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Attention to Instruction Directed to Another by U.S. Mexican-Heritage Children of Varying Cultural Backgrounds

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Children commonly observe and pitch in to ongoing activities in Indigenous communities of Mexico, according to ethnographic research. The present study examines the generality of this approach to learning by comparing its use among Mexican immigrants of two cultural backgrounds in the United States. Results showed more sustained attention to (and learning from) instruction directed to another person by 22 U.S. Mexican-heritage 6- to 11-year-old children whose families likely have experience with Indigenous practices (and limited involvement in Western schooling), compared with 16 U.S. Mexican-heritage children whose families have extensive involvement in Western schooling (and related practices).

Keywords: informal learning, observation, attention, Mexican, Indigenous

This study examines learning by attending to instruction directed to another child by 6- to 11-year-old U.S. Mexican-heritage children of two cultural backgrounds, differing in their experience with Indigenous and Western practices. Among Mexican immigrants, there is great variability in these cultural experiences. For example, according to the National Taskforce on Early Childhood Education for Hispanics (2007), nearly half of Mexican immigrant mothers have had extensive involvement in Western schooling (12 or more years), whereas one third have had limited involvement in this cultural institution (zero–eight grades of schooling). It is likely that many of those with limited involvement in Western schooling have greater involvement in another cultural system common among Indigenous communities of Mexico—one that seems to provide children with a distinct structure in support of learning that emphasizes keen observation.

Learning by Observation in Indigenous Communities of the Americas

According to numerous ethnographic studies, observation is a prevalent method of learning that accompanies children's active engagement in the range of their community's work and social activities in many Indigenous communities (Chamoux, 1992; Corona & Pérez, 2005; de Haan, 1999; de León, 2000; Rogoff, 2003). Because young children are regularly included in the wide range of social and productive activities of their community, they are often in a position to observe and listen to ongoing events, and they are expected to pay attention to be able to contribute to them. In turn, such inclusion also seems to encourage children's active interest in knowing what is going on and in contributing to it.

This cultural tradition in support of learning, termed *learning through intent community participation,* has been posited to be especially common in Indigenous communities of North and Central America, where children traditionally have been included in the community's range of activities and expected to observe and to contribute as they become ready (Rogoff et al., 2007; Rogoff, Paradise, Mejía Arauz, Correa-Chávez, & Angelillo, 2003). For example, Yucatecan Mayan children are expected to observe the activities of others in their village to report to adults as well as to contribute to family activities, and parents scold Guatemalan Mayan children for not paying attention by reprimanding them, "Have you no eyes?" (Chavajay, 1993; Gaskins, 1999).

A few comparative studies examining the use of simultaneous attention to ongoing events are consistent with the idea that keen observation is especially emphasized in Indigenous and Indigenous-heritage communities of the Americas, compared with

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some other communities. Guatemalan Mayan and U.S. Mexican-heritage mothers and children from families likely to have Indigenous histories simultaneously monitored several ongoing events. In contrast, European American mothers and children from families with extensive schooling tended to attend to one event at a time, interrupting their involvement in one event to attend to another or seeming unaware of events of interest (Chavajay & Rogoff, 1999; Correa-Chávez, Rogoff, & Mejía-Arauz, 2005; Rogoff, Mistry, Göncü, & Mosier, 1993).

Experience with Western Schooling and Cultural Patterns of Attention

Keen attention to surrounding events may be less common in communities where children are seldom included in the range of community activities, where instead, adults give lessons and attempt to manage children's attention in ways resembling the practices of Western schooling (de León, 2000; Gaskins, 2000; Morelli, Rogoff, & Angelillo, 2003; Rogoff et al., 1993). In Western schooling, children often have little opportunity to be onlookers and observe others productively carrying out the activities that they are trying to learn. Instead, school is often organized so that lessons and exercises are "delivered" to students out of the context of productive activities, with attention controlled by a teacher. Children may be punished for trying to observe or assist with each other's work. In this context, children may become used to having their attention directed by adults and may be less likely to spontaneously attend to what is going on around them.

