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SANTA CRUZ

**TRANSFORMATIONS IN FAMILY COLLABORATION ACROSS
A GENERATION IN A MAYAN COMMUNITY**

A dissertation submitted in partial
satisfaction of the requirements for
the degree of

DOCTOR OF PHILOSOPHY
in
PSYCHOLOGY
by

Itzel Aceves-Azuara

June 2021

The Dissertation of Itzel Aceves-Azuara is approved:

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Professor Margarita Azmitia

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Quentin Williams
Acting Vice Provost and Dean of Graduate Studies

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Abstract

Transformations in Family Collaboration Across a Generation in a Mayan
Community

Itzel Aceves-Azuara

Research has indicated that Indigenous children of the Americas often

collaborate more skillfully — through fluid synchrony — than middle-class children

from several highly schooled backgrounds (Alcalá, Rogoff, & López-Fraire, 2018;

Chavajay & Rogoff, 2002; Mejía-Arauz et al., 2007; Ruvalcaba & Rogoff,

submitted). However, with globalization, there have been dramatic community

changes that may relate to changes across generations in ways of collaborating. Many

Indigenous American communities have increased schooling, widened access to

digital technologies, and decreased family size and Indigenous language use (Rogoff,

2011; Rogoff, Correa-Chavez & Navichoc-Cotuc, 2005).

The present study directly examined generational change in family

collaboration, by comparing the interactions of the same Guatemalan Mayan family

groups across 30 years using the same procedure as was videotaped 30 years earlier.

Twenty-two mothers and a related 1- to 2-year-old toddler and 3- to 5-year-old child

were videotaped exploring novel objects during a home visit in 1990. In 2020, the

toddler/child generation of the 1990 families was videotaped in the same situation

with their related toddler and 3- to 6-year-old. The mothers in the 2020 cohort were

also asked about community changes in child rearing practices across the generations.

This study examined whether the two cohorts differed in the extent to which all three people (mother, toddler, and 3-5-year-old) were engaged together.

In line with expectations, the results indicated that the 2020 cohort families spent less time with all three people (mother, toddler, and 3- to 5-year-old) in collaboration, than the 1990 cohort ($M= 38\%$ vs 73% of the time segments, respectively). Although on average the 2020 cohort families were less collaborative than the 1990 cohort families, a few of the 2020 families were actually more collaborative than their 1990 counterparts. The 2020 families who collaborated more than their 1990 family members tended to be involved in practices that resemble the practices from 30 years before: Children spoke Mayan Tz'utujil, families had experience with traditional Indigenous Practices, mothers had basic schooling, and families had a low level of involvement with digital technologies.

In sum, on average, Mayan family triads in 2019-2020 tended to collaborate less as a triad than their own families did 30 years before, although some families who participated less in globalized practices and more in traditional Indigenous practices that have been traditional seemed to maintain the collaborative approach of their relatives of the prior generation.

Dedication

The present work documents the story of a town through family interactions. I was born in the '90s, just like the children of the present study, and just like the families we present here, my own family went through similar changes.

Although I did not live in an Indigenous Mayan town, but rather in several Mexican cities, I witnessed similar transformations in collaboration and childrearing practices in my cultural community; I witnessed the advent of globalization and noticed how it changed family life.

I dedicate this work to all the Grandmothers that continue to pass on traditional Indigenous knowledge to the children. Despite all the popular child rearing and parenting books, on how children learn or how children should be raised, that did not include the traditional knowledge that our Elders have carried across generations, this knowledge is still here. Traditional Indigenous knowledge will resist erasure as long as we follow the guidance of our Elders.

Acknowledgements

First and foremost, I would like to express my sincere gratitude to my advisor Prof. Barbara Rogoff. By applying the principles of LOPI (Learning by Observing and Pitching In) into practice, Prof. Rogoff shared all her experiences and knowledge, as she worked side-by-side with me in every step of my learning process. She has taught me how to be present and breath. She has started me into a journey of learning how to think critically and consciously, while being more careful, patient, and accepting. Since the beginning of my PhD program Prof. Rogoff has been there for me, with her gentle guidance reminding me of the importance of having balance in life, and embodying how a strong spirituality can prevail even in the most challenging times. Her holistic approach and commitment to social justice through research, have helped me understand how our work can contribute to constructing a more diverse, inclusive, and united society. Prof. Rogoff's work has showed me that the field of developmental psychology needs to be more understanding of real-life everyday situations, not only the lives of those in power, but especially the lives of those who have been historically underserved.

I want to thank the people of San Pedro la Laguna, especially the families who participated in this study and shared their intergenerational stories, while opening the doors to their homes and their hearts.

I could not have done this work without the contributions of Marta Navichoc Cotuc, Christine Mosier and Ignacio Saldaña. Marta, who has been Barbara's research assistant for more than four decades, guided me in San Pedro

Paradise, whose descriptions of Indigenous collaboration were foundational for my understanding of the topic. I am also thankful to all the people who were part of Professor Rogoff's lab meetings.

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Guadalupe García, Julia García Picaso, Rubén Azuara Tagle y Sergio Aceves de la Huerta por haberme inspirado en este trabajo. Las ideas de esta tesis surgen de las formas en que las que ellos aprendieron, por las cuales enseñaron a mis padres, y con las cuales me formaron. Colaboración, iniciativa, aprendizaje por observación y participación, ser *acomedidos* y respetuosos, ofrecer oportunidades a los niños desde edades tempranas para participar en las actividades familiares; todo este repertorio de prácticas ha formado parte de mi bagaje cultural y ha forjado la manera en la cual concibo las teorías de aprendizaje y desarrollo. Una de mis metas profesionales es compartir con el mundo académico, dominado en gran parte por personas de otras nacionalidades y etnicidades, el rico conocimiento que me ha ofrecido mi familia mexicana.

Especialmente, agradezco a mi núcleo y centro, a los que les debo todo lo que soy: a mi hermano, Sergio Rubén Aceves Azuara por su honestidad, complicidad, cariño, chispa y encanto. A mi padre, Jaime Aceves García por leer todos los libros disponibles para ser un mejor padre: sobre inteligencia emocional, liderazgo, eficacia, negociación, hábitos y por al final del día incorporar todos estos conocimientos con la sabiduría de sus padres. Su crianza, su énfasis en la iniciativa y modos de enseñarme la vida me han ayudado a desarrollar una gran autonomía. Papá, gracias por darme las herramientas para enfrentar los retos con valentía y fortaleza. A mi madre, Elisa Azuara García le agradezco el siempre haberme visto como un ser capaz de contribuir e innovar, me ha hablado y tratado como a su par desde que era un bebé mostrándome respeto y amor profundo. Nuestras

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Este trabajo me ha llevado a entrar en estados de profunda conciencia, dejándome un sentido de unidad y conexión. Me siento sumamente agradecida.

Transformations in Family Collaboration Across a Generation

in a Mayan Community

This study looks at cultural-historical continuities and changes in family interactions across a generation in an Indigenous American community that has undergone rapid globalization. In particular, the study focuses on microgenetic processes of collaboration as Mayan family triads from two generations explored novel objects together. The contrast across generations was made by looking at the same families across 30 years, with a mother and her two young children involved in the exact same semi-naturalistic situation. Due to children's and family increase participation in globalized practices, a decrease in family collaboration was expected.

This introduction first provides evidence to support the claim that collaboration is an important aspect of human development. Then, it provides a definition of collaboration, building on the theoretical model of Learning by Observing and Pitching In to family and community endeavors (LOPI; Rogoff, 2014). Next, the introduction reviews research that compares the collaboration among families and peers in Indigenous communities of the Americas and highly schooled communities. This section is followed by an overview of research regarding recent community- a wide changes in many Indigenous communities of the Americas, such as an increase in compulsory schooling, decreases in the use of the Indigenous language and families' participation in Indigenous traditional practices, and increased contact with digital technologies that may impact the circumstances of children's opportunities to collaborate in their families. The introduction concludes with an

examination of indirect evidence of historical change in small group collaboration by considering research on collaboration among Indigenous Heritage people of the Americas with different extent of experience in Western practices.

Collaboration as an Important Aspect of Human Development

The 21st century brought a rising concern for the need to work and think together, shifting the emphasis from individual efforts to group work (Laal, Laal & Khattami Kermanshahi, 2012). Collaboration has been recognized as a 21st century skill, essential for children's development in a globalized world, along with problem solving, critical thinking, effective communication, motivation, persistence, and learning to learn (Pellegrino & Hilton, 2013).

Some theories in psychology suggest that collaboration promotes cognitive, social, and emotional development (Dewey, 1938; Mead, 1934; Piaget, 1932; Tudge & Rogoff, 1989). In particular, Vygotsky (1978) claimed that learning and cognitive development occur in collaborative interaction. Subsequent cultural-historical writers elaborate on the idea that learning happens between people in communication and shared thinking (e.g., Bruner, 1990; Cole, 1998; Engeström, 1900; Leontiev, 1978; Lave, 1991; Lave & Wenger, 1991; Rogoff, 1990, 2003; Wertsch,1991).

Collaboration has been a topic of interest for many scholars of Indigenous Knowledge Systems who describe holistic, dynamic, and relational processes of human development and emphasize mutuality (Cajete 2000; Rogoff & Angelillo 2002). For many Indigenous people of the Americas, collaboration has been a key aspect of their way of living (Lenkersdorf, 1996).

Research on collaboration suggests that working together to achieve a common goal produces higher achievement and greater productivity than does working competitively or alone (Fawcett & Garton 2005; Gabbert et al. 1986; Gillies & Ashman 1998; Johnson & Johnson, 2014). For example, 5-year-old novices and experts who built a Lego model collaboratively performed better on spatial perspective and visual perception than children who built the model alone (Azmitia, 1988). Similarly, in an errand planning task, 5- to 7-year-old novices paired with same-age experts were more involved in the task and did more successful planning than those who worked individually (Duran & Gauvain, 1993).

Developmental research has shown that toddlers from many cultural communities (including those in families of European, European-American middle-class and Indigenous backgrounds) are interested in coordinating with others to achieve tasks and often show initiative to help (e.g., Correa-Chávez, Roberts, & Martínez Pérez, 2011; Dahl, 2015; Hamann, Warneken & Tomasello, 2012; López, Rogoff, Najafi, & Mejía-Arauz, 2012; Warneken & Tomasello, 2009; Warneken et al., 2007). However, cultural differences arise early on in life: many children from European-American highly schooled families soon learn that their help might not be welcomed, losing interest in contributing to family endeavors, whereas many Mexican and Indigenous children of the Americas are encouraged and supported in participation and they often pitch in with initiative (Coppens et al., 2014; Rogoff et al., 2020; Morelli, Rogoff, & Angelillo, 2003; Rogoff, 2003; Rogoff et al., 2021; Rogoff, Morelli, & Chavajay, 2010).

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What is Meant by Collaboration?

This study employs a definition of collaboration based on research in Indigenous communities of the Americas. This definition describes collaboration as engagement that involves mutuality and synchrony, with people working together towards a shared goal, in a horizontal way with no apparent hierarchy or division of labor (Paradise & Rogoff, 2009). Individuals are part of one joint endeavor, which is impossible to separate into parts. The role of leader could shift to anyone with expertise at any time and anyone can take the initiative.

This definition of collaboration has been described in Facet 3 of the theoretical model Learning by Observing and Pitching In to family and community endeavors (LOPI). The LOPI model is represented as a prism that includes seven interrelated facets that articulate how Indigenous families and communities of the Americas organize opportunities for learning (Rogoff, 2014).

In psychology, research on collaboration has tended to study ways of thinking together by focusing on individuals as the unit of analysis (John-Steiner & Mahn, 1996; Lave & Wenger,1991; Rogoff, 1997, 2003; Wertsch, 1991). The type of collaboration that the LOPI model describes and that the present study uses differs from mainstream approaches to collaboration, which fit more with the negotiation model. Negotiation appears to be a common way that highly schooled people combine their thinking (Mejía-Arauz, Rogoff, Henne-Ochoa, Dayton, 2018). In the negotiation model, individuals make proposals to join separate ideas; in the collaboration model, people engage in a unified process.

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Research on Cultural Differences in Collaboration

Research on cultural differences in collaboration has focused on how much children in different communities collaborate, and on how children in different communities collaborate. The proposed study builds on studies of how children collaborate, with a focus on fluid collaboration.

Some studies show that Indigenous children of the Americas collaborate more than children from highly schooled families. For example, Mexican Indigenous 7- to 10-year- olds were more likely to coordinate with others to achieve a common goal in a laboratory task than their urban middle-class counterparts (Madsen, 1967). Research shows more inclusion and less division of tasks among Indigenous people of the Americas than among European American middle-class people (Chavajay & Rogoff, 2002; Chavajay, 2008; Philips, 1983). Likewise, Navajo 9-year-old and 7-year-old pairs often engaged all together as a group while playing a maze game (Ellis & Gauvain, 1992), whereas European American middle-class dyads often engaged individually, were distracted more often, and some even left the task when not in control.

Group engagement was also found among P'urhépecha children who collaborated with their partner, building on each other's ideas during a board game (Correa-Chávez, Mangione & Mejía-Arauz, 2016). This contrasts with urban middle-class Mexican children who more often played individually, taking turns to make a move. Often, when a partner in the urban middle-class Mexican dyad was deciding what move to make, the other child became bored and did not participate in the game.

Several studies have described the collaboration of Indigenous people of the Americas as fluid. Mazahua fifth- and sixth-graders and adults switched roles fluidly, for example, with one being a "knowledgeable performer" and the other an "observing helper," or both "coordinating performers" focusing on different aspects of a task in common (Paradise & De Haan, 2009). Mejía-Arauz et al. (2007) observed particularly fine-tuned interactions among Mexican-American triads folding origami figures. Triads "engaged together in a strikingly smooth, flowing fashion, with markedly the same rhythm and pace, and all three children adapted their contributions together seamlessly" (p. 1006). In contrast, European-American middle-class triads mostly worked separately or in dyads, leaving one person out.

