

Mexican-Heritage Children's Attention and Learning From Interactions Directed to Others

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The study builds on ethnographic research noting an emphasis in many Indigenous communities of the Americas on learning through keen observation of and participation in ongoing community activities. Forty-four U.S. Mexican-heritage 5- to 11-year-old children whose families likely have experience with Indigenous ways more frequently attended to and learned from a toy construction activity that was directed to another child, compared to 36 U.S. Mexican-heritage children whose mothers had extensive experience with Western school (and related European American practices). The results support the idea that children whose family history emanates from Indigenous communities of México may be especially oriented to learning by observing ongoing events, and that this method of learning may be less commonly used by children whose families have extensive experience with schooling (and related Western practices).

This study investigates cultural variation in children's attentiveness to a nearby toy construction demonstration that was not directed to them. We examined this "third-party attention" and resultant learning of U.S. Mexican-heritage children whose families likely varied in experience with Indigenous practices and with Western schooling (and related practices).

Third-party attention can provide children with important information regarding, for example, their community's cultural values and how to interpret ambiguous situations (Lewis & Feiring, 1981; Mitchell-Kernan & Kernan, 1975; Repacholi & Meltzoff, 2007). They can learn new words and the appropriate use of language through listening in on conversations not directed to them (Akhtar, 2005; Barton & Tomasello, 1991; Ochs, 1988; Oshima-Takane, Goodz, & Deverensky, 1996; Schieffelin, 1991; Ward, 1971).

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Although keen observation of events directed to others may be helpful to everyone, it may be more common among people with experience of Indigenous practices of the Americas than among people whose experience heavily involves Western schooling and related practices. Ethnographic research in Indigenous communities of the Americas shows that children are integrated in a wide range of their community's activities and encouraged to keenly observe the events around them (Cancian, 1964; Corona & Pérez, 2005; de Haan, 1999; de Leon, 2000; Gaskins, 2000; Greenfield, 2004; Modiano, 1973; Morelli, Rogoff, & Angelillo, 2003; Whiting & Edwards, 1988). For example, Chamoux (1992) reported that Indigenous children in Central Mexico gain a great deal of knowledge through keen observation of ongoing events and understanding of Indigenous explanatory theory by listening in on conversations among adults.

The cultural learning tradition in which children observe and pitch in to ongoing events of importance in their community has been labeled "learning through *intent community participation*" (Rogoff, Paradise, Mejía Arauz, Correa-Chávez, & Angelillo, 2003; Rogoff et al., 2007). As "legitimate peripheral participants" in community events (Lave & Wenger, 1991), children can observe and contribute when they are ready. Indeed, they may not only be given the opportunity to learn by observing ongoing events but they may be expected to spontaneously

do so throughout their day (Chavajay, 1993; Philips, 1972).

Learning through intent community participation may be present everywhere but less common in communities in which children are seldom included in a wide range of community activities. In middle-class communities where schooling is prevalent, children are commonly segregated from the range of activities of their communities. Much of their days are spent in school and they are otherwise restricted from the work and mature social activities of their communities (LeVine & White, 1992; Morelli et al., 2003; Rogoff, 2003; Zelizer, 1992). As such, they have limited opportunities to learn by watching or listening to events that are not directed to them. Instead, adult-child interactions often involve child-centered lessons directed to children, utilizing formats common in Western schooling (Harkness, 1977; Heath, 1983; Martini, 1996; Ochs & Schieffelin, 1984; Rogoff, Mistry, Göncü, & Mosier, 1993). Frequently, middle-class parents attempt to manage their children's attention, unlike the expectation in some Indigenous-heritage communities where children are expected to attend keenly on their own (Chavajay, 1993; Dixon, LeVine, Richman, & Brazelton, 1984; Rogoff et al., 1993).

Systematic Cultural Comparisons of Observation and Attention

Although ethnographic studies often have implied a contrast with Western middle-class ways of teaching and learning, systematic cultural comparisons of patterns of attention and observation are rare. One comparative study examined attention when children were directly instructed and found that U.S. Mexican-heritage children from Indigenous regions of México (whose mothers had only basic schooling) more frequently observed an origami demonstration and their peers' efforts to fold the figures, without pressing for more information, compared with both European heritage and Mexican-heritage U.S. children whose mothers had extensive school experience (Mejía Arauz, Rogoff, & Paradise, 2005). The authors related this difference to community emphasis on learning through observation versus experience with the lesson formats of schooling and other Western practices.

Several studies have found cultural differences in simultaneity of attention to multiple surrounding events. Children whose families came to the United States from Indigenous regions of México

often skillfully attended to several events simultaneously, without interrupting their attention to one event as they attended to another. They did so more often than European American middle-class children and U.S. Mexican-heritage children whose mothers had extensive school experience, who more often attended to one event at a time, interrupting each in rapid alternation (Correa-Chávez, Rogoff, & Mejía Arauz, 2005). Similarly, Guatemalan Maya toddlers and their mothers more often simultaneously attended to several events at once compared to middle-class European heritage toddlers and mothers, who tended to alternate their attention between events (Chavajay & Rogoff, 1999; Rogoff et al., 1993). These authors speculated that attending simultaneously to several events would facilitate learning by observing, in that it would allow monitoring of possibly important surrounding events without interrupting the activity at hand.

To our knowledge only two studies have systematically examined cultural variation in children's attention to surrounding events that were *not* directed to them. Spontaneously attending to surrounding events can be key to learning in communities where children have opportunities to be present during the range of community interactions. The two studies, with children living in two Indigenous communities (Navajo and Guatemalan Maya), found differences in children's attention to third-party interactions that may relate to experience with Indigenous ways as well as to experience with Western schooling.