Of course, schooling does not stand alone in the experience of children from families with extensive schooling. Children from such families generally have experience with a whole constellation of related practices, including small family size, cosmopolitan living arrangements, and occupations and other practices generally characteristic of the cultural traditions of the middle class (Rogoff & Angelillo, 2002). We view these characteristics as co-occurring aspects of a complex cultural constellation that occurs in many parts of the world and in different historical contexts (Hernandez, 1997; Rogoff et al., 2005; Tapia-Uribe, LeVine, & LeVine, 1994). In other words, we do not see school by itself as the sole "active ingredient" contributing to children's ways of attending to events. We treat schooling as an indicator of a constellation of interrelated aspects of children's lives associated with extensive schooling, in addition to pointing to the socialization of particular ways of attending that may occur in schooling itself.

Children's approaches to learning are likely affected by their mothers' experience with the practices of Western schooling; mothers with extensive schooling experience often seem to use more school-like approaches with their children (Laosa, 1980, 1982; Moreno, 2000; Rogoff et al., 1993). For example, U.S. children whose mothers had extensive school experience—whether they were of European or Mexican heritage—requested more information than was available from observing an adult's origami demonstration, compared with Mexican-heritage U.S. children whose mothers had limited schooling and likely had more experience with Indigenous practices (Mejía-Arauz, Rogoff, & Paradise, 2005). Guatemalan Mayan children whose mothers had more than 12 years of schooling attended less to an interaction addressed to their sibling compared with Guatemalan Mayan children whose mothers averaged 2 years of schooling (Correa-Chávez & Rogoff, 2009).

Forms of interaction in which adults attempt to direct and control children's attention and interest are rare in communities where children learn through intent community participation in adult activities (Briggs, 1991; Dixon, LeVine, Richman, & Brazelton, 1984; Gaskins, 1999; Heath, 1983; Paradise & de Haan, 2009; Paradise & Rogoff, 2009). In such environments, instruction is given within the context of involvement in the process that is being learned (Cazden & John, 1971; John-Steiner, 1984; Kojima, 1986), and the community often provides opportunities for children to overhear and observe important activities by incorporating children in community life (Rogoff, 2003).

Cultural Patterns in Attending to Information Directed to Others

Regardless of cultural background, attending to situations directed to others often provides children with useful and important information, such as how to interpret the approach of a stranger and the meaning of new words (Akhtar, 2005; Feiring, Lewis, & Starr, 1983; Ochs, 1988; Oshima-Takane, Goodz, & Deverensky, 1996). However, only three studies have systematically examined cultural variation in children's attention to events that are not directed to them, a form of keen attention that is likely to be beneficial for learning from surrounding events. One study found that middle-class European American children were more often off task when they were on the periphery of an instructional activity, compared with Navajo children (Ellis & Gauvain, 1992).

Most relevant to the present study are two studies (Correa-Chávez & Rogoff, 2009; Silva, Correa-Chávez, & Rogoff, in press) that examined attention to instruction directed to a sibling among children differing in family experience with Indigenous practices of the Americas and Western schooling (and related practices). In both studies, as well as the present one, children's attention and learning were examined while an adult showed their sibling how to make a toy, as they waited for their turn to construct a different toy.

Correa-Chávez and Rogoff (2009) found that Guatemalan Mayan children from families who engaged in many practices consistent with Mayan traditions and had little experience with Western schooling showed sustained attention to the instruction addressed to their sibling, whereas European-heritage U.S. children more often did not attend or briefly glanced at the nearby instruction. Mayan children from families with extensive experience with school and associated Western practices were intermediate between the other two backgrounds. When the children returned a week later and had the opportunity to make the toy their sibling had previously constructed, the children from Mayan traditional families needed less help than children in the other two groups.

Silva et al. (in press) found a similar pattern in two Mexican-heritage populations living in a largely European American region of California. Neither group was living in an Indigenous community, but one group likely had family experience with Indigenous practices of Mexico. U.S. Mexican-heritage children from families that were likely to have experience with Indigenous practices and limited experience with Western schooling showed more sustained attention to the instruction directed to their sibling and needed less

help to construct the same toy a week later, compared with U.S. Mexican-heritage children whose mothers had extensive experience with Western schooling.