Fluid collaboration was twice as common among Mexican-American sibling dyads working together to plan a route for picking up a grocery list in a model store, compared with European-American middle-class children (Alcalá, Rogoff, & López-Fraire, 2018). The Mexican-American sibling dyads collaborated as a fluid ensemble for more than half of the session (53%), whereas European-American middle-class sibling dyads spent only 25% of the session collaborating. European-American middle-class sibling dyads spent almost half of the session with one child telling the other what to do, with one or both children ignoring the other while working on their own plan; or with one child excluding the other.

Ruvalcaba and Rogoff (submitted) distinguished two forms of collaboration: fluid synchrony and proposal-building. Dyads of US Mexican-heritage children employed both approaches, and thereby collaborated twice as much as European

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American middle-class classmates as they programmed an animation. Although both groups spent an equal amount of time collaborating by building on each other's ideas with proposals, Mexican-heritage dyads in addition collaborated in fluid synchrony, which almost never occurred among European American middle-class children.

Most directly related to the present study is the study by Dayton, Aceves-Azuara, and Rogoff (in press) who found cultural differences in fluid synchrony at a timescale of fractions of seconds, in a close focus on microscale processes of group action as well as talk. Mayan family triads of mothers and two young children more frequently engaged in fluid collaboration when exploring novel objects together in a home visit, compared with their European-American middle-class counterparts, who were more likely to leave one person out of the interaction or engage in conflict (Dayton, Aceves-Azuara, & Rogoff, in press). Mayan triads usually engaged mutually among all three members and did so three times more than European American middle-class triads. The European American middle-class triads spent more time segments engaged in rough or resistant interactions, almost three times more than the Mayan triads.

For centuries, Indigenous children of the Americas have frequently been included and contributing to family and community endeavors along with everyone else (Baxter, 2005; Chamoux, 1992; Díaz Barriga Cuevas, 2012; Good Eshelman, 2005; Gaskins, 1999; Morelli, Rogoff & Angelillo, 2003; Paradise & Rogoff, 2009; Flores et al., 2015). However, with the rapid increase of globalization around the world, there has been a constellation of community-wide changes that may relate to

children's opportunities to collaborate in their families (Rogoff, 2003; Rogoff, Correa-Chávez, & Navichoc Cotuc, 2005; Rogoff, Najafi, & Mejía-Arauz, 2014).

Some of the aspects that might be involved in this changing constellation of child-rearing practices include: an increase in compulsory schooling, a decrease in Indigenous language use, a decline in participation in Indigenous practices such as attire and use of traditional healers, and an increase in the use of digital technologies. The present study examines such changes, not as a way of tying them causally to potential changes in collaboration, but rather as a description of the constellation of changes in children's and families' lives across generations that may accompany changes in family ways of working together.

Transformations and continuities in collaboration across generations are the topic of the present study. There are a few scholarly works that provide guidance regarding changes and continuities, but most prior work provides only indirect evidence.

Indirect Evidence of Historical Change in Small Group Collaboration

There is some indirect evidence of cultural change in collaboration in Indigenous- heritage communities of the Americas, from comparisons of children from families with more or less involvement in Western schooling and related practices. Researchers have inferred that the schooling of contemporary Indigenous-heritage families can be seen as a proxy for change over time, with those having minimal Western schooling assumed to resemble Indigenous families of the Americas from previous generations (Silva, Correa-Chávez & Rogoff, 2010).

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Studies of collaboration in household work of Indigenous families of the Americas show differences related to amount of schooling, providing indirect evidence suggesting historical change across generations. For example, 6- to 8-year-old children from an Indigenous-heritage Mexican community were more likely to collaborate in household work on their own initiative, whereas children whose families had extensive experience with Western schooling seldom collaborated in family household work on their own initiative (Alcalá et al., 2014, 2018; Coppens et al., 2014). Similarly, more P'urhépecha (Mexican Indigenous) children whose parents had limited Western schooling voluntarily collaborated in the fields, in the kitchen, taking care of siblings or sick relatives, or helping in the family business, than P'urhépecha children whose parents had extensive schooling (Mejía -Arauz, Keyser Ohrt, & Correa-Chávez, 2013).

Indirect evidence of a possible decrease in collaboration across generations in Indigenous-heritage communities also comes from a few studies of children's ways of working together with other children and adults in small-group tasks. Indigenous children of the Americas whose families had limited schooling experience and participated in more traditional practices were more likely to engage collaboratively than children from the same communities whose families had more schooling (Chavajay & Rogoff, 2002; Chavajay, 2006; Correa-Chávez, Mangione & Mejía-Arauz, 2016; Mejía-Arauz et al., 2007). Indigenous heritage children whose families were highly schooled were more likely to engage in the tasks by themselves, leave one person out of triadic interaction, take turns, divide the task, and take unilateral

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control. These cross-sectional studies using schooling differences in contemporary populations as a proxy for generational change give indirect support to the idea of changes across generations in the prevalence of collaboration in Indigenous-heritage children.

To our knowledge, there is only one study that specifically examines longitudinal change in collaboration among Indigenous-heritage children of the Americas. García, Rivera and Greenfield (2015) found a decrease in cooperation across two generations 40 years apart and 20 years apart, when examining pairs of 7-11-year-old children playing the Madsen Marble Pull Game in two regions of Mexico. García et al.'s results are consistent with the expectations of the present study. However, the present study examines collaboration among descendants of the same participants as 30 years before, whereas García et al. just compared children from the same schools in the same villages and towns. (The present study differs in several other ways: It focuses on family rather than peer interactions, and focuses on much younger children.) Thus, the present study is the first that we are aware of to examine change in collaboration across generations with descendants of the original participants.

The Present Study

This study investigates the transformations in family collaboration across two eras (1986-1992 = 1990 cohort and 2019-2020 = 2020 cohort[1]) within the same Mayan families. The study is presented in three parts. In the first part, the study describes the changes in San Pedro family life based on the data collected from a family interview. In the second part, the study compares microgenetic processes of fluid synchrony by looking at videotaped interactions of Indigenous Mayan families exploring novel objects together. In the third part, I present an analysis of the changes in family interaction on a microscale and their relation with globalization changes.

The 1990 cohort data is a secondary analysis of videotaped family visits gathered by Rogoff (1993) and Mosier and Rogoff (2003). I replicated their procedure in the home visits for the 2020 cohort to analyze for microgenetic collaboration. For each cohort, there are observations of twenty-two Mayan families from San Pedro la Laguna, Guatemala; each included a mother with her 1-year-old toddler and 3- to 6-year-old.

The proposed study builds on Dayton et al. (in press), which examined fluid synchrony at a microscale in the same situation and with some of the same families as recorded in the 1990 cohort. The focus on a microscale in the present study is based on both the availability of a fruitful coding scheme and on the ideas from Dayton and Rogoff (2013) and Dayton et al. (in press), which examined collaboration at a microscale. Examination at a microscale provides a view of the foundations of

human interaction and is likely to connect with cultural patterns at a cultural-historical time scale, such as the 30-year span of the present study.

Several aspects of community and family life have changed in 30 years, especially an increase in schooling and a decrease of participation in traditional Mayan practices, such as the use of the Mayan language Tz'utujil and the presence of large families with many siblings. Given how schooling and other Westernized practices foster competition and the changed community characteristics may offer less opportunities for collaboration, the present study examines the prediction that fluid synchrony may be less common among Indigenous families in the 2020 cohort, compared with the 1990 cohort.

Participants

The participants from the 1990 cohort were mostly recruited from families known to the researchers; most were families who had participated in prior studies of Rogoff and colleagues, or their relatives. Most of the twenty-two families (18 of them) were videotaped by Mosier and Rogoff in 1990 (although Mosier & Rogoff, 2003, only used 16 of them). The sample was supplemented with 4 more families who were videotaped in 1986 for Rogoff et al. (1993) using the same procedure (except that one more novel object had been presented by Rogoff et al., 1993, at the end of the novel object sequence) and with the same family characteristics as Mosier and Rogoff.

Description of San Pedro across 30 years

Both cohorts are from the Mayan town of **S**an Pedro la Laguna, Guatemala[2].

In 1990, San Pedro had about 8000 inhabitants (Rogoff, et al. 1993) and by 2020 the

town had grown to about 13,000 inhabitants (INE, 2020). (See Figure 1).
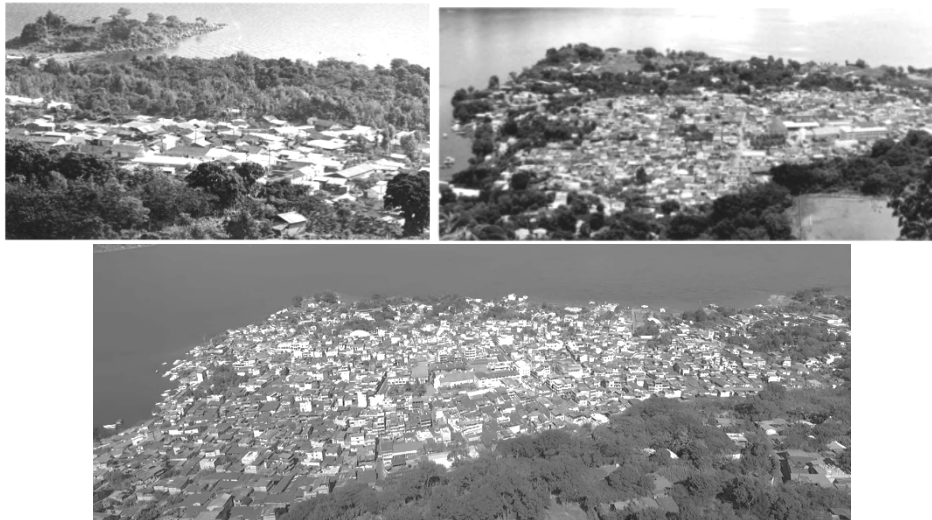
Figure 1. The images depict the increase in population and housing in San Pedro from 1975 and 1998 (Rogoff, 2011) to 2020.

Over the 30 years between the two cohorts of the present study, Pedranos

(people born in San Pedro) have experienced much greater contact with other

locations and people. Access to town before the 70's was by boats that only arrived

twice a week or periodic buses that went through rocky paths (Rogoff, et al. 1993;

Rogoff, 2011). By the 90's boats left the town many times and connected to towns

around the lake (Rogoff, et al. 1993). In 2020 access to San Pedro could be done by

land and water. There is a highway that connects San Pedro with Guatemala City.

There has been a notable increase in the presence of foreigners who come to

San Pedro for a few days for tourism or have settled in San Pedro for months or

years[3]. More Pedranos have migrated to Guatemala City or Xela (the second largest city in Guatemala) to continue their studies or to find more job opportunities; others have migrated to the United States for work, studies, or marriage. People who leave are often in close contact with family in San Pedro.

Many occupations now require parents to spend time away from the family and age segregation has become more common. Occupations in 1990 were mostly agricultural for men (either on their own land or day labor for others) and weaving and embroidery for women (Rogoff, et al., 2005). Children were many times present and observing what their parents were doing (Morelli, et al., 2003). In contrast, many of the occupations in 2020 involve paid employment that has a fixed schedule at places where children of employees are not always allowed (nurses, teachers, bank tellers, vendors, etc.).

Age segregation has also increased due to changes in children's lives. Children nowadays (2020) spend a great deal of time in school and doing homework and little time helping at home. Children have many objects designed for children's care and entertainment now; homes are cluttered with them. Girls seldom learn to weave; boys seldom spend time in agriculture (Rogoff, 2011; Rogoff, Correa-Chávez, Navichoc Cotuc; 2005).

There have been many other changes in family life. One of the most important for the recruitment of our sample, and for the daily lives of children is a dramatic drop in the number of children per family. Few families in 1990-2020 had two children in the age range of the children in the 1990 cohort.

Finding the Descendants of the 1990 Cohort

Ideally, we could have focused solely on mothers who were the children of the 1990 cohort (who were 28-36 years old by 2019-2020). However, there were several reasons that this could not be done. We had to expand the descendant pool beyond the original families' direct descendants.

A primary reason that it was impossible to recruit exclusively from the 1990 cohort direct descendants was because family size has decreased too dramatically to find families of the exact ages as in the 1990 cohort. Hence, we expanded the ages from those of the 1990 cohort. Although some of the 1990 cohort children had become parents of children who were too old or too young for the present study, many 1990 cohort children had not become parents by 2020, that is, they did not have children at all; and some had only one child the desired age.

The original families in the 1990 cohort had more children than their children had in 2019-2020. When Mosier and Rogoff visited the 1990 cohort mothers, they had an average of 3.6 children, ranging from 2 to 7 children. In contrast, when their babies and 3–6-year-olds (the children who participated in the 1990 study) were in their early to mid-30s in 2020, they had an average of only 1.3 children, ranging from 0 to 4 children, $t(70) = 6.89$, $p < 0.0001$, 95% CI [1, 3]. In fact, 20% of the 1990 or original children did not have any children by 2020, and 40% only had one child[4]. So, we **_slightly expanded the age rang_**e to help create our sample, but maintained the average age (details follow in the participants' section).

We also had to expand out to include extended family. Because many of the 1990 cohort were boys and our study focused on mothers in both cohorts, we included the wives of the 1990 cohort boys, as the mothers for the 2020 cohort. Of our twenty-two families, only five contained the 1990 cohort child as the 2020 cohort mother and one who was the wife of a 1990 cohort child.