In one study, children were on the periphery as one child taught a game to another. Middle-class European American children were more often off task and distracted than Navajo children, who more often maintained attention to the game and the instruction (Ellis & Gauvain, 1992).

In the other study, children were present when an adult showed their sibling how to make a toy. Guatemalan Maya children from families with many traditional Maya practices (and little or no Western schooling) attended more keenly to the interaction that was directed to their sibling than did middle-class European American children and Guatemalan Maya children whose mothers had extensive experience with Western schooling (Correa-Chávez & Rogoff, 2009). The Maya children from more traditional families also demonstrated greater learning—they needed less assistance when they unexpectedly had the chance to make the toy they had had the opportunity to observe being made a week earlier.

Both studies are consistent with ethnographic work showing that learning through keen observation to events that involve others is important in Indigenous communities of the Americas. Both of the prior studies examined Indigenous children's attention in communities that are structured as and identify as Indigenous (Navajo in the United States and Mayan in Guatemala).

The present study examined the attention of children whose families were *not* living in Indigenous communities but whose families are likely to have experience with practices emanating from Indigenous communities of prior generations in México, although they currently live in a predominantly European American setting, with a distinct structure of learning opportunities. We examined whether similar patterns of attention would be seen among children in families that had emigrated to the United States from rural regions of México that formerly had extensive Indigenous populations and who were likely to have experience with some Indigenous practices, compared with children from families from the same region of México but with extensive experience in Western schooling and related practices.

Thus, although much cultural research treats national origins as homogeneous, our study focuses on cultural practices that vary within two groups with the same national origin (Mexican) and the same residence (California). Our focus is on experience with cultural ways, rather than on ethnic identity *per se*.

The present study also differs from the prior two studies in extending to the practices of distinct Indigenous groups—those of West Central México rather than of the United States and Guatemala. (The Indigenous population of the region of México from which most of our sample emigrated has been largely P'urepecha in addition to a few smaller groups—all of which are culturally and linguistically very distinct from both Navajo and Mayan.)

The practices of Indigenous communities and of Western schooling appear to be widespread features of constellations of cultural practices that are important for many U.S. immigrant children, as well as U.S. and Canadian Native children and children in many communities of Mexico and Central America. However, the generality across these national and cultural groups needs to be investigated, not assumed. (We limit our speculations regarding generality of the patterns to North and Central America in the interest of caution, given that we have less knowledge of the extent to which the pattern appears on other continents.)

Identifying Experience With Indigenous Practices of the Americas and Western Schooling

A large portion of the Mexican immigrant population in central California has come from rural areas in México that have been considered Indigenous in the recent past, such as in Michoacán. People of some rural *pueblos* in this region of México consider themselves to be Indigenous. Many others consider themselves *mestizos* (mixed race), but in earlier generations many of their ancestors lived as Indigenous people in *pueblos* that were often organized according to recognizably Indigenous practices (Bonfil Batalla, 1996; Frye, 1996; Vigil, 1998). These *pueblos* have had little access to Western schooling. Therefore, we presume that experience with Indigenous practices is likely among families that have immigrated to the United States from such regions of México if they have limited schooling.

Our presumption of historical connection with Indigenous practices is supported by a study in a West Central Mexican town that was considered Indigenous a generation ago. Residents of this town have little involvement in Western schooling and participate in some Indigenous practices that can be traced back centuries; highly schooled residents of nearby Guadalajara who have lived in the city for only a generation engage in Indigenous practices in an attenuated form, whereas families with generations of extensive schooling and residence in Guadalajara do not engage in these Indigenous heritage practices (Najafi, Mejía Arauz, & Rogoff, 2007).

Similarly, in a Nahuatl town in Central México, people usually do not identify themselves as Indigenous (except to claim or request something from the government). They may simply refer to themselves as "Mexicans," although they refer to people in nearby towns as Indigenous. However, they continue to pass down key traditional Mesoamerican Indigenous practices and beliefs across generations, including stories, moral values, and cosmological concepts (Lorente y Fernández, 2006; personal communication, June 2007).

Luis Urrieta (2003) reflected on the Indigenous identity of people from the West Central Mexican region from which many California immigrant families come. His father's *pueblo* in Michoacán had once been "a culturally P'urhépecha village. . . . But due to the proximity of the *hacienda* there were many cultural shifts that diluted the strength of Indigenous identity" (p. 155). In his youth, Urrieta found references to being Indian confusing:

I heard older relatives in Los Angeles and Michoacán saying, "When we were Indians," while at other times, "When we were more Indian." This was also made more confusing when referring to people of nearby *pueblos* in the Pátzcuaro region as being *mas indios*, or "more Indian," as if being "Indian" was something that could be diluted, lessened, or changed. (p. 149)

Indigenous identity underwent some changes around the time of the Mexican Revolution in the early 1900s, when many Indigenous *pueblos* transformed from Indian to *campesino*, in a process promoted in part by schooling (Urrieta, 2003). Only recently has extensive schooling become widespread, extending from the United States and Europe to Indigenous communities in Mesoamerica (Meyer, Ramirez, & Soysal, 1992). One of the goals of mass schooling in México was to "modernize" the mostly Indigenous countryside, and to suppress Indigenous ways (Bonfil Batalla, 1988; Stavenhagen, 1988).