The Present Study

The present study examines further whether the keen attention to surrounding activities that has been observed in Indigenous communities of the Americas is also common among children from U.S. immigrant families with likely experience with Indigenous practices of the Americas. It compares their attention and learning with that of U.S. Mexican-heritage children whose family experience includes greater involvement in Western schooling (and related practices).

Differences From the Prior Studies

The present study differs from the previous studies in focusing on U.S. immigrant families who are not living in Indigenous communities, but in which all mothers were born in Mexico and reside in a region of the U.S. that is heavily populated with recent Mexican immigrants: Los Angeles, which has the largest population of Mexican-heritage people of any city except Mexico City. (Correa-Chávez and Rogoff's [2009] study included Guatemalan Mayan families living in an Indigenous community and European American families; Silva et al. [in press] included U.S. Mexican-heritage families that were born in the United States or in Mexico and resided in a region of California that is primarily European American.)

Our study differs from much cultural research that treats culture as equivalent to *ethnicity* and assumes that people from the same national origins are homogeneous. Instead, the present study focuses on experience with cultural *practices*. We examine variations in cultural practices of people who have the same country of origin (Mexico) and the same place of current residence (Los Angeles) but who may differ in the experience of their families with American Indigenous and schooling practices. This study also extends the prior work by developing the logic for inferring experience with Indigenous practices of Mexico.

The Logic of Inferring Experience With Indigenous Practices of Mexico

Silva et al. (in press) suggested that in Mexican immigrant communities in the United States, limited schooling is likely to mean more experience with Indigenous practices. This is an important point, as it goes beyond the deficit model that treats limited schooling as simply a lack and suggests other cultural experience that may be available. In Correa-Chávez and Rogoff (2009), families with limited schooling made greater use of a number of Mayan traditional ways: For example, the Mayan language was more likely to be spoken in their homes, parents followed more traditional weaving and agricultural occupations, the families' homes were organized in communal compounds, and children were more involved in the families' productive work.

However, less information on involvement with Indigenous practices is available for U.S. Mexican-heritage families, in part because they often do not live in a community that is recognized or recognizes itself as being of Indigenous heritage. Not only have the families immigrated to the United States in recent years but also the families' communities of origin in Mexico are unlikely to claim Indigenous heritage (Urrieta, 2003). In the early 1900s in Mexico, an explicit goal of the school system (and other government agencies) was to "modernize" the nation by cutting ties with Indigenous languages and traditions (Bonfil Batalla, 1988; Stavenhagen, 1988). The Indigenous populations were largely rural and had limited access to schooling because of socioeconomic status, power dynamics, and unequal distribution of resources (López, 2007). Families in formerly Indigenous pueblos are more likely to maintain some Indigenous practices than populations that have migrated to cities and have thus had more access to schooling and other Western practices (Frye, 1996; Najafi, Mejía-Arauz, & Rogoff, 2008; Vigil, 1998).

Our reasoning in inferring that Mexican-immigrant California families with limited schooling are more likely to have experience with Indigenous practices than are Mexican-immigrant California families with extensive schooling is thus as follows: Migration to the United States has been more common from rural regions of Mexico from the states of Michoacán, Durango, Guanajuato, Nayarit, Zacatecas, Jalisco, Aguascalientes, and San Luis Potosí (Consejo Nacional de Población [National Population Council of Mexico], 2000). Rural populations of these regions often have had limited access to schooling and have a high probability of coming from communities that were considered Indigenous in former eras. Research has demonstrated continuing use of some Indigenous practices as well as limited schooling in Mexican communities that were considered Indigenous in former eras. For example, families in a town in west central Mexico that identified as Indigenous a generation ago were more likely to report engaging in practices that have Indigenous history than more schooled families living in a nearby city (Najafi et al., 2008). Similarly, towns in central Mexico where Nahuatl is now rarely spoken still engage in Indigenous cosmological traditions and practices that often involve children (Corona & Pérez, 2005; Lorente y Fernández, 2006).

The present study involved pairs of siblings from Mexican-immigrant U.S. families who varied in likely experience with Indigenous practices and Western schooling. We are using paucity of maternal schooling of immigrants from the specified regions of Mexico as a general indicator of likely experience with Indigenous practices. Our study examines the extent to which the children from the two backgrounds differ in one aspect of learning through intent community participation (i.e., keen attention), which Rogoff et al. (2003, 2007) posited to be especially common in Indigenous-heritage families of the Americas.