Recruiting the other 16 families required some compromises from having the mothers of the 2020 cohort be exclusively the children from the 1990 cohort (or if a boy, his wife). We **expanded out to include extended family**, in two ways:

*Including siblings and cousins of the 1990 children **as 2020 parents***. In addition to the five 2020 cohort mothers who were original kids (or a wife), the 2020 mothers were mostly siblings (*n=3*) or a sibling's wife (*n=3*) of the original children from 1990, or cousins (*n=5*) or a cousin's wife (*n=5*).

*Including a 2020 mother's niece or nephew **as the 2020 child*** if they had only one child the appropriate age of their own. We only substituted a toddler or a 3–6-year-old that treated the mother almost like the mother's own child and lived together with the 2020 cohort mother or spent time together daily (including one family that the mother-child relation was being next door neighbors and close friends). 16 out of the twenty-two mothers in our sample fit this category.

The Children in the Two Cohorts

Participant children's ages and genders in the two cohorts. The average age of the two cohorts was quite similar. However, the age range was slightly expanded in order to find sufficient children to be able to involve close descendent families in the

2020 cohort. Even selecting the 2020 families with more children from among many relatives, there were still very few families with two children in the desired age range. The families that we ended up recruiting as the 2020 cohort still only had an average of 1.7 children (and none that had died). Indeed, half (11) of the 1990 families had more than 3 children; none of the 2020 cohort (whom we had selected for having at least one child in our age range) had more than 3 children.

The 2020 cohort included a few toddlers that were 2 months younger or 5 months older than in 1990, but the average age was only 3 months different. A few of the older siblings in the 2020 cohort were 3 months younger or 1y7m older than in the 1990 cohort, but the average age was only 2 months different.

Specifically, the 1990 cohort includes twenty-two family triads composed of a mother, a toddler whose average age was 17 months ($SD = 2m$; range = 14-22m), and their older sibling whose average age was 4 years 3 months ($SD = 9m$; range = 3y1m old to 5y9m). The 2020 cohort triads were composed of mothers with their toddlers whose average age was 20 months ($SD = 4.6m$; range = 12-27m) and their older siblings whose average age was 4 years 5 months ($SD = 15m$; range = 2y10m to 7y4m). Three of the mothers in the 1990 cohort were pregnant; none of the mothers in the 2020 cohort were pregnant.

The gender distribution of the children was similar across the two cohorts. The 1990 cohort gender distribution of the children was 8 mixed-gender, 5 male-male triads, and 9 female-female triads, and the 2020 cohort gender distribution was 12 mixed-gender, 5 male-male triads, and 5 female-female triads.

The Mothers in the Two Cohorts

     Mother's schooling and occupations. In 1990, only 60% of the 1990 mothers went to school at all; the 1990 mothers averaged only 2.8 grades of schooling. In contrast, all of the 2020 mothers went to school, and 77% of them finished high school or went further, averaging 12.7 grades completed, a significant difference, $t(21) = 12.29$, $p < 0.0001$, 95% CI [8, 11]. 15 of the 22 mothers completed 0 to 3 grades of schooling in 1990; thus, their descendants, the 2020 mothers, had on average completed 10 more grades than the 1990 cohort. In fact, many mothers in the 2020 cohort had achieved a professional degree; a third (32%) of them had training as school teachers. However, only one actually worked as a schoolteacher; unemployment of certified teachers and other professionals is high.

     Occupations for the 1990 cohort mothers included weavers, vendors, and homemakers. In the 2020 cohort, mothers' occupations included artisans, vendors, nurses, teachers, business owners, home makers, bank tellers and homemakers.

     Mother's language, and their language with their children. All mothers in our 1990 cohort sample spoke Maya Tz'utujil during the interview, although 45% spoke some Spanish to their children. However, by the time of the 2020 cohort, mothers used much less Tz'utujil and more Spanish during the interview with the same native speaker of Tz'utujil. Out of the 22 mothers, 16 spoke Tz'utujil (72%), 3 spoke a combination of Tz'utujil and Spanish (14%) and 3 spoke Spanish only (14%).

     The mothers clearly are not using as much Tz'utujil with their children: 6 mothers reported that their children only speak Spanish and do not understand

Tz'utujil (except for a few words or a little more); 9 mothers reported that their children understand Tz'utujil, but do not speak it -- they speak mostly Spanish; 7 mothers reported that the children understand and speak Tz'utujil and also Spanish. None of the children were reported to speak Tz'utujil only, unlike in the 1990 cohort interviews, during which mothers mainly spoke in Tz'utujil with their children.

Mother's religion. There was not much change in the mothers' religion. Most mothers in the 1990 cohort were Catholic (63%); the rest were Protestant (37%). Similarly, in the 2020 cohort, 14 out of the 22 mothers were catholic (63%), 7 were Protestant (32%), and 1 reported no religious affiliation.

The methods and results of the present study are presented in three parts: The first part presents the methods and results of the interview regarding family characteristics and children's everyday life across the three decades. The second part presents the methods and results regarding family collaboration over the generations. The third part combines key findings of parts one and two (the family characteristics and the analysis of collaboration), to examine the relation of variation family practices in the 2020 cohort and their extent of collaboration.

Part 1. How Did the San Pedro Families Change across Two Cohorts? (Interviews)

In the 1990 cohort, Rogoff and colleagues made family home visits with Mayan mothers with a 1-year-old toddler and a 3- to 6-year-old sibling that consisted of a daily routine interview focused on the children. The participants in both cohorts

were contacted in person, usually at their home, with the help of Marta Navichoc Cotuc, the research assistant for both cohorts. The same procedure for the 1990 cohort was followed for the 2020 cohort, adding questions about changes in child rearing practices and ways of collaboration across generations.

1990 Cohort Interview Procedure

In the 1990 cohort, a European-American female researcher and the local research assistant (Marta Navichoc Cotuc) visited the family homes. Visits lasted about an hour and a half, during which they conducted a daily routine interview. The researcher recorded the interview, with the camera focusing broadly on the triad. The researcher also sketched a map of the household.

The interview was conducted in the language the mothers preferred, either Spanish or Tz'utujil, although in the 1990 cohort all mothers spoke Tz'utujil. During the visit, the research assistant gave a gift to the mother (a towel), a *quintal* of beans and a small snack packet for the toddler. The interviewer accommodated the interview script to the flow of the activity in the home with breaks to change diapers, feed, clean up spills, etc., and adjusted the order of questions to the ongoing direction of conversation. If any of the interview topics occurred spontaneously out of sequence, they were taken up when they arose.

Key aspects of the interview scripts (from the 1990 cohort procedure and for the 2020 cohort additional questions) are presented in this section in English. The complete script in English, based on the 1990 cohort interview, and the script in

Spanish that was used in the 2020 cohort interview (including the new questions added to the end of the interview) are in Appendices A and B.

First, the research assistant conversationally asked the mother questions about family background and the child's caregiving, such as *Who is in your family? What work does your husband do? What work do you do? Who helps with the baby? What types of playmates do your children have?*

Then, the interviewer asked about how the children help around the house, for example, *Does the 3-to 5-year-old sibling help around the house? How? Does the baby try to help you around the house? How?* Then the research assistant presented a ball of playdough, saying: "We brought something for you and the baby to pretend to make a tortilla". Then, the interviewer presented a doll saying, "Does the baby like to take care of babies?" and waited for the child to handle the doll.

The 1990 cohort interview continued with questions such as, *what sort of play/social games does the baby enjoy? Where do the baby and sibling sleep at night? How do you teach the children to behave properly with each other? When do you think children begin to understand the consequences of their acts? How many hours of TV do your children watch each day? What kind of programs do they watch?*

2020 Cohort Interview Procedure

The procedure for the 1990 cohort data collected with 18 families by Mosier and Rogoff was followed for the first part of the 2020 cohort procedure. We made slight changes to the interview to fit the new family configurations and ways of living in 2020[5].

The script in Spanish was used to remind the research assistant of the procedure from 3 decades before, during a training period with six families that were not among the 2020 cohort families. During the actual visits, the research assistant occasionally referred to the Spanish script with key points highlighted for her benefit (Appendix B).

Once the original 1990 cohort procedure ended, the interview shifted seamlessly to new questions about children's collaboration at home and in community activities, to document cultural change. The topics that had come up spontaneously in the 1990 cohort questions were not repeated. The interview questions that are new for the 2020 cohort focus on understanding cultural changes that may relate to collaboration. They yielded the following information: a) Increase of family use of technology and media; b) Decrease in family participation in Indigenous practices; and C)Increase in adult supervision on children's location and play.

The questions below are those that were added for the 2020 cohort interviews. The italicized headings below are just for the reader's reference. The 1-year-old's and 3- to 5-year-old's names (or however the mother refers to them) were used in the questions below, or they were simply referred to as the baby or the child, and referring nonverbally to distinguish the two little ones.

Children's media and technology access

1. Does your 3-to 5-year-old use a cellphone? What do they do with it? What about the toddler? Does your 3-to 5-year-old play video games?

2. Does your 3-to 5-year-old use a computer or a tablet? What do they do when they are on the computer or tablet?
3. Does the family use the internet to search information?
4. Do you use Facebook? Do you use WhatsApp? Does anyone in the family make video calls?

School related activities
1. Does your 3-to 5-year-old get homework from school? How much?
2. Do your children take classes outside of school? What type? (Topic/ Who sponsors it?)
3. Have you taken parenting classes or child development courses? (If so, what was the class about, why did you take it?)
4. Does someone read books to the children? In Spanish or Tz'utujil? Are those children's books?
5. Which language do you speak with your children? Do the children know Tz'utujil? Do they know Spanish? Are there any other languages spoken at home? (Who speaks those languages?)
6. Do you do anything to prepare the 3- to 5-year-old or the toddler for school? What? Do you play with the baby? Why?

Contact with other cultural communities
1. Do you have family members out of the country? Where? Are the children in contact with them? How?
2. Have you ever lived or traveled outside of Sololá? What about Guatemala?
3. Do your children have contact with foreigners? How?

Family and community involvement
1. Do you spend time with the *allegado*? Everyday? The whole day?
2. Do you have any relatives living in the same *sitio* [homestead]?
3. Do your children have frequent contact with the extended family? Every day? Weekly? Just the holidays? How far away do they live?
4. How far can your 3-to 5-year-old roam, with whom? What about the toddler? Do your 3-to-5-year-old run errands? If so, how far? What about the toddler?
5. Does your 3-to 5-year-old go to a parent's workplace? Does she/he help? What about the toddler?

6. Does your 3-to 5-year-old have any responsibilities in community activities? (Like cleaning the lake or singing in the chorus) What about the toddler?
7. Do they wear traditional clothing? Every day or only on special occasions?

Protections and expectations
1. When you were pregnant did you use any *secretos* [protections] to protect the baby? (e.g., Wear a red or safety pin?)
2. Who delivered the baby? [Doctor or Midwife]
   Did you use a hammock when they were little?
   When you left the house with the baby in the hammock, did you use a *machete* or something under the hammock to protect the baby?
   Have you used any evil eye protections with your children?
3. Did you swaddle your children?
4. What did you do with the *muxuux* [umbilical stump]? If you bury it, where did you bury it? Why?
5. How far do you want them to go in school? What type of work do you want them to do?

Invitation to chat about observations of cultural changes
[Really relaxed] To finish – we have some questions about families today and families from before, when you were a child.

Do the children of today behave differently in the family than the children of before?
When you were a child, did you help without your mother asking you? And the children today, is it the same or not?
When you were a child, did you learn to work just by watching or listening? What about children today?
When you were a child, did children contribute to adult conversations? How is it now?
Do children today bother adult conversations more or less than before?

Today's moms - how do they treat their children differently than moms before?
The great-grandmothers gave birth to 7-8 babies, and the grandmothers to 4-5. Why don't they have so many children now?

Before, people collaborated by working with each other to build their houses, now does this continue. Why?

How was life better for children before?
How is life better for children now?

Interview Results: Changes in the Two Cohorts' Family Life across Generations

This section provides information on key aspects of changes in the interviewees' family characteristics and arrangements that seem to correspond with general changes in San Pedro. The information comes from the mothers' interviews. (However, many of the interview questions that were asked in the 1990 cohort were not analyzed specifically for the present study -- many of them were included just to exactly repeat the procedure from decades ago.)

The 1990 cohort's responses to the interview questions that are relevant to understanding cultural change across these decades, reported below, yielded information showing that the families in our study faced major shifts in the way they organize their life. Some of the most noticeable include: decrease in family size, increase in maternal schooling, decrease in the use of Tz'utujil, increase in families' involvement with media and technology, decrease in families' participation in traditional Indigenous practices, decrease in mother-child proximity and increase of adult supervision on children.

Family size decreased. As described in detail in the participant section, families in the 2020 Cohort were much smaller compared with the 1990 cohort

families. To summarize, the families that we interviewed for the 1990 cohort averaged 3.6 children whereas the families that we included in the 2020 cohort averaged only 1.7 children (and the two original children from the 1990 cohort grew up to average only 1.3 children per family). (Figure 2 illustrates what the family size decrease looked like during visits; the 1990 cohort visits included many siblings and cousins; the 2020 cohort had few siblings and few cousins.)

Figure 2. The image on the left is a cohort 1990 family with 6 children. The image on the right is from the same family in 2020; this mother has two children only.

When we asked the 2020 mothers why they thought there was such a dramatic decrease in family size, they mentioned that in 1990, mothers did not have much access to birth control. In addition, they reported other reasons why mothers now have smaller families. For example, they pointed out that now it is more expensive to have a child, in terms of the costs of schooling, health, housing, and everyday life.

> Porque antes, todo lo que comían era muy saludable, muy bueno. Pero en cambio, la vida de ahora… Los niños de ahora a cada rato se enferman, entonces uno solo se desespera, y mejor solo [tener] uno. Pero ahora hay tantas cosas que salen, como ropa. Antes, mamá solo ponía un solo corte hasta que se rompiera, en cambio ahora.
>
>> Because before, everything that families ate was healthy, very good. But in contrast, today's life… Children today get sick all the time, and one only gets desperate, and

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it's better to only have one. But now there are so many things coming out, like clothing. Before, mama just used a single corte (wrapped skirt) until it fell apart, unlike now.