With experience in particular cultural institutions, such as school, people may adopt approaches resembling practices associated with those institutions in other parts of daily life (Gutiérrez & Rogoff, 2003). Mothers' experience with schooling in such communities often relates to their use of teaching approaches that coincide with teaching models often used in Western schooling (Chavajay, 2006; Chavajay & Rogoff, 2002; Dunn, Griggs, & Price, 1993; Laosa, 1980, 1982; Moreno, 2000; Rogoff et al., 1993). Mexican-heritage U.S. children whose mothers had completed at least 12 grades observed an Origami demonstration in ways that resembled those of U.S. European-heritage children whose mothers had also completed at least 12 grades. Both backgrounds relied less on observation as a source of information and less often attended simultaneously to ongoing events compared with Mexican-heritage U.S. children whose mothers averaged six grades of school (Correa-Chávez et al., 2005; Mejía Arauz et al., 2005).

Although we argue that experiences with school practices provide familiarity with particular ways of teaching and learning (along with LeVine, LeVine, & Schnell, 2001), we do not regard schooling as a solitary "active ingredient" in community differences. Rather we regard the extent of experience with Western schooling in Indigenous-heritage communities of México and Guatemala as part of a constellation of associated characteristics—such as migration, urban experience, occupations requiring school credentials, few children in a family, and limited involvement of extended family—that may

also relate to teaching and learning approaches (Chavajay & Rogoff, 2002; Rogoff & Angelillo, 2002; Rogoff, Correa-Chávez, & Navichoc Cotuc, 2005; Rogoff et al., 2007). Thus, family experience with Western schooling may contribute, along with many associated practices, to community practices surrounding learning.

The Present Study

Our primary question was whether U.S. Mexican-heritage children whose families likely had greater familiarity with Indigenous practices (and little experience of Western schooling) would use more sustained attention while their sibling is shown how to construct a toy, compared with U.S. Mexican-heritage children whose mothers had extensive experience with school. In addition, we examined the children's learning, by coding the ease with which the children of the two backgrounds constructed the toy their sibling had been shown how to make, when they were given an unexpected opportunity to make it a week later. We also examined whether the children's extent of sustained attention to the third-party interaction in the first session was related to their subsequent ease of constructing the toy that they had had the opportunity to observe.

The current study also examined differences in children's attempts to direct attention toward themselves when they were not included in the interaction. Children who are accustomed to being directly addressed may disrupt interactions that are addressed to others by calling attention to themselves. European American middle-class children more often interrupted and sought attention when adults were occupied than did Efe or Maya children (Correa-Chávez & Rogoff, 2009; Rogoff et al., 1993; Verhoef, Morelli, & Anderson, 1999). In ethnographic reports, children in several Indigenous Mexican communities rarely tried to garner attention to themselves (de Haan, 1999; Gaskins, 2000; Paradise, 1996). Both Guatemalan Mayan children from traditional families and those whose families had extensive experience with Western schooling seldom tried to divert attention to themselves when they were not addressed (Correa-Chávez & Rogoff, 2009).

Method

Participants and Their Communities

Eighty children between the ages of 5 and 11 years old participated in the study (see Table 1

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

	Pueblo Basic Schooling (<i>n</i> = 22 pairs)	Mexican Hi Schooling (<i>n</i> = 18 pairs)
Average maternal schooling	6.4 grades (range = 0-9)	12.6 grades (range = 12-16)
First nonaddressed child (observing mouse construction)		
Gender	7 girls, 15 boys	11 girls, 7 boys
Average age of focal child	6.8 years (range = 5-10 years)	6.4 years (range = 5-9 years)
Second nonaddressed child (observing frog construction)		
Gender	9 girls, 13 boys	11 girls, 7 boys
Average age of focal child	9.0 years (range = 6-11 years)	9.1 years (range = 7-10 years)

for ages, gender, and grades in school for children). Children were Mexican-heritage sibling pairs recruited through two public elementary schools in neighboring California towns where immigrant populations from México have often come from rural areas of the state of Michoacán, attracted by the agricultural industry. Siblings were used to ensure that the children working together had similar family schooling histories, to provide a familiar partner, and to provide a reasonable excuse for making the children "wait" for another child.

In the first of the two sessions, participants were 44 children from "Pueblo Basic Schooling" families that likely had familiarity with Indigenous practices from the pueblos of México and had little experience with Western schooling (average maternal grade = 6, range = 0-9 grades) and 36 children from "Mexican Hi Schooling" families (average maternal grade = 13, range = 12-16 grades). In the second session, 37 of the children whose families were from the Pueblo Basic Schooling background and 35 of the children from Mexican Hi Schooling families participated. (Some children who participated in the first session were not able to participate in the second session 1 week later due to absence from school.)

Maternal experience with school was divided at high school completion because completion of high school is an important milestone in both México and the United States that can often lead to different occupations and income, and often accompanies differences in family life such as fewer children and more school-like interactions of parents with children. Maternal schooling experience was thus a proxy for a constellation of cultural practices that seem to be indicative of Indigenous experience for families who come from rural areas of México to California for agricultural work. The labels "Pueblo Basic Schooling" and "Mexican High Schooling" represent not only differences in extent of the chil-

dren's mothers' experience in Western schooling but also many other related features such as their fathers' and grandparents' schooling, parental occupations, and family size.

Of the 44 children from Pueblo Basic Schooling families, most (32) were born in the United States, 6 were born in México, and parents declined to give birthplace information of 6 of the children. Almost all (21) of the 22 Pueblo Basic Schooling mothers were born in México and 1 was born in California; almost all (20) had attended school in México, 1 had attended school in both México and the United States, and 1 had not attended school. Of the fathers, almost all (20) were born in México and 2 of their birthplaces were not reported; they averaged 7 grades of schooling. In both backgrounds, mothers' and fathers' schooling was highly correlated, $r = .66$, $p < .01$. Grandparents' schooling was limited to primary grades: Most (65%) had completed 0-3 grades, and some (23%) had completed 4-6 grades; information was not available on the remainder. The Pueblo Basic Schooling families averaged 3.3 children.