The central analysis was the attention of each of the siblings as they waited nearby while the other sibling was shown how to make a different toy than the one they made. In addition, to examine learning, a week later the children returned to pick up the toy they had made and were unexpectedly given the chance to make their sibling's toy.

Method

Participants

Thirty-eight children, ages 6–11, participated in the study (19 sibling pairs; 20 girls and 18 boys). Three of the children from families with extensive experience with schooling were not present

for Session 2. The children were recruited from a public elementary school serving almost exclusively Mexican-heritage children in Los Angeles—the U.S. city with the largest Mexican-heritage population (Saenz, Morales, & Filoteo, 2004).

Although there are many schools in Los Angeles serving Mexican-heritage children, there are few schools that include both of the backgrounds we were interested in. It was important to recruit children from the same school, given that children's approaches to learning are likely influenced by the approaches used in their schooling in addition to the approaches used in their homes (Mejía-Arauz, Roberts, & Rogoff, 2009). Hence our sample size was limited to the 19 sibling pairs of the appropriate ages and backgrounds who were available in this school. Our study focused on siblings not only to ensure familiarity of partners and similar family backgrounds, but also to justify having the children wait for each other (giving them the opportunity to observe).

Almost all of the school's students (93%) participate in a free or reduced-price lunch program, and 74% are English language learners. Seventeen of the 19 mothers were born in Mexico; we also included one sibling pair with a Salvadoran mother in each of the two backgrounds. (El Salvador has a similar history of Indigenous practices and access to schooling; the attentional approaches of these children were similar to the pattern of the children of Mexican mothers.)

All but three sibling pairs have visited their parents' country of birth, and all but four sibling pairs speak Spanish in the home, according to children's reports during the session. Parents provided family demographic information in responding to the permission slip sent home from school. It would have been desirable to have more background information on family histories, but recruitment of the children through their school did not permit that.

Twenty-two children (11 sibling pairs) came from families that we inferred were likely to have experience with Indigenous practices, with mothers averaging 7.5 grades of school (*pueblo background*, see Table 1). Of the 73% of pueblo mothers for whom we have information, 50% completed their schooling in Michoacán or Jalisco (two states with top migration rates), and the other 50% completed schooling in another Mexican state (Zacatecas, Yucatán, or Nayarit) or Mexico City.

Sixteen children (eight sibling pairs) came from families with extensive schooling experience, with mothers averaging 13.5 grades (12 to 16 grades; *hi-schooling background*). Of the 75% of hi-schooling mothers on whom we have information, 50% completed their schooling in Michoacán or Jalisco, 17% in another Mexican state (Baja California), and 33% in the United States.

Most of the fathers from the pueblo families were born in Mexico (eight; the other on whom we have birthplace information was born in neighboring Guatemala, which has a majority Indigenous population). Of the fathers from the hi-schooling families on whom we have birthplace information, three were born in Mexico and the other five were born in the United States.

Fathers' schooling was highly correlated with mothers' schooling ($r = .80$, for the 14 out of 19 families that reported fathers' schooling). The average was 8.1 grades for the pueblo fathers and 12.8 grades in the families with extensive experience of schooling (range: 6–9 and 8–16 grades, respectively). Of the 64% of pueblo fathers on whom we have information, 29% completed their schooling in Michoacán or Jalisco and the other 71% in another Mexican state. Of the 63% of hi-schooling fathers on whom we have information, 20% completed their schooling in Michoacán or Jalisco and the other 80% in the United States.

Common occupations for mothers in pueblo families included cook, factory worker, housekeeper, and housewife; for fathers, painter, gardener, mechanic, cook, and busboy. In hi-schooling families, common occupations included housewife, teacher's aid, analyst, and customer service for mothers, and driver, construction worker, police officer, and hotel worker for fathers.

The children's ages and age differences in the two backgrounds were similar. In both backgrounds, the older sibling averaged 9 years of age and the younger sibling averaged 8 (see Table 1).