Considero que se debe al cambio -- hablamos del entorno social, económico, ambiental. Entonces no podemos traer a los niños y exponerlos a un mundo tan desgastante, hablando de ambiente. Y ya todo está tan caro que uno, o sea, ¿Qué les va a dejar a ellos? Entonces uno tiene que pensar bien, y pienso que a eso se debe la planificación. En decir, o sea, si voy a tener un bebé, darle lo mejor. Hasta donde yo pueda ¿Verdad? También nuestros padres, por cómo era antes, no era tanto de pensar ¿Dónde los dejo? Pero el mundo está tan globalizado, uno tiene que ver cómo salir con ellos.

I believe it is due to the changes -- talking about the social, economic, environmental context. So, we cannot bring children [into the world] and expose them to such an exhausting world, speaking of the environment. And now everything is so expensive that one, I mean, what would one leave them [to inherit]? Therefore, one has to really think and I think that is why [people are] planning. In saying, I mean, if I am going to have a baby, give it the best. As far as I can, right? Also, our parents, because of how it was before, it wasn't so much about thinking: Where do I leave them [without any land]? But the world is so globalized, you have to see how to make do with them.

Mothers also mentioned that they believe that children now need more attention, but they pointed out that mothers now work in places like hotels and offices where they cannot bring their children. They also said that there is no one to help take care of the children. (There are less older siblings that can take care of the younger ones, and many grandmothers also work.)

In addition, they pointed out that there is less land, and that buying land is expensive, so they worry that their children would have no place to live when they are grown. (In the past, there was more land for the children to inherit. The decreased infant mortality, accompanying vaccinations, led to a population boom in the last half of the 1900s. In addition, foreigners began to purchase land, and families in dire straits sold their children's inheritance.) A mother told us:

La gente de antes comía lo que tenía. Porque también los abuelos de antes tenían maíz, mucho maíz y frijol. Esa era la riqueza de antes. Sí, uno podía tener muchos hijos. Si uno tiene mucho terreno, puede poner a los niños, pero si no, si uno no tiene nada, entonces son los

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niños que sufren. ¿Dónde los vamos a poner? Nosotros nos morimos, ellos son los que se quedan sufriendo. Para mí, es bueno tener más hijos, pero si uno tiene sitios, casas donde dejar a los hijos. Por ejemplo, yo, está bien, voy a dar 3,4, 5 o 6 hijos, pero yo no tengo nada, solo estoy con mis papás. Porque, por ejemplo, muchos dicen que, por favor, se cuiden, no hay que tener muchos hijos, hay muchos medios [anticonceptivos]. Porque también, hay que comprar sus casitas, sus terrenitos, pero ahora, las casas y terrenos son carísimos.

People from before ate what they grew. Because also in the old days, the people had corn, lots of corn and beans. That was the wealth from before. Yes, one could have lots of children. If one has a lot of land, one can place the children, but if not, if one does not have anything, then it is the children that suffer. Where are we going to place them? We die, they are the ones who remain and suffer. For me, it is good to have more children, but if you have land, houses to leave the offspring. For example, me, ok, I am going to have 3,4,5 or 6 children, but I do not have anything, I am only with my parents. Because, for example, a lot of people say, please, be careful, don't have a lot of children, there are many means [contraceptives]. Because also, you have to buy them houses, land, but now, houses and land are very expensive.

Maternal schooling increased with globalization. As described in detail in the participant section, mothers' schooling increased immensely. To summarize, the mothers we interviewed for the 1990 cohort averaged 2.8 grades of schooling, whereas the mothers included in the 2020 Cohort averaged 12.7 grades completed.

The increased schooling is related to global changes in international challenges for traditional forms of supporting families due to increasing population and decreasing land base, pressures on millennial forms of agriculture from CAFTA, crop failures due to global warming, shifting international markets for coffee and other cash crops, the desire for medical insurance that comes with a professional salary, the market for drugs and tourism, violence related to economic and political forces from international greed, and efforts to escape economic and political violence through migration. (By the time of the 2020 cohort, 32% of the families had a family member that had migrated to the USA.)

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Fewer families speak Tz'utujil at home; they speak more Spanish and a little English. Few children in the 2020 cohort speak or even understand Tz'utujil, unlike in the 1990 cohort, when children were generally proficient in Tz'utujil and the majority (55%) were monolingual in Tz'utujil. None of the 2020 children were monolingual in Tz'utujil; 32% are bilingual, both understanding and speaking Tz'utujil and Spanish; 41% understand Tz'utujil but do not speak it (they mostly use Spanish); and 27% do not even understand Tz'utujil, according to their mothers.

Based on the language the mothers used with the interviewer and with their children during the visits, it appears that mothers in the 2020 cohort used far less Tz'utujil than the 1990 mothers. All mothers in the 1990 cohort spoke Tz'utujil with the interviewer during the visit. In contrast, only 72% of the 2020 mothers used Tz'utujil with the interviewer; 14% preferred using Spanish with her and 14% used Tz'utujil combined with Spanish. With their children, most of the mothers in the 2020 cohort used Spanish only (55%) during the visit, and only one spoke exclusively in Tz'utujil. In contrast, in the 1990 visits, most of the mothers (55%) spoke with the children in Tz'utujil only, and 45% of them used both languages in talking with their children; none spoke only Spanish with their children during the visit.

In 1990, parents who prioritized speaking Spanish with their children often did so to prepare the children for school (which was in Spanish). But in 2020, preparing children for school did not get mentioned as a reason for speaking with children in Spanish. A reason that the mothers gave for using Spanish with the children was that most people in town speak Spanish. Some of the 2020 mothers told

us they are speaking less Tz'utujil than Spanish with their children because they felt that Tz'utujil is too difficult for the children, who have trouble with the sounds (which are quite different from Spanish). Some mothers mentioned having trouble themselves with pronunciation, and so they appreciated that the grandmother speaks solely in Tz'utujil to the child, so the child gets used to hearing it.

In addition, English is now taking an important role in the community, given the increase in globalization, in tourism, and in advanced schooling. Some (27%) of the 2020 cohort mothers are teaching their children numbers, colors, animals, and other basic English vocabulary. Upon arrival to visit the families, many of the children were listening to children's songs in English, which were playing on cell phones that they held as a distraction while their mothers prepared for the visit, and a few children had English songs going on the TV. This fits with an increased emphasis in the 2020 cohort in preparing the children for school; 73% of the 2020 mothers reported teaching the children numbers and the alphabet, school rules such as asking permission to go to the restroom, or how to use scissors or hold a pencil. In the 1990 cohort, there was less emphasis on preparing toddlers and young children for school, other than speaking with them in Spanish.

Families' involvement with technology and media increased dramatically. In the 1990 cohort, the families' involvement with technology mostly consisted of watching television or listening to radio; 82% of the families reported that they had a television. In contrast, all families in the 2020 cohort watched television and most families used smartphones; some used computers, and a few used video game

consoles. The 2020 families used technology mostly for entertainment, but also for communication (86% used either Facebook or WhatsApp). Some (45%) of the families also reported they used the internet for searching for information.

In the 2020 cohort, 81% of the 3-6-year-olds and 59% of the toddlers reported or were reported to use a smartphone on a regular basis. Most 3-6-year-olds (72%) used the smartphones for watching cartoons or kid entertainment content, and 27% used the smartphones for playing video games. When the 2020 children were interacting with the screen during the interview, they often stopped paying attention to what was going on around them. Children in the 1990 cohort were not as attached to screens during the visits as the 2020 cohort children (see Figure 3).

Figure 3. The image on the left is from 1990; the family had their television covered with traditional fabric. The image on the right is from the same family, in 2020; we could not follow our procedure because the baby did not want to leave the smartphone; the baby started crying each time the family tried to get her to stop. (We substituted another 2020 family that was also descended from the same 1990 family.)

Families were less involved in traditional Indigenous practices. There was a decrease in family involvement with practices common in many Mayan communities. Traditional midwives delivered most of the 1990 cohort babies (and doctors delivered

a few), whereas doctors or nurses delivered most (77%) of the 2020 cohort babies and traditional midwives delivered only 23% of the babies.

Most of the 1990 cohort mothers followed the traditional Mayan practice of burying their baby's umbilical stump after it fell off, so that their children could fulfill their roles and always find their "roots" (see Rogoff, 2011), but in the 2020 cohort, only one mother buried the umbilical stump and two of the mothers did not remember whether they threw it away or what happened to it.

All the 1990 cohort mothers wore traditional San Pedro clothing (a wraparound cloth *corte* and either a handwoven *güipil* or a specific local style blouse) at the interview but 18% of the 2020 cohort mothers wore Western clothing. Most of the boys wore Western clothing even in 1990. During the visit, all the 3-5-year-old boys in the 1990 cohort wore Western clothing (and all but one of the babies), and all of them did in the 2020 cohort. Although the girls in the 1990 cohort mostly wore the traditional Mayan wraparound *corte* (all of the 3-5-year-old girls except one and all but 4 of the babies), in the 2020 cohort only 45% of the 3-6-year-old girls wore a *corte* (and only 4 of the baby girls did). (See Figure 4.)

Figure 4. On the left, a 1990 mother wore the traditional wrap-around *corte* and the everyday *blusa*; her son is in Western clothing and the toddler daughter is in traditional *corte* and *blusa*. On the right, in the next generation of the same family, in the 2020 cohort, the mother and 3–5-year-old girl and the baby boy are in Western clothing.

The families in the 2020 cohort also reported less involvement in several practices that were common in San Pedro in the time of the 1990 cohort: using traditional folk protections for a pregnancy, using swaddling and a hammock for the baby's daytime sleep, using traditional protections when leaving the baby in the hammock (such as putting a bucket of water or crossed knives to scare spirits away), and using protections for evil eye.

Mothers have less proximity with their young children. Although extended families still live near each other and families have daily intergenerational interactions in shared living spaces or frequent visits, a number of changes involve less proximity of young children with their mothers.

In the 1990 cohort, mothers spent most of their time at home, available to their children. However, one in three mothers in the 2020 cohort (32%) work in places other than their homes for most of the day, in workplaces that discourage children's presence.

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Even at night, although toddlers are still sleeping in the mother's bed (with the exception of 1 toddler in the 1990 cohort and 2 in the 2020 cohort), there is now greater separation between the mother and the 3-5-year-old. Only one of the 3-5-year-olds in the 1990 cohort slept in a separate room from their mother, whereas 7 (32%) of the 3-6-year-olds in the 2020 cohort had a room separate from their mothers (1 had their own room alone, and 6 shared a room with at least one sibling). The decrease in mother-child sleeping proximity may be associated with an increase in the number of rooms and expansion of houses to more than one level. The houses in the 1990 cohort were mostly one floor with one room where everyone slept. Most (16, 73%) of the 2020 cohort's houses had multiple rooms distributed on multiple floors; the other 6 (27%) still had houses on one floor with one room for sleeping. However, the sleeping arrangements may be a matter of choice rather than space driving the arrangements – 5 families kept the 3-6-year-old in the same room despite having other available rooms.

The seating arrangements in 2020 have also become more distant, due to the now-widespread use of large chairs and couches. Formerly, mothers often sat or kneeled on a mat on the floor, throughout the day, interacting with their children while weaving, sewing, and chatting with other relatives. The change in furniture seems to create distance between mother and young children, as is suggested in the videos from our visits. During the 1990 cohort visits, as mothers sat on mats on the floor, they could easily interact with the toddlers and the 3-5-year-olds, who mostly stayed next to her, touching or leaning on her. The mothers handled the novel objects

together with the children with flexibility of their positions and they could use the floor as a working surface for the objects.

In contrast, in the 2020 cohort visits, although most of the mothers were sitting on the floor by the time of the novel objects portion of the visit, 5 of them remained sitting on a chair or couch (or bed) with no table at hand, despite having been invited earlier to use the floor. Those 5 mothers often had difficulty engaging with the toddler. With the toddler at her knee, the mother had to awkwardly bend over to show the toddler how to work the objects (see Figure 5), or if the toddler was in her lap, the mother had her hands full with the toddler. Indeed, those 5 families were among those who engaged less among all 3 members of the triad (averaging 26% of their time spent with all 3 together, compared with an average of 42% for the other 17 families). This suggests that the routine seating arrangement of the 2020 cohort -- sitting in chairs or couches sometimes at a distance from the children -- might be among the changes in family life that may account for the reduction across cohorts in engagement of all three people together, during our visits. (This occurred even though the families had been encouraged to sit on the floor for the visit itself.)

Figure 5. This mother has to bend to show the toddler how to operate one of the novel objects.

Consistent with the possibility that changes in furniture play a role in ways of interacting, the 3-6-year-olds in the 2020 cohort were more often not near the mother. During our 1990 visits, all triads stayed near each other exploring the novel objects, but in the 2020 visits, two toddlers and seven 3–6-year-olds spent some of the novel object portion of the visit away from the mother and the center of activity. Many of them sat in a chair or on a couch of their own, at a little distance, and often they faced away or wandered off from the group to do something else. (See Figure 6.) Their more distant position from the mother during our visits may reflect a more general increase in distance of young children from their mothers over these decades.

Figure 6. All 1990 families (like the family on the left) sat on the floor, where they could easily reach each other and objects. Many 2020 families (like the family on the right) sat on chairs or couches, making interaction more distant and sometimes awkward.

Children's daily lives are more controlled by adults. The 2020 cohort children's locations are more supervised by mothers than in the 1990 cohort, who used to be able to be away from their homes to join with other children to play or to run errands or give messages at a distance. People knew each other better throughout

town, and neighbors would be likely to help a child away from home. In contrast, none of the 2020 cohort mothers let toddlers out of the home alone and few of the 3–6-year-olds were allowed to go out by themselves; some were allowed to accompany a responsible older sibling or cousin.