Of the 36 children from Mexican Hi Schooling families, almost all (33) were born in the United States, 1 was born in México, and parents declined to give information about the birthplace of 2 children. Half (9) of the 18 Mexican Hi Schooling mothers were born in the United States and half (9) were born in México; almost all (16) had attended school in the United States, 1 had attended school in México, and 1 had attended school in both countries. Of the fathers, about half (7) were born in the United States, 8 were born in México, and 3 of their birthplaces were not reported; they averaged 13 grades of schooling. Grandparents' schooling ranged broadly: 0-3 grades completed (33%), 4-6 grades (11%), 7-9 grades (6%), 10-11 grades (11%), and 12 or more grades (18%). The Mexican Hi Schooling families averaged 2.4 children.

Procedure

One of two bilingual female research assistants ("Toy Ladies") who were blind to the hypotheses and goals of the study worked with the siblings in a vacant section of an elementary school classroom. Both Toy Ladies worked with children from both groups and were not informed of the background of the children with whom they were working. Comparison of sessions from the two Toy Ladies ensured that differences between Mexican Hi Schooling and Pueblo Basic Schooling groups were not due to the different Toy Ladies who worked in different schools.

The procedure was based on Correa-Chávez and Rogoff's (2009) study with Mayan and European American children, for comparability across the different cultural communities. In Session 1, each sibling had a chance to make a toy; our interest was in each child's attention when they were not addressed. The first nonaddressed child was always the younger child (waiting while the sibling made a toy mouse that runs via a spool and rubber band) and the second nonaddressed child was always the elder (waiting while the sibling folded an Origami paper frog that jumps). Thus, the children's age, order of making a toy, and which toy they had a chance to observe being constructed were purposely not counterbalanced. Hence we do not compare age, order, or toy differences. We note, however, that the pattern of the younger child who observed the mouse construction first was similar to that of the older child who observed the frog construction second. In Session 2, the children came back individually 1 week later to pick up the toys they had made, and were unexpectedly invited to construct the toy that their sibling made the week before.

Session 1: Observing sibling's toy construction. The Toy Lady led the sibling pairs into a child-friendly classroom with two tables. The main table had a chair for the Toy Lady and one for the child constructing the toy. A side table, 16 in. away, had a chair for the nonaddressed sibling to sit in while "waiting." The nonaddressed child's chair was parallel to and slightly forward of the sibling's chair, to give a cue that the nonaddressed child was not expected to participate in the activity of their sibling. The position required the nonaddressed child to turn to watch, which also meant that coders could clearly see when the child was attending to the construction activity (see Figure 1). All interactions were videotaped.



Figure 1. Setup for Session 1.

Note. The Toy Lady and a child make the mouse at the rectangular table while the nonaddressed sibling sits at the round table with the distracter.

The session was designed for the nonaddressed child to know that they would make a different toy than their sibling and thus would be unlikely to think that attending to their sibling's mouse construction would help for making their own toy. The Toy Lady greeted the children and introduced herself and told them that she was going to help them make a toy. She led the younger child to wait in the seat at the side table saying, "I'm going to start with your big brother/sister, and he/she is going to make a mouse, and when he/she's done you can make a frog" (referring to the models of each toy in view on the main table). The Toy Lady handed the nonaddressed sibling the distracter toy saying, "While he/she does that, how about you sit here and you can play with this." The distracter toy was a "do-nothing" machine—a wooden block with a crank to turn. This toy was chosen because it does not require much focused attention to manipulate it and it is attractive but is not interesting for long.

After settling the nonaddressed child, the Toy Lady then sat with the older sibling at the main table and put two sets of the materials used to make the mouse toy on the table (one set for the child and one for herself). She addressed only the child making the mouse: "I'm going to be making one and you are going to be making one. You can watch me and do what I do."

After the mouse was completed, the Toy Lady asked the siblings to switch seats. The child who constructed the mouse now sat at the nearby table and was given the distracter toy and told, "You can play with this while you wait if you want." The previously nonaddressed child sat at the table with

the Toy Lady and constructed an origami jumping frog. The Toy Lady said, "Okay (addressed child), now it's your turn." The Toy Lady followed a script similar to the one used while constructing the mouse.

At the end of the session, the Toy Lady had the children put their names on a bag for her to keep their toys in for a week (to prevent other children in the school from studying them and to justify Session 2). She told the children "We are going to keep your toys for a few days until all of the kids have a chance to make one. You can come back next week to pick them up." Session 1 lasted about 8 min in total for both children to construct their toy.

The Toy Lady followed a script in all interactions to ensure that she taught and interacted with all children in a similar way. The script limited the Toy Lady's extent of explanation of steps in the toy construction (avoiding explicit verbal instructions and instead saying, e.g., "put this through here") to ensure that the nonaddressed child would need to watch the toy construction in order to learn from it.

The script also provided the Toy Lady with guidelines on how to react if the nonaddressed sibling sought involvement and/or attempted to enter into the construction of the toy: She gently discouraged the nonaddressed sibling's participation by reminding the child that she/he would soon have the chance to make the origami frog. The script also included instructions for how to interact if the nonaddressed child tried to disrupt the construction activity. For example, if the nonaddressed child began to talk about something extraneous such as an upcoming vacation, the Toy Lady would either ignore the child or say, "oh that's nice" and turn back to the child she was working with and begin the next step, making it clear that she was only addressing the child at the table.