Procedure

In Session 1, a female bilingual adult (the "Toy Lady") who was unaware of the hypothesis showed the older child how to construct a foam mouse that runs, while the younger sibling waited nearby and off to the side for the chance to make a different toy, an origami jumping frog (see Figure 1). All children were interested in making the toys. The videotaped procedure and the coding followed Correa-Chávez and Rogoff (2009).

The Toy Lady followed a script, informing the sibling pairs that they would each construct a different toy (so that the children would not think that paying attention to the instruction to their sibling would help them in making their own toy). She said, "I'm going to start with your sister/brother and she/he is going to make a mouse, and when she's/he's done, you can make a frog. While she/he does that, why don't you sit here?" The nonaddressed child sat at a side table and was given a distracter toy that was attractive and briefly interesting. The distracter toy is a "do-nothing machine," which is a wooden block with a crank that can be turned,

Table 1
Maternal Schooling, Gender, and Age of Focal Child

Maternal and child characteristics	Mexican-heritage pueblo (n = 22 children, 11 pairs)	Mexican-heritage hi-schooling (n = 16 children, 8 pairs)
Average maternal schooling	7.5 grades (range: 4–11)	13.5 grades (range: 12–16)
First nonaddressed child (younger, observing mouse construction)		
Gender	4 girls, 7 boys	4 girls, 4 boys
Average age of focal child	8.0 years (range: 6–10 years)	7.7 years (range: 5–9 years)
Second nonaddressed child (older, observing frog construction)		
Gender	7 girls, 4 boys	5 girls, 3 boys
Average age of focal child	9.7 years (range: 9–10 years)	9.4 years (range: 8–10 years)

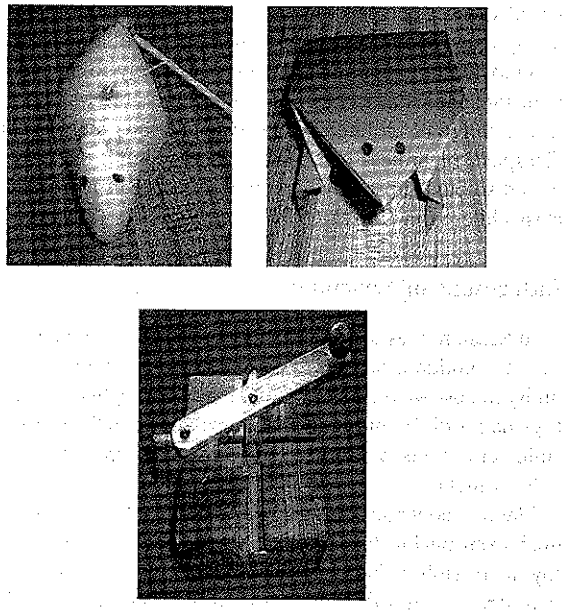

Figure 1. The toys that the children constructed (a foam mouse that runs on a spool with a rubber band and an origami jumping frog) and the distractor "do-nothing machine."

moving some pieces in grooves in the block (see Figure 1). During the session, the Toy Lady addressed only the child she was helping; if the other child attempted to become involved, the Toy Lady politely reminded the child that he or she would have a turn soon to make the other toy and avoided prolonging contact with the nonaddressed child.

When the first child was done, the Toy Lady had the children switch seats and showed the previously nonaddressed child how to make an origami jumping frog. The previously addressed child then waited for her/his sibling and played with the distracter toy. The children were told at the end of Session 1 that they would come back a week later to pick up the toys they had made, when "all of the kids have had a chance to make one." Session 1 took about 3 min for each child to construct the toys.

Session 2 examined children's learning a week later. All children had completed Session 1 before Session 2 was initiated, so that the children would not hear from others that they would get the chance to make their sibling's toy (to avoid encouraging their attention in Session 1). In addition, the Toy Lady was not informed of the upcoming Session 2 until after Session 1 was completed, to ensure that she would not encourage the nonaddressed child to pay attention in Session 1.

When the children returned for Session 2, they were called in one at a time; the Toy Lady told the child that she had some materials left and asked if they would like to construct the toy that their sibling had made previously. The children were all interested in making a toy like their sibling had made. The Toy Lady told the child, "Here are all the materials that you will need to make a frog/mouse. I have a project to do right now, so you can get started and let me know if you need help." She then sat back at a little distance and started reading, seemingly absorbed in her work, to justify not instructing the child and not responding quickly if the child asked for assistance.