The 2020 cohort mothers face a different world from the one they grew up in; their precautions are based on dangers that have emerged in these decades. As of five decades ago, groups of children played in the streets with only an occasional horse or a stray dog to beware of. Now, cars and motorcycles constantly fill the streets outside the family homes; pedestrians have to walk in the same streets, trying to dodge vehicles (sometimes unsuccessfully). As of five decades ago, there were other worries that mothers felt for their families (such as transforming witches) but in the meantime, mothers worry about traffic and also the drug and some gang activity brought by the influx of foreigners.

In addition to supervising children's locations, mothers seem to have a more controlling role in children's play interactions. Formerly, children played only with other children (and an occasional uncle). The 1990 cohort mothers often laughed with embarrassment when asked if they played with their toddlers and young children; this was not a mother's role. But all of the 2020 cohort mothers reported that they play with their toddlers. Some said that because they spend their day away from the toddler, they feel bad and feel like they should play with the child when they get home. Some mothers may play not as playmates but in didactic ways that control the play -- in line with international efforts to get mothers to prepare children for school

by teaching them in play. A few reported that they play with their toddler because it is important for their development. For example, one mother responded to being asked why she plays with her children,

> Nosotros sabemos que esta etapa para ella es muy importante, porque todo lo que aprenda ahora, es lo que va a hacer algún día, (…) Mi mayor apoyo en esta situación es mi hermana que es maestra de preescolar. Entonces ella me dice, según la edad que es lo que yo le tengo que enseñar.

>> We know that this stage is very important for her, because everything she learns now is what she is going to do one day, (…) My greatest support in this situation is my sister who is a preschool teacher. So, she tells me, depending on the age, what I have to teach her.

In sum, there have been many community-wide changes in San Pedro across these three decades. Some of the most striking changes we found in the 2020 families compared to the 1990 families include a reduction in family size, an increase in maternal schooling, fewer families using Tz'utujil, an increase of technology use, less involvement in Indigenous traditional practices, less proximity between mothers and children and more adult supervision in children's location and play.

The many transformations that San Pedro families have faced across generations might accompany shifts in how families interact. The following section will describe the changes in the family collaboration that were observed across generations.

Part 2. Has Collaboration Decreased over Time?

Family Triads' Interactions: 1990 Cohort and 2020 Cohort Procedure

Partway through the interview (after the questions about family background, children's caregivers, and children's helping at home), the research assistant presented the mother with seven novel objects, one by one, demonstrating each one surreptitiously. The interviewer introduced the first novel object telling the mother "We brought some objects for you to get the baby to operate. The objects are too difficult for the baby to operate alone and so he/she will need help."

No instructions were given regarding the older sibling's involvement. Although the focus was on the triad, other family members or community members were free to join in (and sometimes they did).

The objects were:

1. a metal embroidery hoop with handles to detach the two rings
2. a wood pencil case with a tricky latch
3. a set of nesting dolls
4. a clear plastic jar with a lid, and a toy figure inside
5. a wooden Jumping Jack doll that dances when a dangling string is pulled,
6. a peek-a-boo puppet mounted on a stick that is used to push in and out of a cone
7. and a plastic latching video cassette case

When the family lost interest in an object (usually 2-4 minutes), the research assistant introduced the next object, briefly demonstrating it. Each object remained available to the family through the rest of the visit. Two other objects were also introduced later: a baby doll and playdough.

Coding of Collaboration in Exploring Novel Objects

The procedure provided an unusual opportunity to examine a standard but semi-naturalistic event across the different families and cohorts. Coding examined family interaction during the 10 seconds after the mothers grasped each of five of the novel objects. (These were the five in which participants in both communities showed more interest.)

Coding the 10 seconds after each mother grasped each of five novel objects created five virtually identical, standard semi-naturalistic situations for coding cultural differences in the ways that families interact together or not. Coding each of the five 10-second events in segments of 200-microseconds yielded 250 coded segments per family, in a standard semi-naturalistic situation.

The coding used the scheme that Dayton, Rogoff, and I developed (in press). To be able to code the type of engagement families used, each 10-second clip was slowed to 20 percent of the original recorded speed, yielding slow-motion clips. To take context into account, coders viewed the 10-second events in the context of the preceding 10 seconds and the following 10 seconds.

The five categories are mutually exclusive descriptions of the engagement of the mother, toddler and sibling. Figure 7 gives an overview of the coding categories, preceding the definitions.

	ABC	AB BC

All 3 mutual   All 3 participants mutually engage with each other   ABC   AB BC

Only 2 mutual   2 mutually engage together, 1 does something else   AB C   AB BC

No mutual, Oneway No mutual engagement, but some one-way looks   A ->B ->C
No mutual, Separate Entirely separate   A B C

Rough, resistant   Participants resist or engage at counterpurposes   A 🖐B C
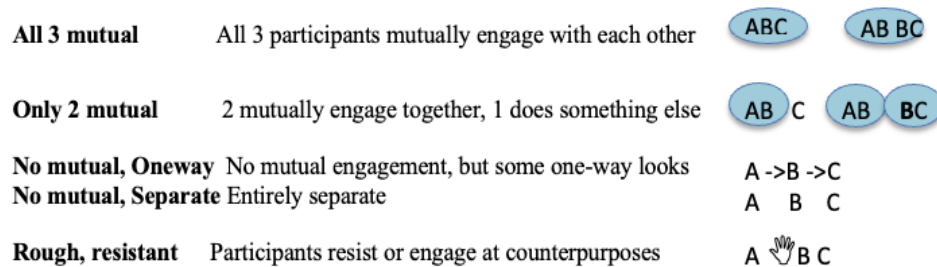
time	ALL 3 MUTUAL	only 2 MUTUAL	No mutual One-way	Separate	Rough Resist
113	X				
114	X				

Figure 7. Overview of the coding scheme and example of a coding sheet

All 3 Mutual. The participants function as a coherent synchronous group, an ensemble. The participants are in sync with the overall movement of the ensemble even if there are multiple activities. The ensemble appears to function as *one organism with many limbs*. Each participant is mutually engaged with at least one of the other two in one common "envelope of activity". One or two of the participants can engage by being ready to act and keenly attentive to the other participants' activity, if the observer is clearly included within the envelope of activity of the people they are observing.

Only 2 mutual. Only 2 participants are mutually engaged and responding to each other while the other is not clearly included with those two. This category can be described as having "more than one story." The activity is split, with two people engaged together, reacting to each other, while the other is not clearly included in their envelope of activity. The person who is not clearly mutually engaged with the other two may be engaged in something entirely separate or could be watching but not clearly included by anyone (the watching is irrelevant to the others).

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No Mutual. There is no mutual engagement. Two subcategories of *Zero Mutual* were distinguished:

> ***One-way.*** One or more of the participants watches another member of the triad, but the observed person does not observe or interact with them. Each participant is engaged in their own activity.
> ***Separate.*** Moves are not coordinated and are not in reference to each other; they are not contingent. Nobody is attentive to or tries to engage with or observe another, or all three are attentive to something external such as a fourth person.

Rough/Resistant. This category trumps any other. Two or three participants resist each other's work at cross-purposes or with conflict or active opposition, rigidly avoid sharing agendas, attempt to engage another but fail somehow, actively ignore another, get in each other or way awkwardly, or interact in a clumsy, flustered, or frenetic manner.

Coding was done by two coders -- a blind coder and myself -- overlapping on 60% of the data. Differences were resolved by consensus. The reliability score shows strong agreement between the two coders' judgments, weighted Cohen's κ = .92 , 95% CI [.87 to 1].

Results: Changes in Collaboration across Generations

This section analyzes the changes in family collaboration across cohorts 1990 and 2020. The analysis used graphical analysis, pairwise t-tests, correlations, and confidence intervals to examine the hypothesis that family triads mutual involvement decreased from the 1990 cohort to the 2020 cohort. There were no significant

differences related to the children's gender, age of either child, or whether the children were siblings or cousins.

Overall, this study finds that the mother-child collaboration has decreased in 30 years. Although on average the families in the 2020 cohort were less collaborative than the families in the 1990 cohort, some of the families in the 2020 cohort were actually more collaborative than their 1990 cohort counterparts.

Cohort Differences in Extent of Collaboration

Supporting expectations, the 2020 families collaborated only half as much -- with the mother, toddler, and 3-6-year-old all engaged together -- compared with the 1990 families (M= 38.3% vs 73.4% of the time segments, respectively, see Table 1). The difference was significant, $t(21) = 3.90$, $p=.0005$, 95% CI [41, 134].

As can be seen in Figure 8, almost all of the 1990 families (18 of the 22 families, 82%) spent at least 65% of their time in collaboration with all 3 engaged together. In contrast, only 6 (27%) of the 2020 families collaborated that much.

In fact, three of the 2020 families (14%) *never* collaborated with all 3 engaged together. This contrasts with the highly collaborative pattern of the 1990 families: The two *least* collaborative 1990 families collaborated with all 3 engaged together for a minimum of 35% of the time segments.

Table 1. Mean number of segments (and standard deviations) and percentages that triads spent in each way of engaging. (One-tailed tests were used for All 3 mutual and Rough/Resistant; two-tailed tests were used for the other comparisons.)

	1990 Cohort		2020 Cohort				95% Confidence Interval
					t	p	
All 3 mutual	183.5 (44.5)	73.40%	95.8 (77.4)	38.30%	3.9	.0005**	41-134
One left out	38.1 (30.6)	15.20%	114.5 (64.8)	45.80%	4.77	.000**	43-109
Zero mutual	15.7 (19.7)	6.30%	26.4 (21)	10.60%	1.41	.173	5-26
One- way	12.7 (17.5)	5.10%	21.6 (18.6)	8.70%	1.4	.176	0-4
Separate	3 (5.6)	1.20%	4.8 (8.5)	1.90%	0.726	.476	0-6
Rough/Resistant	12.7 (17)	5.10%	13.3 (14.2)	5.30%	0.123	.451	0-10
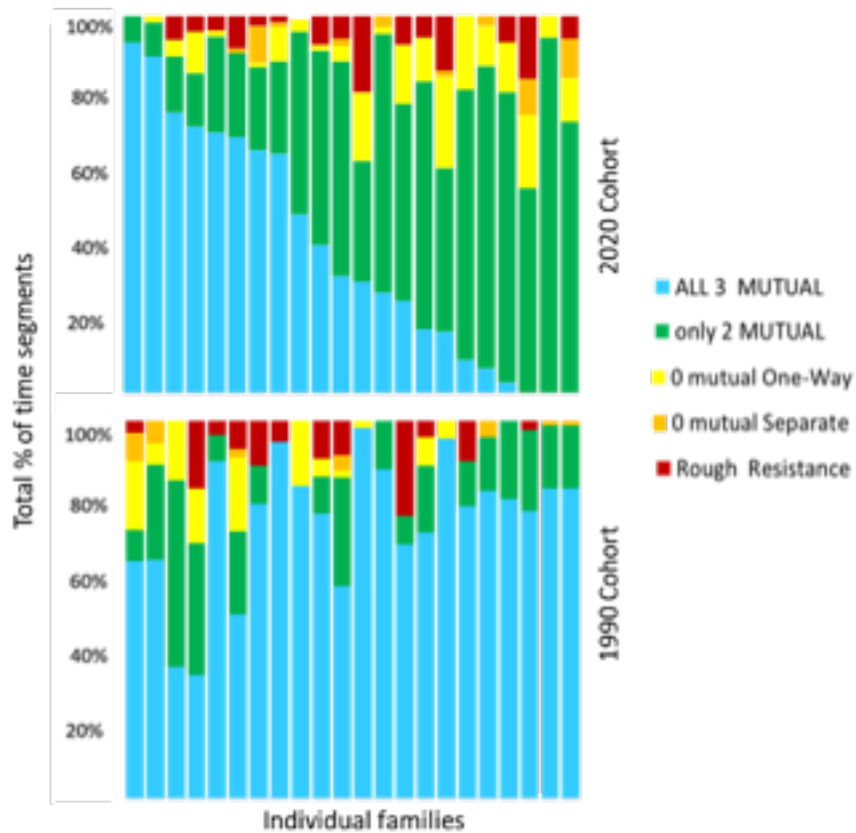
Figure 8. Casegraphs showing the type of engagement of each triad in the 1990 cohort and the 2020 cohort, in each bar. The height of each bar shows the percentage of time segments each family spent in the five types of engagement.

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Rather than collaborating with all 3 engaged together, the 2020 families often engaged with only two people and with one person left out. They did so three times as much as the 1990 triads -- averaging 45.8% vs 15.2% of time segments with two people engaged and one left out, $t(21) = 4.77$, $p < .0001$, 95% CI [43, 109].

The amount of time spent with none of the triad members interacting did not differ significantly across the generations (M=6.3% for 1990 families vs 10.6% of time segments for the 2020 cohort families), $t(21) = 1.41$, $p=0.17$, 95% CI [5, 26]. In both generations, only 1-2% of the time was spent separate, with no one interacting or attending to another. Usually, one person was watching one or both of the others -- usually the mother watching a child, who was not engaged with anyone else.

Contrary to expectation, the amount of time in which the three triad members engaged in rough/ resistant interaction did not change in 30 years (M=5.1% for 1990 vs 5.3% of time segments for 2020).

Stability and Change in Extent of Collaboration within Individual Families Across Generations

How does individual families' collaboration in the 1990 cohort play out in the 2020 cohort? Is the way of interacting stable across generations, even though there is generally less collaboration across cohorts? It would not be surprising to find some correlation across the two generations within families, with the families who collaborated more in the first cohort continuing to collaborate more than others in the later cohort. However, the results showed some surprising *negative* correlations, for

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which there are not any obvious explanations. Surprisingly, there was a negative correlation across generations within the same families in the amount of time families spent engaged with all three together, r = -0.45, n = 22, p = 0.035.

