses Although the previous example was taken from a mother-son pair, the effect was not specific to a particular parent or child gender. However, now we turn to a discussion of the gendered patterns in parent-child exchanges. The results indicated that there were no parent gender differences in the likelihood of a scaffolding response after children's correct answers or counter-questions. Given that the similarities between men and women are often overlooked in much psychological research (Crawford 1995, Jacklin 1981), we want to reiterate that the mothers and fathers in our study acted similarly in many ways before discussion of their differences.

As hypothesized, when parent differences occurred, mothers had more scaffolding responses than fathers. For example, mothers were more likely than fathers to scaffold children after incorrect answers. The following example demonstrates a typical scaffolding exchange between a mother and her three-and-a-half-year-old daughter.

Mother: What is this shape? [*conceptual question*]

Daughter: I don't know. [*incorrect answer*]

Mother: Is it a circle? [*perceptual question*]

Although the above example was taken from a mother-daughter pair, the previously mentioned parent gender effect did not depend on the child's gender.

Differences in mothers' and fathers' scaffolding for daughters and sons Contrary to the second hypothesis, parents did not demonstrate more scaffolding with children of the other gender. However, three of the ways in which mothers were observed using more scaffolding than fathers were each found to be specific to the child's gender. First, mothers were more likely than fathers to provide scaffolding responses following daughters' correct answers. Also, mothers were more likely than fathers to provide scaffolding responses following sons' counter-questions and incorrect answers.

In general, these results suggest that Mexican-descent mothers were more likely than fathers to scaffold children's learning in certain ways. Most past studies have similarly found that in naturalistic conversation European-American mothers adjust to the child's cognitive level more than do fathers (Gleason 1987, McLaughlin, White, McDevitt & Raskin 1983). Some research has suggested that fathers may be less

cognizant of children's cognitive levels because they spend less time with their children (e.g., Mannle & Tomasello 1987). Perhaps, as a result of spending less time with their children, fathers are less able to respond contingently and scaffold their children's learning. However, these past studies and others (Davidson & Snow 1996, Tenenbaum & Leaper 1997) have relied on overall frequency scores (i.e., how many questions parents asked) rather than examining the sequential patterns between parents and children. The findings from the present study are consistent with work in conversational analysis (Levinson 1983) and psycholinguistics (Clark & Brennan 1991) that emphasize the importance of examining speech acts within their conversational context.

In contrast to researchers emphasizing the importance of scaffolding (e.g., Wood & Middleton 1975), researchers who advance the distancing hypothesis (e.g., McGillicuddy-DeLisi 1988) might argue that it is the overall use of conceptual questions, irrespective of their placement, that increases children's cognitive development. More specifically, distancing strategies have been found to be correlated with children's abilities in mathematical and abstract reasoning (Sigel, Stinson & Flaughter 1991). Although both types of parental strategies, scaffolding and distancing, contribute to children's cognition, empirical research is needed to differentiate which types of parental strategies are most effective with different types of cognition (e.g., mathematical reasoning versus puzzle completion). In addition, research should compare teaching strategies in families from different cultural backgrounds. This line of research would enable researchers to understand better different types of learning and development within the socio-cultural contexts of parent-child interactions.

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