The Toy Lady followed a script specifying her help for each step in building the toy so that we could identify the extent of help needed as an indicator of learning. If the child asked for help, the Toy Lady first paused (finishing her work); if the child still indicated a need for help, she provided a small hint ("start with the body"), then she provided a bigger hint ("fold the corners together"), then showed a bit of that step, and finally completed the step, depending on how much help the child needed for each step in the toy construction. At the end of each step she returned to her work. Session 2 lasted about 7 min for each child.

Coding

Session 1. Our primary interest was the attention of the nonaddressed child to the construction activity of their sibling with the Toy Lady. A blind coder coded the attention of each nonaddressed child in 5-s segments, in one of the following categories: sustained attention, brief glances, or no attention. Coding was based on the gaze, posture, and activity of the child. Our analyses were based on the totals for each type of attention across Session 1.

Sustained attention was coded if the child was concentrating and devoting attention to the sibling's construction activity for the majority of the 5-s time segment. Beyond just watching, the child's posture was alert and eyes often appeared glued to the construction process.

Brief glances meant that there was sporadic attention to the toy construction process; most of the segment involved attention to something else or no active attention.

Not attending to the construction meant that the child did not attend at all to the construction of the toy during the 5-s segment.

Session 2. Session 2 was coded by a different bilingual coder who was unaware that Session 1 had taken place and was unaware of the hypotheses. Each step in making the toy was assigned points on the basis of how much assistance the child needed to complete the step. Zero was no help, 1 was a small hint, 2 was a bigger hint, 3 if the child was shown a bit of the step, and 4 meant the step was done by the Toy Lady. Our analyses were based on the total score for Session 2: The toy mouse consisted of four steps, with a possible total of 16 points; the origami frog had five steps, with a total possible score of 20 points.

Reliability. Another blind bilingual coder coded one third of the data for interrater reliability. Pearson correlations were as follows: sustained attention (r = .99), glances (r = .98), no attention (r = .99), help needed in Session 2 (r = .99).

Results

First, results are presented regarding cultural differences in amount of sustained attention, glances, and no attention during Session 1 (third party attention). Next, we present the analysis of children's learning in Session 2, measured by the amount of help that was needed to construct the toy they had previously had the opportunity to observe. Finally, we consider the relationship between attention in Session 1 and evidence of learning in Session 2. The analyses follow those of Correa-Chávez and Rogoff (2009) and Silva et al. (in press).

Planned contrasts were used to compare the patterns for the children from the pueblo background with those of the children from the hi-schooling background. Planned contrasts are appropri-

ate to provide a conservative test of directional hypotheses. Because the patterns were the same for the children who were nonaddressed during the mouse construction (the younger children) and the children who were nonaddressed during the frog construction (the older children), our analyses focus on the two groups of children combined. (Note that it is not appropriate to compare across the two children/two toys, as the study was not designed to counterbalance these. Restrictions in the number of sibling pairs available in the same school precluded increasing the sample size to be able to counterbalance children's age, order of constructing toys, and which toy was made.)

No significant gender differences were found across the sample as a whole or within background groups. This is in accord with the results of Silva et al. (in press) with Mexican-heritage children, but unlike the results of Correa-Chávez and Rogoff (2009), who found a main effect for gender in their study with Guatemalan Mayan and European American children, with girls showing more sustained attention than boys and boys more often not attending than girls. Rogoff et al. (1993) also found somewhat greater attentiveness among girls than boys in the same Mayan community studied by Correa-Chávez and Rogoff (2009) and a different middle-class European American community, though not within a middle-class Turkish community or a tribal community in India.

Third Party Attention

The analyses of Session 1 employ proportion of the time segments, because of differences in how long individual children took making the toys. (However, there were not differences across the two backgrounds in the length of the sessions.)