The Figure 9 casegraph shows the negative correlation, with most of the families in the upper left corner of the graph -- but the 1990 families that collaborated the least tended to collaborate the most in the later generation. It looks like the families that are creating the negative correlations are the 5 who switched from less all-3 mutual engagement in 1990 to more all-3 mutual engagement in 2020. Of the 8 families who collaborated the most in 2020, 5 were among the 7 families who collaborated the least in 1990.
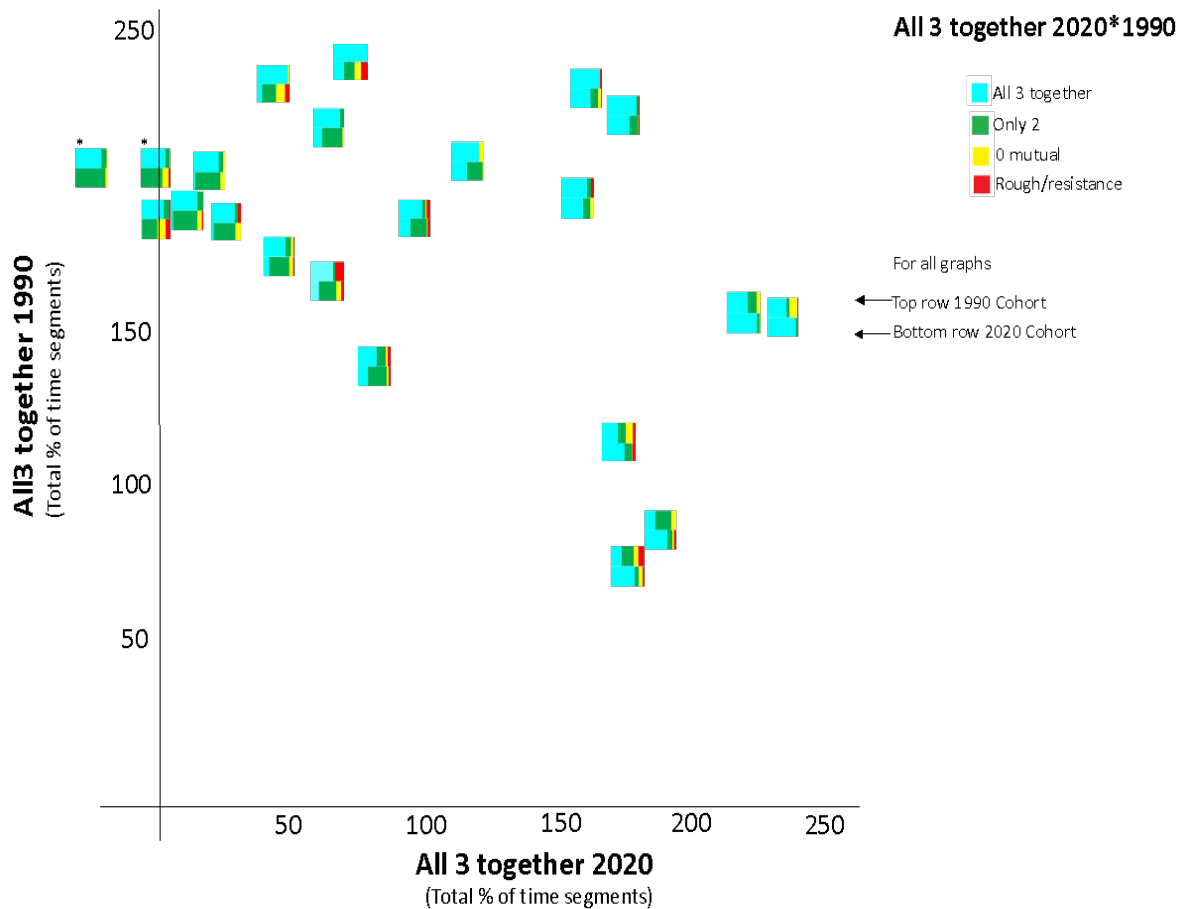
Figure 9. This casegraph shows each family as a case, illustrating the correlation between the 2020 and 1990 cohorts in the extent of collaborating with all 3 members of the triad engaged together, with 2020 represented horizontally and 1990 represented vertically. (On the far-left side of the graph, two families occupy the same coordinates; those families are marked with a *.)

[In the event that the reader is interested in the details of each family's interactions, this is also represented. Each case is represented by two tiny histograms that show the other types of interaction in addition to the collaboration with all 3 together. The top tiny histogram represents the 1990 family interactions and the bottom one shows the 2020 family interactions.]

In addition to the negative correlation across generations in the level of

collaboration among all 3 members of the triad, there also was a negative relation

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across generations in the amount of time family triads were not engaged together at all, $r = -.523$, $n = 22$, $p = .013$. The 1990 families who spent the most time with no one engaged together tended to spend the least time with no one engaged together in the later generation, and vice versa. (This negative correlation appears to be mostly due to one-way observation among participants, which approached a negative correlation, $r = -.379$, $n = 22$, $p = .082$; there was no hint of a correlation for the less-common code for everyone entirely separate, $r = -.098$, $n = 22$, $p = .664$).

There were not significant correlations across generations for only 2 people engaged and one left out ($r = .127$, $n = 22$, $p = .573$) and rough interactions ($r = -0.28$, $n = 22$, $p = .903$).

The details of the casegraph make the important point that the 17 families who dropped in the amount of all-3 collaboration (blue, in the tiny histograms of Figure 9) generally did not increase their level of rough/resistant interactions. Only 6 of those 17 families increased the amount of time they spent in rough/resistant interactions (red). The drop in collaboration with all 3 together primarily was associated with changes in the other forms of interaction: All 17 of the families who dropped in the amount of time that they spent engaged all 3 together increased in the amount of time spent with only two people engaged and one left out (green), and 14 of the families also increased in their amount of time without engaging (yellow).

Part 3. Which families changed? Relation of larger scale changes to microscale collaboration for the sample as a whole

How does variation in uptake of the globalizing changes in family life relate to variation in individual families' extent of collaboration in 2020? Although the extent of collaboration has generally dropped from the 1990 cohort to the 2020 cohort, it is of interest to distinguish among the families in the 2020 cohort who engaged in more collaboration than other families in their cohort. What are the changes in San Pedro family life that might help to understand which families in the 2020 cohort engage in more collaboration than other families in the 2020 cohort?

Overall, the families in the 2020 cohort who were highly collaborative were those that maintained a similar lifestyle to the norm of the 1990 cohort. In the 2020 families who collaborated most, more of the children speak Tz'utujil in addition to Spanish, and more of the mothers were involved in traditional Indigenous practices and not very involved in using technology and media. In contrast, those 2020 families who collaborated less were more likely to participate in changes that have come with globalization: More of the children speak only Spanish (though they might understand some Tz'utujil) and more of the mothers are not so involved with traditional Indigenous practices and involved with digital technologies and media.

This section considers whether there is a relation to the families' use of collaboration in 2020 and children's use of Tz'utujil, mother's use of technology, mother's schooling, and family involvement in Indigenous practices. (We also

examined other changes in family life from our interview data -- whether children sleep in a separate room, whether family members have migrated, whether mothers work away from their children for most of the day, whether a grandmother is a key caregiver, and whether extended family are highly present -- but we did not find patterns or correlations with the amount of time the triads spent engaged with all 3 members.)

Children's Tz'utujil. The children of the 2020 cohort have limited use of the Mayan language. Out of the 22 families, only 7 reported that children speak Tz'utujil and these 7 all also spoke Spanish; another 9 understand Tz'utujil but do not speak it, and the other 6 children speak only Spanish; none of the children speak only Tz'utujil. There was a moderate correlation between the children's use of Tz'utujil (whether none, just understanding, or speaking) and the number of segments in which all 3 members of the triad were engaged together, $r= .36, n=22, p =.05$. Speaking Tz'utujil (rather than just understanding it) seems to be pulling this correlation; the difference in amount of collaboration between the 7 families whose children speak Tz'utujil and the other 15 was significant, $t(20) = 3.08, p=0.002$, 95% CI [29, 154], and the correlation with engaging as a triad rises, $r= .57, n=22, p =.003$.

Technology. Digital technologies and media use increased dramatically among the 2020 cohort families in our study compared with the 1990 cohort. Out of the 22 families, 16 mothers reported using WhatsApp, 13 reported using Facebook, 10 reported that they frequently search for information on the internet and 8 said they made video calls. We found that the mothers who used more of these social media

were more likely to be in families that engage in less triadic collaboration with all 3 mutually engaged, $r= -.415$, $n=22$, $p =.027$.

However, the families in which children used more technology were not more likely to be engaged in triadic engagement among all 3 people, $r= -.166$, $n=22$, $p =.230$. The 2020 children's technology use was a count of whether the children watch TV (they all did); whether the 3-6-year-old watches videos on a smartphone (17 did), plays video games (6 did), or uses computers (4 did), and whether the toddler uses a cellphone (13 did).

Mother's schooling. Mother's schooling increased dramatically from the 1990 cohort to the 2020 cohort: 17 out of the 22 mothers in our sample completed 12 or more grades in school, and 12 of the 17 mothers went on beyond 12 grades; those who completed the least schooling had finished 6 grades. Many mothers in the 1990 cohort did not go to school at all. There was not a significant correlation in the 2020 cohort between the number of grades a mother had completed and the number of segments families spent with all three members engaged together, $r= .14$, $n=22$, $p =.55$, perhaps because most mothers in the 2020 cohort were already so highly schooled. (Previous research that has found strong differences with mothers' schooling has been based on more variation in the entry levels of schooling than in the 2020 cohort.)

Indigenous practices. In 2020, families participated in fewer traditional San Pedro Maya practices, such as burying the baby's umbilical cord, having a child delivered by a traditional midwife, wearing traditional clothing, using a hammock for

the baby, protecting the children from evil eye, and swaddling the baby. There was not a significant correlation between the families' number of traditional San Pedro Maya practices and the total time the families spent with all three members engaged together, $r= .18$, $n=22$, $p=.41$.

Constellations of family practices. The family triads from the 2020 cohort who spent more time engaged all together among all 3 members showed a pattern involving a constellation of the 4 family characteristics: the children spoke Tz'utujil, the mother had low involvement with technology, the mother had low experience with schooling (12 or fewer grades), and the family was highly involved in traditional San Pedro Maya practices. (These 4 aspects of families' lives were not highly intercorrelated. There was a correlation between children speaking Tz'utujil (or not) and mothers having low involvement with technology, $r= .49$, $n=22$, $p =.01$. There were no other significant correlations among children's Tz'utujil, mother's use of technology, mother's schooling, and traditional San Pedro Maya practices.)

The families that engaged above the median in extent of collaboration as a triad (= 76-time segments) included the majority of the families with these more traditional practices. They included 86% of the children who spoke Tz'utujil (6/7); 73% of the mothers who used only a little technology (8/11); 60% of the mothers who had basic schooling (6/10); and 64% of the families who were highly engaged in traditional San Pedro Maya practices (7/11).

Another way of looking at this constellation is to describe the pattern of engagement in traditional practices among the families that engaged in more or less

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collaboration as a triad, dividing at the median. Of 11 families above the median of collaboration as a triad, 7 (64%) engaged in 3 of the 4 of these traditional types of practice, and 0 engaged in none of these practices. In contrast, of the 11 families below the median of collaboration as a triad, only 1 (9%) engaged in 3 of the 4 traditional types of practice, and 5 (45%) engaged in none of these practices.

Taken together, it seems that the 2020 families that had a similar constellation of practices to the families in the 1990 cohort were more collaborative as a triad. The fact that the 2020 cohort on average engaged in less collaboration among the 3 members of the triad than was the case in the 1990 cohort is related to the overall decrease in involvement in the traditional practices as a whole.

Discussion

By examining collaboration across generations within the same families, this study provides a rare opportunity to directly examine changes and continuities across a time period that has involved many changes in family life related to globalization, in an Indigenous community that has previously been noted for the prevalence of sophisticated fluid collaboration. Indeed, this study indicates that family collaboration decreased across generations spanning 30 years of extensive changes in Western practices in a Mayan community. The Mayan families of 2019-2020 averaged only 38% of their time with all three members of the triad engaged together mutually when exploring novel objects, whereas their relatives had earlier averaged 73% of their time with all three people engaged with one another, in 1986-1990.

Instead of collaborating mutually among all three people, the recent cohort

averaged almost half of their time (45.8%) with only two members engaged together and one person left out. This tripled from the 1990 cohort, who only spent 15.2% of their time in this type of engagement. The decrease in triadic interaction was accompanied by an increase in dyadic interaction, which left one person out. This might signal a prioritization of dyadic interaction. Dyadic communication structures are common in the everyday lives of people who have spent their childhoods in Western classrooms and have small nuclear families of about two children or less (Keller, Decker, & Döge, 2019; Philips, 1983; Rogoff, 2003).

It is important to note that the decrease in triadic interaction was almost all carried by the increase in dyadic interaction, not by an increase in the family members engaging in solo activities. The families did not change significantly in the extent to which the three members of the triad were unengaged with each other. The 1990 cohort families averaged 6.3% of the time segments unengaged together and the 2020 cohort families averaged 10.6% of the time segments with no one interacting with each other.

Notably, there was also no change in 30 years in the amount of time in which the triad members engaged in rough/ resistant interactions, averaging 5.1% of time segments in conflict or resistance with other triad members in the 1990 cohort and 5.3% in the 2020 cohort. This is worth noting, given how common conflict and resistance are in a number of previous studies of populations with extensive Western schooling, a topic that we will explore below.