The Toy Lady was not told about the second session until she had completed Session 1 with all of the children, to further limit the possibility of her encouraging attention from the nonaddressed child. The Toy Lady was not told about our interest in the nonaddressed child's attention (or about our interest in the children's backgrounds). She was informed that we were interested in how children learn to make toys and what the nonaddressed children do naturally when waiting for their turn to make a toy.

A procedural check was conducted on 25% of the Session 1 data in order to ensure that the Toy Lady was consistent in her treatment of the nonaddressed child and her adherence to the script. Most important, the Toy Ladies did not address the non-

addressed child or encourage that child to attend to the toy construction in any sessions; they interacted almost exclusively with the child constructing the toy.

Session 2: Nonaddressed siblings' learning. Each child returned to the classroom individually, approximately 7 days later, to pick up the toy that they made a week before. The Toy Lady unexpectedly gave them the opportunity to make the toy that their sibling had made the previous week, saying, "I have some extra material and I thought that you might like to make a [frog/mouse] this time."

The Toy Lady put all of the materials that the child needed on the table and said, "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." The Toy Lady then picked up a notebook and started writing, seemingly absorbed in her project, so that the child would not expect her to give instructions and so that the Toy Lady would have reason not to respond immediately if the child requested help (see Figure 2). The Toy Lady sat at the same table as the child but with her chair slightly pushed away from the table, working on her project and sitting back in her chair, to create distance from the child and the toy construction.

To measure learning, we examined the extent of help needed by the child to construct the toy, based on a set of graduated, scripted hints. (A similar series of hints was specified for each step in the mouse and the frog.) As she worked on her project, the Toy Lady inconspicuously monitored the progress of the child and at the beginning of each step of the toy construction, the Toy Lady waited approximately 5 s for the child to attempt to get started on



Figure 2. Setup for Session 2.

Note. The Toy Lady acts busy at work on her project while the child attempts to construct the mouse toy.

the step. After the 5 s, if the child did not spontaneously complete the step, or if they asked for help (either verbally or nonverbally) or began to do the step incorrectly, the Toy Lady started off giving them a small hint specifying what step to do (e.g., "The body is first") or what material to begin with (e.g., "Try starting with the string"), then went back to her work and waited another 5 s. If the child continued to have trouble, the Toy Lady gave the child a bigger hint about what to do with the materials (e.g., "Fold this," pointing to the portion of the paper the child needed to fold). If the child needed more help, the Toy Lady demonstrated a bit of the step to the child, and finally if the child could not do the step, the Toy Lady completed the step for them and then went back to her work and told the child to go ahead. A procedural check conducted on 25% of the Session 2 data showed that the Toy Ladies did not differ in adherence to the script, time lapse before giving children hints, or order of hints given.

On completion of the toy, the child was given both toys. (All participants in the same school completed Session 1 before Session 2 began, so that children would not anticipate making their sibling's toy at the time they participated in Session 1.) Each child's second session took an average of 7 min.

Coding of Session 1: Children's Attention to the Construction Activity Plus Disruption and Attempts to Become Involved

Our primary interest was the attention of the nonaddressed child to the construction activity, which was coded in 5-s segments by a coder who was blind to the goals of the study and to the children's maternal schooling. The child's predominant form of attention during each 5-s segment was coded as either sustained attending to the construction, briefly glancing at the construction, or not attending to the construction activity, based on the children's gaze, posture, gestures, and other visual and verbal cues.

Sustained attending to the construction consisted of energetically watching the construction activity, with attention devoted to it for most of the segment. During sustained attending, children sat still and actively attended to the toy construction activity, with their eyes fixed on the construction activity and with an alert body posture. Children could break their attention to the construction momentarily or simultaneously work the distracter toy, but their attention to another activity was minor within the segment.

Glancing involved sporadic interest in the construction activity for a brief portion of a segment, without seemingly being engaged by the construction activity; most of the segment involved attending to something other than the construction activity. In the few instances when both sustained attending and glancing occurred in the same 5-s segment, the segment was counted as sustained attending. (There was no difference between the two backgrounds in the percentage of segments in which children equally used both sustained attending and glancing in the same 5-s segment.)

If children stretched or strained or moved their chair closer to get a better view of the toy construction activity while engaged in sustained attention or glancing, straining to observe was also coded within those 5-s segments.

If the child was not attending to the construction activity, we recorded what else they were attending to. Often, this involved working the distracter toy, but it also sometimes involved looking at objects in the room such as posters and books, or daydreaming.

We also examined the time segments in which the nonaddressed child tried to disrupt the construction activity, trying to divert the attention of the Toy Lady or their sibling to themselves (e.g., by playing loudly in an insistent repetitive way, talking to the sibling or Toy Lady about a topic extraneous to the toy construction, or grabbing materials to get attention). Disruptions were not mutually exclusive with the attentional categories; however, they did not often occur in the same 5-s segment with sustained attention or glancing.

In addition, we coded whether the nonaddressed child showed attempts to collaborate in the construction activity of the Toy Lady and the sibling, verbally and/or nonverbally. Attempts to collaborate included picking up the materials to try to become involved in the construction (not to disrupt it), attempting to help build the toy, nodding to verify the information the Toy Lady was giving about how to make the toy as if they were part of the interaction, asking "Can I do it?" or commenting on the ongoing activity (e.g., "Wow, that looks really cool").