The U.S. Mexican-heritage pueblo children spent more of the Session 1 time segments paying sustained attention to the instruction addressed to their sibling than did the U.S. Mexican-heritage hi-schooling children, in 43% versus 25% of time segments, $F(1, 36) = 4.5$, $p = .02$. (See Table 2 for means and standard deviations.) Confidence intervals for one standard deviation indicated that children from pueblo backgrounds showed sustained attention for 30.2% to 55.5% of the time compared with children from hi-schooling backgrounds, who showed sustained attention for 14.5% to 40% of the time (effect sizes of Cohen's $d = 0.72$ and $r = .34$).[1]

In contrast, the U.S. Mexican-heritage hi-schooling children spent more time segments not attending to the instruction addressed to their sibling than the U.S. Mexican-heritage pueblo children, in 60% versus 46% of the time segments, $F(1, 36) = 3.8$, $p = .03$. Confidence intervals for one standard deviation indicated that children from pueblo backgrounds paid no attention for 34.8% to 56.8% of the time, whereas children from hi-schooling backgrounds paid no attention for 50.4% to 69.6% of the time (effect sizes of Cohen's $d = -0.66$ and $r = -.31$).

No significant differences were found in the percentage of brief glances. Brief glances were not very common in either background (15% and 11% of the time segments, respectively).

We also examined the nonaddressed children's straining to get a closer view of instruction, their attempts to disrupt the construction or divert attention to themselves, and their attempts to join the construction activity. However, these were extremely rare and did not differ across the two backgrounds. Unlike our study, Correa-Chávez and Rogoff (2009) found some attempts to collaborate but no differences across their three communities, and Silva et al. (in press) found that straining and attempts to collaborate were more common among children from families likely to have experience with Indigenous practices. As in our study, the Mayan and Mexican immigrant children in the two previous studies also rarely disrupted, regardless of schooling background; the only children who disrupted substantially were the European American middle-class children in Correa-Chávez and Rogoff's (2009) study.

Indications of Learning

In Session 2, as a measure of learning, we compared how much help the children needed to complete the toy they had an opportunity to observe their sibling making the week before. Because the toys had a different number of steps and therefore different possible help scores, we turned the scores into percentage of possible help available.

Planned contrasts showed that the U.S. Mexican-heritage children from pueblo backgrounds needed less help to construct the toy their sibling had previously made (32% of possible help) compared with the U.S. Mexican-heritage children from hi-schooling backgrounds (43% of possible help), $F(1, 33) = 2.9$, $p = .05$. (See Table 3.) Confidence intervals for one standard deviation indicated that children from pueblo backgrounds needed 23.8% to 40.6% of possible help and children from hi-schooling backgrounds needed 33.5% to 51.9% of possible help (effect sizes of Cohen's $d = -0.61$ and $r = -.29$).

Relation Between Attention in Session 1 and Indications of Learning From Session 2

Like the previous studies of third party attention, we expected a negative correlation between amount of sustained attention in Session 1 and amount of help needed to construct the toy in Session 2 the following week. However, level of sustained attention in Session 1 was not significantly correlated with amount of help needed in Session 2 ($r = -.17$), although the correlation went in the same direction as in the previous studies (Correa-Chávez & Rogoff, 2009; Silva et al., in press).

Discussion

As hypothesized, we found that U.S. Mexican-heritage pueblo children were more attentive to their sibling's activities and learned more about the activity compared with U.S. Mexican-heritage children from hi-schooling families. We link these attention and learning practices to ones that have been reported in Indigenous communities of Mexico and Central America.

Our findings are consistent with the two prior studies of cultural differences in third party attention (Correa-Chávez & Rogoff, 2009; Silva et al., in press), employing a sample that differs from the prior two studies: first-generation Mexican immigrant families living in a city with many other recent Mexican immigrants. The characteristics of our sample mirror the immigrant population from rural Mexico, which is showing the greatest growth in the United States (Kochhar, Suro, & Tafoya, in Garcia & Gonzalez, 2006).

[1] Given the small sample size, effect sizes may be a bit inflated.