Globalization has brought many changes to the ways in which families in San Pedro live. The most striking changes include a decrease in the number of children per family, an increase in maternal schooling, and a decrease in families' involvement in traditional Mayan practices, such as speaking the Tz'utujil Mayan language. In addition, families now use more digital technology, especially smartphones for calls and entertainment. Changes in mother-child interaction have also taken place, such as a decrease in mother-child proximity in seating and sleeping arrangements and a decrease in children being allowed to be out in town without adult supervision. The families in the 2020 cohort who spent the most time collaborating among all three members of the triad were those that maintained a similar lifestyle to the norm of the 1990 cohort.

This concluding discussion first examines whether the Mayan families' recent practices have come to resemble the ways that highly schooled European American families engage in the same situation. Then, the findings of the present study are connected to previous research on cultural differences in collaboration. Next, there is discussion of some of the features of globalization that might decrease collaboration and some practices that might help protect it. The dissertation concludes by suggesting that collaboration is a strength for learning among children anywhere.

Do the 2020 Cohort's Ways of Interacting Resemble European American Highly schooled families?

Do the changes in family collaboration found in the present study among the Mayan families in 2019- 2020 bring them to the same pattern of interaction that has

been found with highly schooled European American families? Fortunately, a casual

comparison can be made using data that employed the same procedure with a sample

of highly schooled families in Salt Lake City (in 1990, reported in Dayton, Aceves-

Azuara, & Rogoff, in press).

The 2019-20 Mayan families engaged in only slightly but not significantly

more collaboration among all 3 members of the family triad than did the Salt Lake

City triads, and similarly for 2 members collaborating and 1 left out. (See Figure 10.)

Likewise, the Mayan families did not differ from the highly schooled European

American families in the extent to which two members of the triad collaborated, with

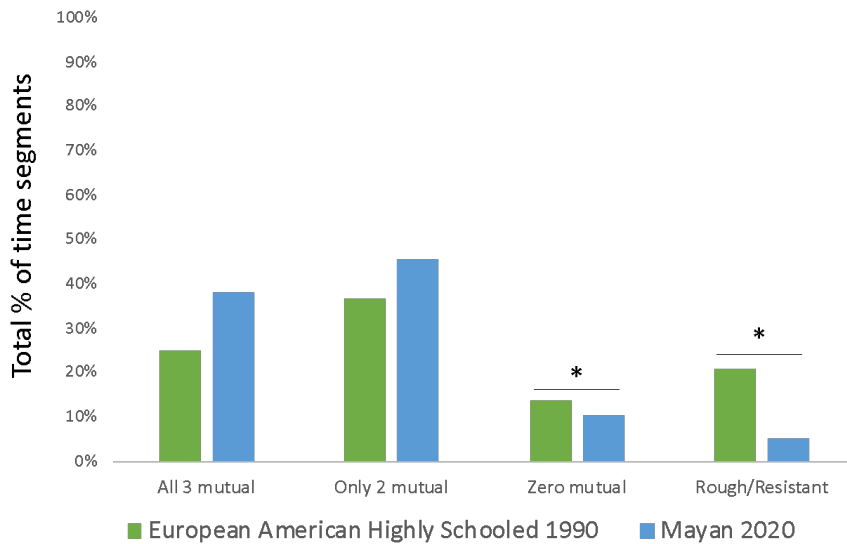one left out. This was the most common approach for both populations.

Figure 10. Percent of time segments spent in the four types of engagement in the 1990 European American Highly Schooled families and in the 2020 Mayan families. *p≤ 0.05

There were, however, differences between the two sites in two approaches

that relate to separateness among family members -- not engaging together and

engaging in rough or resistant ways. The European American highly schooled families spent more time with no interaction among any of the three members of the triad -- 14% of their time vs 10.6% of the time in the recent San Pedro families. This difference was significant, $t(21) = .937$, $p=0.017$, 95% CI [10, 27]. The difference appeared to be primarily due to the European American highly schooled families' greater extent of being all separate from each other with no involvement at all, in 6.2% of the time segments, compared with the 2020 cohort Mayan families (1.9%), $t(21) = 2.03$, $p=0.024$, 95% CI [1, 22]. (There was not a significant difference in the extent of one-way interactions in which a member of the triad observed another but without interaction, 7.8% vs 8.7%, respectively).

Most interesting, however, is that the Mayan families in 2019-20 did not resemble the European American highly schooled families' frequent engagement in rough or resistant interactions. The European American highly schooled families engaged in rough or resistant interactions for an average of 21% of the time segments. This was over three times more than the 2019-2020 Mayan families, who only spent an average of 5.3% of their time in rough or resistant interactions. (The difference is significant, $t(21) = 3.92$, $p < 0.0001$, 95% CI [19, 60], see Figure 10.)

The fact that the 2020 cohort Mayan families spent less time solo or in conflict than the highly schooled European American families suggests that the San Pedro Mayan families of the 2020 Cohort may be moving in the direction of dyadic engagement[5], but not just becoming like the highly schooled European American families' solitary or conflictual approaches. Valuing group harmony, a goal for many

Indigenous families of the Americas (Dayton & Rogoff, 2016; Thomas, 1958), could

be a resilient principle, even in the face of increasing participation in the globalized

world.

Connection to Previous Research on Cultural Differences in Collaboration

Previously, only one longitudinal study looked at collaboration across

generations, finding a decrease in cooperation among Indigenous heritage children in

Mexico attending the same schools as children several decades before (García et al.,

2015). The findings of the present study are consistent with the drop in collaboration

and extend the previous literature by examining collaboration longitudinally within

the same families in a Mayan town that went through rapid changes in the face of

globalization.

The present study also fits with a number of studies finding cultural

differences in collaboration in samples differing in maternal schooling, used as a

proxy for generational change. The 1990 Cohort engaged together like people with

less schooling in previous cross-sectional research, and the 2020 Cohort engaged

somewhat like participants with more schooling in the studies of two contemporary

populations. The studies of two contemporary populations found that collaborative

approaches are more common with Indigenous children of the Americas whose

families have basic schooling than with children from the same communities but

whose families had extensive experience with schooling, who more often used dyadic

or solo ways of interaction (Alcalá et al., 2018; Chavajay & Rogoff, 2002; Chavajay,

2006; Correa-Chávez, Mangione & Mejía-Arauz, 2016; Mejía-Arauz et al., 2007).

How might Features of Globalization Decrease Collaboration

or Traditional Practices Protect Collaboration?

A whole constellation of changes in San Pedro, extending across centuries, has involved Mayan communities in colonial societies, practices, and technologies. These community changes might help to explain the different approaches for family interaction observed in the present study.

Globalization theories suggest with the incorporation of communities into global economies, there are changes in traditional ways of living, ways of relating with one another, ways of knowing, family organization, perception and even cognition, many times resembling the culture of the dominant society (Bauman, 1998; Greenfield, 2016; Giddens, 2002). Globalization has been suggested as an environment that fosters competition, which relies on mass production and individual consumption as a way to subsist. Globalization has changed community organization everywhere, but especially in Indigenous communities of the Americas (Escobar, 2014; de Sousa Santos, 2014; Santorello, 2016).

Opportunities in the family to participate in group work collaboratively might be decreasing with globalization. Prior studies suggest that in Indigenous heritage communities, parents with basic schooling often included their children, so children had ongoing opportunities to collaborate. Parents from the same communities but with extensive experience in schooling often have prioritized academic learning instead of children's participation in family and community endeavors (Alcalá et al., 2014; Mejía-Arauz, Keyser Ohrt, & Correa-Chávez, 2013).

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In spite of the general trends shifting towards globalization, there are some indications of practices that may be related to preserving the skillful collaboration observed in the 90's. Five out of the twenty-two families actually collaborated more in the 2020 cohort than in the 1990 cohort. These families had a constellation of practices that included speaking Tz'utujil at home, having high involvement with Indigenous practices, having low involvement with media and digital technologies, and having a mother with basic schooling.

Involvement in Indigenous practices might foster collaboration. The use of the Mayan Indigenous language, which has a relational structure (Lenkersdorf, 1996; Briceño Chel, 2016), a preference of verbs over nouns, and emphasizes coordinating activities (de León, 2001; de León, 2007), could foster thinking holistically and collaboratively. Being involved in traditional practice such as wearing the traditional clothing, or giving birth with the guidance of a sacred midwife, could indicate that families value and care about preserving traditional ways of living. The fact that some people still choose to wear traditional clothing, despite its greater expense than Western apparel, or choose to seek guidance of a sacred midwife instead of only relying on Western medicine might in some cases be markers of commitment to Indigenous knowledge and practices. In the face of globalization, when identity salience is high and cultural threat is present, there might be motivation to defend the local culture (Chiu & Kwan, 2016).

Broader implications: Collaboration as Strength for Learning

Traditional Indigenous childrearing practices are sometimes in conflict with dominant Western educational models, which historically in many places of Latin America have been presented by governments and other organizations as "the best approach" to promote child development. The findings of the present study will likely be of interest to the people of San Pedro as they consider the recent changes in their town. An important future step is presenting these findings to the people of San Pedro. The community could then reflect on the changes in family collaboration and decide what might be some of the advantages and disadvantages of reincorporating (or continuing) traditional ways. Elders from previous generations have embraced change along with preserving traditional ways (Rogoff, 2003).

Innovation and constant change have always been part of the Indigenous American cosmovision, emphasizing continuous and cyclical change (Rosado-May, Urrieta, Dayton, & Rogoff, 2020). Some communities have incorporated intercultural approaches as a way to transform and promote the harmony and continuity of future generations; this could also be the case for fluid collaboration in the face of globalization.

The present findings could aid in incorporating diverse perspectives into the scientific narrative, and could help people from different cultural backgrounds expand their repertoires of cultural practices and use them when appropriate (Rogoff et al., 2017). Collaboration has been recognized by the US National Academy of Sciences and many other institutions as an important skill for facing current global challenges

(National Research Council, 2013; Laal, Laal & Khattami Kermanshahi, 2012).

Although division of labor has been a common approach to sustain political and economic systems in bureaucracies across the globe, many situations are demanding collaborative approaches. Indigenous ways of collaboration could be broadly beneficial for promoting harmonious relationships and effective teamwork, and a strength for learning. People from many cultural backgrounds could learn how to incorporate this way of engaging in groups.

Footnotes

[1] The data was collected right before the COVID-19 pandemic crisis. The family visits occurred in October-December of 2019 and then January-early March of 2020, which was right before international borders were closed.

[2] In the 1990 cohort all families lived in San Pedro. For the 2020 cohort, most family triads (20) still lived in San Pedro, 2 lived in nearby towns, but had close contact with their family in San Pedro.

[3] Some foreigners own land and run businesses by the lake; some are there for tourism or learning Spanish or visiting with religious groups. There are also a lot of non-Indigenous Guatemalans that visit for tourism. San Pedro is known on the internet now as a drug capitol for foreigners.

[4] In 2020, the 1990 mothers reported an average of 5.4 total live births, ranging from 2 to 11 children, including their children born after the 1990 cohort visits. In addition, 32% of them reported having one or more children who died in childhood.

[5] These changes included:

Gift. Instead of a towel, we gave an equivalent amount in money. In 1990 many families did not have towels. In 2020 almost all families had one. Since the needs of the 2020 families varied, the local research assistant advised us to give a monetary gift. We still gave a quintal of beans, the same as in 1990, but we did not use any plastic bags, since disposable plastic items are now forbidden in San Pedro.

Instead of drawing a map of the house, we asked questions about the house configuration. Houses during the 1990 cohort visits were only one level, and mostly one bedroom, therefore, it only took a couple of minutes to sketch a map of the house. However, most houses during the 2020 visits were 2 or more levels, hence, instead of having a map of the house, we included some questions about the house distribution, right after the demographic questions.

> How many levels does the house have? On which floor do you live? Who lives on the other floors?
> How many bedrooms do you use? Besides the bedrooms, are there other rooms you use?
> How many bathrooms do you use?
> Do you have a living room or a corridor? Do you have a patio?
> Do you rent rooms to foreigners? Do foreigners live with the family?

Video equipment used and participant's relation to the equipment.

A) Camera size. During the 1990 cohort visits a much bigger, more noticeable camera was used (12 pounds, versus 2 pounds in the 2020 cohort visits).

B) Families in San Pedro were unfamiliar with video recording at the time of the 1990 cohort visits, but they were familiar with videotaping (usually by cellphone) by the time of the 2020 cohort visits.

C) The children treated the camera differently. The 1990 cohort children hardly ever approached the camera, but many of the 2020 cohort children wanted to see how the camera was operated and some of them even grabbed it during the session. (A couple of toddlers knocked the camera to the floor during the recording, therefore we added using a cell phone camera for the novel object portion of the visit to make sure we had backup data.) The local research assistant was surprised by the 2020 cohort children's ways of interacting; she commented that it fit with some of the other changes in the children's behavior having to do with more entitlement and less calm.

[5] Dyadic engagement seems to be a preferred, default model of social interaction for many European-American highly schooled families (Mejía-Arauz, et al. 2018); some San Pedro families may be moving in this direction.

INTERVIEW PROCEDURE FOR COHORT 1

As the camera is being set up, the interviewers chat informally with the family. The interviewer then proceeds to obtain the following information. The headings are for the readers' reference.

Family information

1. Who is in your family? -names, ages, children's birthdates, levels of education
2. Have any of your children died? What is the birth order of the child(ren)? How old was the child?
3. Has the baby ever suffered from a serious illness? If so, at what age? Has the sibling?
4. What work does your husband do? What work do you do? (inside and outside the home)
5. What religion is your family?
6. Do you own a home or are you renting? **(Draw floor plan of house)**

Caregiving and social network

1. Who helps with the baby (e.g., babysitters, siblings, father, other kin)?
2. Does the baby attend daycare or preschool?
3. Who takes care of (or supervises) the 3 to 5-year-old?
4. Does the 3- to 5-year-old help take care of the baby? How?
5. What types of playmates do your children have, for example, neighbors, family members, play groups, day care, school? What ages are the children's playmates?