Coding Session 2: Children's Learning: Unexpected Toy Construction

Session 2 was coded by a blind coder for the amount of assistance that the child needed from the Toy Lady in each step of the construction. A different blind coder was used than in Session 1 so that

the coder would not know the children's extent of observing in Session 1. The coder tallied the level of hints the child needed to complete each step: completing the step with no assistance (0 points); a small hint about the step or the materials to use for the step (1 point); a bigger hint about what to do with the materials (2 points); showing the child a bit of the step (3 points); or doing the entire step for the child (4 points). The maximum score for the four steps of the mouse was thus 16 and for the five steps of the frog the maximum was 20; no help needed was scored 0.

Reliability. A bilingual coder, blind to the hypotheses of the study, coded the Session 1 videotapes. A second coder coded 40% of the data. Inter-coder reliability was calculated by means of Pearson's correlations between the two coders: percent of segments with sustained attention $r = .95$, glances $r = .84$, straining to observe $r = .91$, not attending $r = .99$, disruptions $r = .97$, and attempts to collaborate $r = .99$.

For the Session 2 data, a different bilingual research assistant coded 40% of the data. Inter-coder reliability was examined by means of Pearson's correlations between the blind coder and the first author for amount of help needed by the children, $r = .99$. Disagreements in both sessions were resolved by the coders reviewing the segment together and coming to consensus.

Results

We first examine cultural differences in Session 1 in children's attention to an interaction that is directed at others, attempts to disrupt, and attempts to collaborate in others' activities. We then compare the children's learning in Session 2 (i.e., the amount of help they needed to construct the toy that they had the opportunity to observe being constructed a week before). Finally, we examine the relation between attention in Session 1 and learning in Session 2. We employed planned comparisons (a conservative test) for the key analyses for which we had clear predictions.

Attention, Disruption, and Attempts to Collaborate by the Nonaddressed Child (Session 1)

Because the length of sessions varied among individual children, the proportion of time segments was used to analyze the data. However, there was no systematic difference in the length of sessions of the two cultural backgrounds.

Table 2

Mean Percent (and Standard Deviation) of Segments in Which Non-addressed Children Attended to the Construction

Form of attention	Pueblo Basic Schooling	Mexican Hi Schooling
First nonaddressed child (observing mouse construction)		
Sustained attention	40.2 (19.9)*	28.0 (20.4)*
Not attending	43.8 (19.1)*	53.8 (21.2)*
Brief glancing	16.0 (9.1)	18.1 (11.6)
Second nonaddressed child (observing frog construction)		
Sustained attention	40.5 (32.5)*	19.2 (20.0)*
Not attending	44.6 (24.5)**	62.7 (19.2)**
Brief glancing	14.9 (12.7)	18.0 (11.6)
All siblings combined		
Sustained attention	40.4 (27.0)**	23.6 (20.0)**
Not attending	44.2 (21.7)**	58.3 (20.4)**
Brief glancing	15.4 (10.9)	18.1 (11.0)

* $p < .05$. ** $p < .005$.

Third-party attention. Children observing first and those observing second showed the same patterns of attention in both backgrounds, so we focus on the combined data. (Note that any difference between siblings was not interpretable in terms of age, birth order, nature of the toys constructed, or order effects, as these were purposely not counter-balanced.) There were not systematic gender differences in the children's attentional patterns. Table 2 shows the means and standard deviations for Session 1 analyses, separately for each child and then combined.

As expected, U.S. Mexican-heritage children from Pueblo Basic Schooling families used more sustained attention than the U.S. Mexican-heritage children from Mexican Hi Schooling families, in an average of 40% versus 24% of the time segments, $t(78) = 3.18$, $p < .001$ (see Table 2). Straining to observe their sibling's toy construction activity was not common but, as expected, children from Pueblo Basic Schooling families strained to observe more often than did Mexican Hi Schooling children, in an average of 3.9% versus 1.6% ($SDs = 5.7$ and 3.0) of the segments, respectively, $t(78) = 2.39$, $p < .01$.

Also as expected, children from Mexican Hi Schooling families spent more time not attending to the construction compared to children from Pueblo Basic Schooling families, in 58% versus 44% of the time segments, $t(78) = 2.96$, $p < .002$. We had no prediction for differences between the backgrounds in briefly glancing at the construction activity, and analysis showed none, $t(78) = 1.08$, $p = .28$.

When the children were not attending to the construction, they were mostly attending to the distracter toy (in 78% of the nonattention segments). They attended to a made-up activity or game in 16% of the nonattention segments, attended to extraneous activities of the Toy Lady or their sibling in 5% of nonattention segments, and stared into space in 1% of the nonattention segments. There were not differences between the backgrounds in how often their nonattention involved one activity or another.

Nonaddressed sibling's attempts to disrupt or collaborate in the construction. As expected, disruptions were rare among the U.S. Mexican children from both backgrounds, and there was no significant difference between them. Children in the Pueblo Basic Schooling group attempted to disrupt in 2% of the segments, as did children in the Mexican Hi Schooling group ($SDs = 0.05, 0.04$). These rare instances of disruption were in segments in which children were not attending to the toy construction activity, and there were no gender differences. These findings are similar to Correa-Chávez and Rogoff's (2009) findings with two Guatemalan Mayan backgrounds varying in experience with traditional Mayan ways and with Western schooling; they found that disruption was more frequent among European American children.

We expected that if there were differences in attempts to collaborate in the construction activity, children from the Pueblo Basic Schooling background would do so more often. Indeed, the children from Pueblo Basic Schooling families attempted to collaborate in the construction activity more than the children from Mexican Hi Schooling families, in an average of 6.9% of the segments versus 0.7% of the segments ($SDs = 15.0, 2.2$), respectively, $t(78) = 2.70, p < .01$. There were not systematic gender differences. The children's attempts to collaborate occurred when they were attending to the activity, suggesting that these attempts were motivated by interest and not by boredom. The greater attempts to collaborate in the construction among nonaddressed children whose families likely had more experience with Indigenous practices than among children whose families had more experience with schooling may relate to observations that Indigenous communities emphasize learning through *intent community participation* (Rogoff et al., 2003; Rogoff et al., 2007), with children pitching in collaboratively with other children and adults in ongoing events.