Table 2
Mean Percentage (and Standard Deviations) of Time Segments in Which Children Attended to the Instruction Directed to Their Sibling

Form of attention	Mexican-heritage pueblo *M* (*SD*)	Mexican-heritage hi-schooling *M* (*SD*)
All siblings together		
Sustained attention	42.9 (28.5)*	25.2 (20.1)*
Brief glancing	11.4 (8.1)	14.8 (7.6)
No attention	45.8 (24.8)*	60.0 (18.0)*
First nonaddressed sibling (younger, observing mouse construction)		
Sustained attention	44.8 (25.9)	32.3 (19.7)
Brief glancing	11.5 (7.0)	13.5 (6.1)
No attention	45.8 (24.2)	54.2 (16.8)
Second nonaddressed sibling (older, observing frog construction)		
Sustained attention	41.6 (33.3)	18.3 (17.7)
Brief glancing	11.5 (9.6)	15.6 (9.0)
No attention	44.8 (27.4)	66.0 (17.0)

* $p < .05$.

Together with ethnographic work done in Indigenous communities of the Americas and comparative studies done with Mayan children living in a Mayan community and with Mexican immigrant children living in a European American region, our findings suggest that many children whose family histories involve participation in Indigenous practices of the Americas may show keen attention to events surrounding them, even when living in another nation. Our findings thus lend support to the generality of learning through intent community participation among widely different Indigenous-heritage populations of the Americas, as postulated by Rogoff et al. (2003, 2007). In future work, it will be valuable to have more direct evidence of experience with Indigenous practices than was feasible in this study.

Whether keen attention to surrounding events is common in populations in other parts of the world is also an important empirical question. Ethnographic research in many parts of the world has noted the importance of keen observation, though generally without distinguishing whether the children's attention was to an event in which they were directly addressed or one in which they were not addressed. (An exception is Ward's 1971 study of African American children as overhearers.) We avoid generalizing beyond Indigenous-heritage populations of the Americas in an effort not to jump to conclusions, but we would not be surprised if keen attention to surrounding events were an important part of learning in many communities around the world.

Another key empirical question is how often and under what conditions children from Indigenous-heritage backgrounds can maintain an emphasis on learning through keen observation to surrounding events at the same time as they learn to fit with the narrower, adult-managed attentional approach often used in Western schooling and related settings. Prior research suggests that schooling practices often replace other cultural practices among people who have extensive experience in this cultural institution. However, we are convinced that people can learn to do things more than one way and that this is preferable both for individual success and for the resources for learning available in schools and other cultural settings.

Increased understanding of children's repertoires of attentional practices, including paying close attention to ongoing events directed to others, would help schools to better serve children from these and related backgrounds. In traditionally structured classrooms, teachers may accuse children of cheating for engaging in sustained third party attention.

Some children may even be improperly tracked or put in special education classrooms as a result of differing attentional approaches (Gay, 2001). If teachers assumed that children attending to the activities of others are not attending to their own work, they would often be mistaken (Correa-Chávez et al., 2005)—but their mistaken assumption might lead them to infer attentional problems in these children, rather than seeing that the children have attentional resources.

Schools could make greater use of children's ability to learn by observing others, for the benefit of all. Correa-Chávez and Rogoff (2009) showed that when European-heritage children attended to their siblings' activity, they, like the Mayan children, learned from their observations. Some research has shown that reading and

Table 3
Mean Percentage (and Standard Deviations) of Help That Children Needed to Construct the Toy in Session 2

Siblings combined and separately	Mexican-heritage pueblo *M* (*SD*)	Mexican-heritage hi-schooling *M* (*SD*)
All siblings together	32.2 (19.0)*	42.7 (15.2)*
First nonaddressed sibling (younger, making mouse)	27.5 (18.0)	33.4 (11.7)
Second nonaddressed sibling (older, making frog)	38.8 (18.2)	50.7 (13.7)

* $p < .05$.

writing scores increase on pre/post tests when observation is an important component of the writing curriculum, compared with engaging solely in individual exercises (Couzijn, 1999). Similarly, when learning to write, kindergarteners who were allowed to attend to their neighbors developed more elaborate stories and demonstrated their knowledge by spontaneously providing other children with information (Larson, 1999).

Innovative schools have shown that it is possible to structure schools in ways in which children build on each other's work as well as that of the teacher (e.g., Rogoff, Goodman Turkanis, & Bartlett, 2001). We believe all children would benefit from being allowed to learn by attending to others' activities. However, inclusion of opportunities to observe may be especially beneficial for schools to build on the skills that many children—such as those from rural Mexican families without a long history of schooling—may bring with them into the classroom.

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