The interviewer presents the novel objects one by one, initially saying

"We brought some objects for you to get the baby to operate. They are too difficult for the baby to operate alone and so he/she will need help".

Chores

1. Does the sibling help around the house? How?
2. Does the baby try to help you around the house? How?

The interviewer presents the playdough saying: "We brought something for you and the baby to pretend to make a tortilla"

The interviewer presents the baby doll saying: "Does the baby like to take care of babies?" [The items in grey could be deleted if the interview is too long; to be determined in piloting.] *Play and social games*

1. What sort of play/social games does the baby enjoy? (For example, peek-a-boo, finger games, rhymes, chase, give 'n take, hiding, catch?) With whom?
2. What times of day does the baby play the most? (can be times or during other activities)
3. How much time do the baby and sibling spend together? When?
4. What kinds of games do they play together?

Daily routine

1. Do the baby and older sibling eat together?
   a. With the rest of the family?
   b. Does the sibling help or encourage the baby to eat?
2. Did you nurse the baby? If so, when was the baby weaned?
3. Did you nurse the sibling? If so, at what age was the sibling weaned?
4. Does the sibling encourage or help the baby to dress?
   a. Does the sibling select their own clothes? How?
5. Does the sibling dress by him/herself? What kind of help does the sibling get?
   a. Tying shoes, buttoning, selecting clothes
6. How do the children go to sleep?
   a. When do the baby and the sibling sleep at night? Same time as parents or before? When do they wake in the morning?
   b. Where do the baby and sibling sleep at night? During the day? With whom? (Make a map of sleeping arrangements)
   c. Did the sibling sleep in a different place before the baby was born? Where? With whom? When did the change occur? Was the change related to the baby's arrival or pregnancy? If so, was this change planned?
   d. What are the children's bedtime routines (e.g., story, rocking, lullaby, games, toothbrushing)?
   e. Security objects? (ask for both children) (Pacifier, teddy, blanket)
7. Did the sibling go through notable difficulties during the mother's pregnancy with the toddler? After? Were any interventions undertaken?

Socialization for proper behavior

1. How do you teach the children to behave properly with each other?
    a. What do you do if the children fight over a toy? What if it belongs to the baby? To the sibling?
2. When do you think children begin to understand the consequences of their acts, for example, that there are places not to go and things not to touch, etc.?
    a. When do you think you can trust a child not to put a small object in his/her mouth? Does the baby put things in her/his mouth?
    b. If the toddler destroys or were to destroy something, how do or would you handle it? If the toddler were to destroy something, can she/he be punished? How?
    c. Is it possible for the toddler to destroy things on purpose at this age? For the older child? When did the older child begin to understand?
    d. If the baby hits at another child, does he/she ever mean to hurt the child, or does he/she not understand? Does the older child understand? When did the older child begin to understand what he/she does…that it might hurt someone?
3. Does the baby try to brush his/her teeth?

    a. Do you brush them? If so, how?
    b. Does the baby cooperate, or do you have to force her/him? How do you do that?
    c. How about the sibling?
4. How many hours of TV do your children watch each day? What kind of programs do they watch?

AZUL: INSTRUCCIONES NEGRO: MARTA DICE ROSA: NOTAS PARA IAA

A. Información familiar

1. ¿Cómo se llama Ud.? ¿Y el papá de su hijo? ¿Los otros familiares?

   Edad ____ Fecha de nacimiento de los niños ___ Nivel de escuela ___ [si es párvulos 2/3, pregunta si cursó 1/2]
   (Marta toma notas durante esta pregunta.)

2. ¿Está usted esperando otro niño?

3. ¿Ha tenido usted niños que murieron? ¿A qué edad?

4. ¿El bebé ha sufrido enfermedades serias? ¿Y el niño?

5. ¿Qué clase de trabajo hace Ud.? ¿Y el papá? (si es maestro/a, ¿dónde?)

6. ¿Qué religión es su familia?

7. (Marta: Anota las respuestas de esas preguntas--) ¿Esta casa es propia o pagan una renta?

   ¿Cuántos pisos hay? ¿En cuál piso viven? [¿Quién vive en los otros pisos?]
   ¿Cuántos cuartos con camas usan Uds.? ¿Cuántos otros cuartos? ¿Cuántos baños?
   ¿Tienen sala o corredor con muebles? ¿Tienen patio?
   ¿Rentan cuarto a extranjero? ¿Los extranjeros comen con la familia?

Marta -- guarda el cuaderno y lapicero.

B. Cuidado y relaciones sociales

1. ¿Quién ayuda con el cuidado del bebé?

2. ¿Quién cuida al niño?

3. ¿Ayuda el niño a cuidar al bebé? ¿Qué hace?

4. ¿Quiénes son los compañeros de juego de los niños? ¿Cuántos años tienen?

JUGUETES -- "*Traemos unos juguetes.*"
Si el bebé no está en buena posición para interactuar con la mamá, pedir que se arreglen. No pida nada sobre el niño.
Diga para el primer juguete:
"*Yo te paso el juguete y tú le enseñas [nak'ut] al bebé a manejarlo, porque es muy difícil.*"
Si el niño intenta agarrar el primer objeto, clarificar a la mamá que el juguete es para el bebé primero.
Presenta los objetos a la mamá uno por uno; puede decir "*Hay otro juguete*" si es necesario, pero sin interrumpir.
[Esto se aplica no importa si es 4 minutos o menos; no hay prisa en ofrecer el próximo juguete.]

Demuestre el siguiente juguete a la mamá en una manera sutil cuando ella está lista, no llamando la atención del bebé. Mientras demuestres el juguete, mantengas tu posición sentada, no agachando ni demostrando hacia el bebé. Solo agachas al entregar el juguete.

Espera a que se aburra el bebé con el juguete antes de mostrar el siguiente. (No interrumpir el interés del bebé.)

En las familias de 4 minutos, si el bebé se pone malcontento o empieza a chillar, hay que seguir con el siguiente juguete o esperar que tome pecho.

En las familias de 'cuando aburre el bebé,' si el bebé solo usa el juguete unos segundos, puede esperar 1 minuto o 1.5 minutos para ver si regresa al juguete.

Demuestra lo mínimo posible – más o menos

> 1-2 veces el *bastidor*, 1 vez la *caja de lápiz* (ofrecer con cerrojo cerrado), 1 vez la más grande de las 3 *muñequitas*, 1 vez el *payaso*, 1 vez el *jarro*, 1-2 veces el *picabú*, 2 veces la *caja de video* (ofrecerle cerrado).

Durante las interacciones, si alguien anda entre la cámara y la mamá y bebé, Marta puede pedir que se mueva. [Itzel, si Marta no lo hace, Itzel puede pedirlo a Marta)

C. Tareas

1. ¿Ayuda el niño con el trabajo en la casa? ¿Cómo?

2. ¿Trata el bebé de ayudar con el trabajo en la casa? ¿Cómo?

PLASTILINA Marta le da a la mamá y dice: "Tal vez el bebé quiere hacer unas tortillas…"
Espera que se aburre el bebé.
MUÑECA: Marta le da a la mamá y dice: "Tal vez tiene ganas de chinear una nena." Espera a que se aburra el bebé.

D. Juegos

1. ¿Qué clase de juegos le gusta jugar al bebé?

2. ¿El bebé y *el allegado* se juntan todos los días? ¿Dónde? ¿De visita o para cuidar?

3. ¿Qué clase de juegos les gusta jugar juntos?

E. Rutina diaria

1. ¿Su hijo come junto con el resto de la familia?

   ¿Ayuda el niño a que el bebé coma?
2. ¿El bebé mama todavía? ¿Cuándo dejó de mamar?

3. ¿Cuánto tiempo mamó el niño?

4. ¿A veces, el niño ayuda a que el bebé se ponga la ropa?

5. ¿El niño se pone la ropa solo? ¿Escoge su propia ropa?

6. ¿A qué horas de la noche se duerme el bebé? ¿Y el niño?

   ¿Dónde duerme *el bebé* durante la noche? ¿con quién? ¿Dónde duerme durante el día? ¿Dónde duerme *el niño* durante la noche? ¿con quién? ¿tiene su propio cuarto?

¿Dónde dormía el niño cuando era chiquito? ¿Qué hace usted antes de que los niños vayan a la cama? (¿Les canta canciones, los arrulla?)

Cuando los niños van a la cama, ¿Llevan con ellos un objeto especial?

F. Socialización de las conductas adecuadas

1. ¿Cómo se enseña a los niños a comportarse correctamente unos con otros?

    ¿Qué hace cuando los niños se pelean por un juguete?
    ¿Qué pasa si el juguete le pertenece al bebé? ¿Qué pasa si el juguete le pertenece al niño?
2. ¿A qué edad es que los niños empiezan a entender las consecuencias de sus actos?

    ¿El bebé se mete cositas en la boca? ¿Cuándo dejan de ponerse cositas en la boca?
    Si el bebé rompe algo, ¿Qué hace usted? ¿Castiga?
    ¿Puede el bebé tener la intención de romper cosas a esta edad?
    ¿Puede el niño tener la intención de romper cosas a esta edad?
    Si el bebé golpea a otro niño ¿Tiene la intención de herirlo o no entiende lo que hace?
    ¿Y el niño? ¿Cuándo comenzó a entender?

G. Acceso de los niños a medios y tecnología

1. ¿Miran televisión infantil los niños? ¿Qué programas? ¿Miran lo que miran la familia? ¿Qué programas?

2. **Al niño:** ¿Usas celular? ¿Qué haces con el celular? ¿Juegas videojuegos?

3. **A la mamá:** ¿El bebé usa celular?

4. ¿El niño usa computadora (o tablet)?

5. ¿Buscan información en el Internet? ¿Tienen Face? ¿Hacen videollamadas?

H. Actividades relacionadas con la escuela

1. ¿El niño trae tareas de la escuela? ¿Cuánto?

2. ¿El niño toma clases (fuera de la escuela)? ¿Sobre qué? ¿Dónde? ¿Pagado o gratis?

    ¿Y el bebé?
3. ¿Y usted? ¿Ha tomado clases para padres o cursos de desarrollo infantil?

    ¿De qué era la clase? ¿Por qué lo tomó?
4. ¿Alguien les lee libros a los niños? ¿En español o Tz'utujil? ¿Son para niños?

5. ¿Qué idioma(s) hablan con los niños?

    ¿Los niños saben hablar Tz'utujil? ¿Saben español? ¿Otro idioma en la casa?
    (¿Quién?)
6. ¿Le enseña Usted algo a su hijo para prepararse para entrar en la escuela? ¿Qué?

¿Juega usted con el bebé? ¿Por qué?

I. Contacto con otras comunidades culturales

1. ¿Tienen familiares fuera del país? ¿Dónde? ¿Están los niños en contacto con ellos?

2. ¿Uds. han vivido o viajado fuera del Departamento de Sololá? ¿Fuera de Guatemala?

3. ¿Los niños tienen contacto con extranjeros? ¿Cómo?

J. Participación familiar y comunitaria

1. ¿Convive **el allegado** con Ud.? ¿Diario? ¿Todo el día?

2. ¿Hay otro familiar que vive en el mismo sitio? (además de su esposo y sus hijos)

3. ¿Su hijo tiene contacto frecuentemente con sus primos, abuelos, y tíos? (¿Cada día? ¿Cada semana?) ¿A qué distancia viven?

4. ¿Usted deja que su hijo salga a la calle para hacer mandados o a jugar con sus amiguitos?

   ¿Solo con los vecinos? ¿Y el bebé?
5. ¿El niño va al trabajo con Ustedes? ¿Ayuda en algo? ¿Y el bebé?

6. ¿El niño participa en alguna actividad para la comunidad? (Por ejemplo, limpiar el lago, coro de la iglesia) ¿Y el bebé?

7. ¿Los niños usan ropa tradicional de San Pedro a diario?

K. Protecciones y expectativas

1. Cuando estaba embarazada, ¿usó algún secreto para proteger a su hijo? (Por ejemplo, no andar a medio día)

2. ¿Quién recibió a su hijo - Comadrona o Doctor?

   ¿Usó hamaca cuando era pequeño?
   Al salir de la casa con el nene en la hamaca, ¿usó machete o algo bajo la hamaca para proteger al nene?
   ¿Y hizo algo para el mal de ojo?
3. ¿Envolvió a su hijo en faja?

4. ¿Qué hizo con el *muxuux*? ¿Dónde lo enterró o guardó? ¿Porqué lo dejó allí?

5. ¿Hasta qué nivel quiere que llegue en la escuela?

   ¿Qué tipo de trabajo quiere que haga su hijo?

L. Cambios en la vida de niños

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Ya para terminar – unas preguntas sobre las familias de hoy y las familias de antes cuando eras niña –

Los niños de hoy ¿se portan diferente en la familia que los niños de antes?

Cuando Ud. era niña, ¿Ud. **ayudaba** sin que su madre le pedía? Y los niños de ahora, ¿es igual o no?

Cuando Ud. era niña, ¿Ud. **aprendió a trabajar solo por ver o escuchar**? ¿Y los niños de ahora?

Cuando Ud. era niña, ¿los niños **contribuyeron a las conversaciones de adultos**? ¿y ahora?

¿Los niños de hoy **molestan** a las conversaciones de adultos más o menos que antes?

¿Las mamás de hoy – en que manera tratan a los hijos diferente que las mamás de antes?

Las bisabuelas dieron a luz a 7-8 bebés, y las abuelas a 4-5. ¿Porqué **no tienen tantos hijos ahora**?

Antes, la gente **colaboró** trabajando mutuamente en construir sus casas, ahora ¿esto sigue? ¿Porqué?

*¿Cómo era mejor **antes** la vida para los niños?*
*¿Cómo es mejor **ahora** la vida para los niños?*

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