Learning: Amount of Help Needed in the Unexpected Toy Construction (Session 2)

We present the comparisons separately for the children constructing the mouse and those constructing the frog, because across the two backgrounds, children who constructed the mouse in Session 2 needed less help than children who constructed the frog toy (even though these were the younger siblings), $t(70) = 4.73, p < .001$. Much of the information about how to construct the mouse was contained in the materials themselves. For example, even without having watched, a child might assume that the string needed to be wrapped around the spool, and do this without help. It would be more difficult to infer a correct fold for the origami frog. Indeed, Correa-Chávez and Rogoff (2009) found significant differences in amount of help needed only for constructing the frog, among Guatemalan Mayan and European American children.

The scores for amount of help needed were converted to percentages, because the maximum scores differed for the two toys (due to the differing numbers of steps needed to construct them). Planned contrasts were used to test for differences between the two backgrounds in the amount of help needed to construct each toy after having had the opportunity to observe their sibling construct it a week earlier.

The children in the Pueblo Basic Schooling group needed less help than the children in the Mexican Hi Schooling group to construct both the mouse toy and the frog toy: $t(32) = 2.20, p < .02$ for the mouse; $t(36) = 1.87, p < .04$ for the frog. There were no significant gender differences. Table 3 shows the means and standard deviations for Session 2 analyses.

Children who engaged in more sustained attention to the toy construction in Session 1 needed less help when unexpectedly given the chance to construct their sibling's toy in Session 2. (This was primarily the case for younger children from Pueblo Basic Schooling background constructing the mouse and older children from Mexican Hi Schooling background constructing the frog. It is not clear why the correlations for the other two situations were not significant; we did not expect differences in the extent of correlation across the four cells of Table 3.) Combining across the two cultural backgrounds, $r = -.34, p < .02$ for the mouse and $r = -.30, p < .04$ for the frog. There were no significant correlations between brief glances and the amount of help needed to construct either toy.

Table 3
 Mean Percent (and Standard Deviations) of Help Children Needed to Construct the Toy, and Correlations With Session 1 Sustained Attention

	Pueblo Basic Schooling (<i>n</i> = 22 pairs)	Mexican Hi Schooling (<i>n</i> = 18 pairs)
First nonaddressed child (observing mouse construction)		
Help needed (% of the available hints)	26.8 (14.8) _a	38.6 (16.4) _a
Relation of sustained attention and help needed	<i>r</i> = -.40*	<i>r</i> = -.13
Second nonaddressed child (observing frog construction)		
Help needed (% of the available hints)	46.5 (18.3) _b	56.1 (12.6) _b
Relation of sustained attention and help needed	<i>r</i> = -.06	<i>r</i> = -.66**

Note. Subscript letters indicate significant differences across columns with the same letter at **p* < .05, ***p* < .005.

The cultural differences in how much help the children needed in Session 2 were directly related to the differences in how much sustained attention they showed in Session 1. This was determined by an analysis of covariance (ANCOVA, with cultural background as a fixed factor and amount of sustained attention as a covariate) showing that sustained attention was a significant covariate in how much help the children received, $F(1, 72) = 4.69, p < .05$. After controlling for sustained attention, cultural background became a nonsignificant main effect, $F(1, 52) = 2.43, p = .12$. These results suggest that other possible cultural differences (such as possible differences in dexterity) did not contribute significantly to the children's learning.

Discussion

This study found cultural differences in children's attention and learning during interactions directed to others in two Mexican-heritage communities living in the United States. The findings extend research indicating that learning through keen attention to surrounding events is emphasized in Indigenous communities of the Americas. The two cultural backgrounds of this study both involved families that had emigrated from regions of México that formerly had extensive Indigenous populations and limited Western schooling. We inferred that the families that have limited parental schooling in the current generation are likely to have experience of Indigenous practices of México, although they do not now live in Indigenous communities. Mexican-heritage families with extensive experience in Western schooling are likely to have less involvement with Indigenous practices, and of course they have more experience with potentially conflicting Western school and related practices.

As predicted, U.S. Mexican-heritage children from families that likely had experience with Indigenous practices and had little experience with formal school attended more keenly to an interaction that was not addressed to them and more often strained to observe it than U.S. Mexican-heritage children whose mothers had extensive experience in Western schooling (and related practices). U.S. Mexican-heritage children whose mothers had extensive experience with school instead often played with the distracter toy, daydreamed, and looked at other items in the room.

The U.S. Mexican-heritage children from families with likely experience of Indigenous practices also learned more about how to construct the toy they had had the opportunity to observe being constructed than the U.S. Mexican-heritage children whose mothers had extensive school (and related) experience. Indeed, sustained attention seemed to have helped the children learn about constructing the toy—children who showed more sustained attention often needed less help when given an unexpected opportunity to construct the toy.

The findings suggest that Indigenous ways of learning may be maintained among families that do not live in Indigenous communities and have left regions where Indigenous practices may be sustained among communities that do not at present identify as Indigenous. Cultural practices may be resilient among populations whose cultural identity is no longer explicitly tied to prior communities from which the practices emanate. In particular, families may continue to structure children's learning in line with the practices of communities that they no longer live in. Our findings regarding attentiveness to surrounding events support the idea that some practices related to the cultural tradition of organizing learning through intent community participation may be sustained among Mexican-heritage families coming from regions

where Indigenous communities have been common and Western schooling has been rare.

Generality Across Times and Places

Our study thus suggests some generality in the pattern of cultural differences in children's attention to surrounding events, across populations residing in different nations and with historical or with current ties with Indigenous communities. The families of the present study, who likely have some experience with Indigenous practices of México but who live as newcomers in a largely European American region, not in Indigenous communities, show a pattern similar to that found in two comparative studies performed in Indigenous communities (Correa-Chávez & Rogoff, 2009; Ellis & Gauvain, 1992). Taken together, the three studies support the idea that children from families that have experience with Indigenous practices of the Americas, whether or not they live in or identify with Indigenous communities, are more likely to be alert to and learn from surrounding events than children from families with little or no experience of such practices. In addition, our study extends the pattern to a different Indigenous heritage, involving P'urepecha and other groups of West Central México, which are culturally and linguistically quite distinct from both the Maya of Guatemala and the Navajo of the United States.

Although we feel confident assuming that maternal schooling experience can be a proxy indicator of Indigenous experience in our participant communities given their histories, in this study we did not have specific information on family experience with Indigenous ways. In future research with immigrants from México, it will be helpful to examine experience with Indigenous practices of the Americas directly, instead of relying on information about the historical and demographic location from which the families have immigrated to infer their extent of experience with Indigenous ways. This would require more in-depth contact with the children's families and communities than was possible in the present school-based study.

It would also be valuable to further examine the generality of keen attention to surrounding events to examine its prevalence among Indigenous people on other continents. Ethnographic studies report that learning through observation is valued in many other communities around the world without a long history of schooling (Harkness, 1977; Mitchell-Kernan & Kernan, 1975; Ochs & Schieffelin, 1984; Ward, 1971). Systematic comparative studies

focused on third-party attention in other cultural settings around the world would allow examination of the generality of the patterns, and their relation to communities' histories and people's participation in their communities' traditions and institutions.

It would also be fruitful to examine the community organization and practices that encourage learning by being aware of ongoing activities. Learning by observing surrounding activities depends on being present when notable events occur. What else is involved in allowing or encouraging attention to one's surroundings? And to what extent do the approaches of the children and families vary across settings (e.g., home, community, and school) that differ in their organization and practices?

The Role of Schooling (and Related) Approaches

Our findings also support the idea that family experience with the forms of interaction and learning common in Western schooling may compete with ways of organizing learning valued in many Indigenous-heritage communities of the Americas. Schooling experience appears to be an important feature of a cluster of practices that may relate to how children approach learning (Rogoff & Angelillo, 2002). For example, greater maternal schooling has been associated with smaller family size and thus fewer opportunities to learn by observing others, as well as differences in occupation, language, and other cultural practices (LeVine, 1987; LeVine et al., 2001; Najafi et al., 2007; Rogoff et al., 2005).

Experience with Western school has been related to the ways that parents interact with their children in the home (Crago, Annahatak, & Ningiuruvik, 1993; Laosa, 1980, 1982; Richman, Miller, & LeVine, 1992; Rogoff, 2003). Like in school, where the teacher often "orchestrates" individual and group attention (O'Connor & Michaels, 1993, 1996), mothers with extensive experience with school are more likely to interact with children in school-like ways, such as managing children's attention and participation (Chavajay & Rogoff, 2002; Rogoff et al., 1993). Children from families with extensive schooling may rely more on having their attention directed by adults, and muster less attention when no one is telling them to attend, as in our activity.

In future research, it would be fruitful to examine whether in supportive circumstances, people may be able to fluently use multiple approaches to learning, or whether schooling experience necessarily or usually competes with ways of organizing

learning in Indigenous-heritage communities of the Americas. Understanding the circumstances that promote expansion of people's repertoires (rather than replacement of one approach by another) would be important information for supporting teaching and learning for immigrant and other populations.

Conclusions and Implications

Our research supports the idea that children whose families have experience with practices of Indigenous-heritage communities of the Americas may be especially keen observers of events occurring around them. Such keen observation may be an important way to approach learning in communities where children are integrated in the range of activities of the community and pitch in when they are ready, in the tradition of learning through *intent community participation* (Rogoff et al., 2003; Rogoff et al., 2007).

The study underlines the importance of focusing on children's community practices as a way of understanding cultural variation, and not just relying on nationality or ethnicity as homogenous categories of culture. Had this study combined the children of the two backgrounds because they are both of Mexican descent, we would have missed important differences in approaches to learning. Rather than assuming that all Latinos or all Mexicans have the same characteristics, it is important for research to examine empirically the extent to which communities within such broad categories differ from as well as resemble each other. This is facilitated by consideration of cultural practices as ways of organizing life, rather than reducing cultural research to simply comparing national or ethnic categories.

Recognizing various ways that children approach learning activities can help in the organization of schools. Children come to school already familiar with practices in their communities that guide them in what is important to learn and how to learn. In addition, teachers come with their own values and methods of teaching influenced by their communities and their own history of involvement in Western school.

Children from communities with Indigenous roots may have to integrate several methods of learning into their repertoires in order to succeed in school. This may be both a challenge and an opportunity for the children as well as for schools, because being able to learn in several ways is likely to be useful in later life and other

circumstances. Schools could make use of a likely propensity for keen observation among children with familiarity with Indigenous practices, along with teaching them how to engage in the adult-directed attentional management common in schools.

More broadly, observing ongoing interactions in which one is not involved may be beneficial to all children as a method of learning and being involved in community life. Indeed, schools could make greater use of children's observation of others as a pedagogical tool that may benefit all children's learning.

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