Looking at the Big Picture: An Analysis of Children's Family Drawings Across Culture

Hana Hajda

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Abstract

Because the family plays such a vital role in child development, it is important to understand how children conceptualize their families and how these conceptualizations are shaped by their broader social context and culture. The current study asked children from the United States (n = 121, 60 female, M = 5.06 years) and Nicaragua (n = 22, 12 female, M = 8.68 years) to "*draw a picture of their family*." A coding scheme was adapted (Cherney et al., 2006) to analyze the drawings and included 3 categories (family members, details, and spatial arrangement). Results show that across gender, girls were more likely than boys to accurately depict the correct number of people living in their households ($p < .05$) and to draw more overall details ($p < .05$). Children from Nicaragua included significantly more people in their drawings ($p < .001$), more people outside of their nuclear families ($p = .01$), and more ears on their figures ($p < .001$). On the other hand, American children included more mouths ($p < .01$) and smiles ($p < .001$), and drew their figures taller ($p < .01$) and with greater differentiation in height ($p < .05$). Nicaraguan children were more likely to anchor their figures using heads as a baseline, while American children more often used feet as a baseline ($p < .001$). Understanding how children's drawings of their families are shaped by gender and culture will provide significant insight into their early concepts of their social world.

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From the very first moments of a child's life, family members are at the center. The family provides children with their primary attachment relationships, teaching them to be trusting of the world around them and willing to explore it (American Psychological Association, 2019). They are the child's primary social group and main socializing agent (Children's Bureau, 2017). Because of this, families often transmit cultural values, instill knowledge of right and wrong, and provide the context within which children can develop their own identities (American Psychological Association, 2019).

Although families play a large role in child development, it can be challenging to investigate the ways that children perceive their families, especially when working with young children who are still developing the language skills needed to verbalize their thoughts and feelings. For this reason, children's drawings can serve as a more accessible way to investigate the mind. Drawing tasks can be completed without the child having to make eye-contact with an unfamiliar researcher, and they allow children to be more deliberate and unhurried when responding to prompts (Einarsdottir, Dockett, & Perry, 2009). Thus, understanding the way children choose to represent their families through their drawings can provide important insight into their conceptualizations of family.

However, there are many ways to define what a family is, and children themselves often have different criteria that they use to categorize a particular group of people as being a "family" (Mann, Borduin, Cone, Borduin, & Sylvester, 1992). Additionally, children's drawings are reflective of their environment (La Voy et al., 2001), so they may change with social surroundings. Therefore, family relationships, as well as children's depictions of them, must always be considered within a context. Previous studies have demonstrated that forming quick

conclusions about children from their drawings, even when using previously validated classification systems, can be inappropriate when contexts such as gender and culture are not taken into account (Daglioglu, Deniz, & Kan 2010; Gernhardt, Keller, & Rubeling, 2016). Thus, our study seeks to understand how children draw their families, while also investigating the ways that these representations are shaped by gender and culture, specifically focusing on American and Nicaraguan cultures.

General Factors Affecting Drawing Skills

First, in order to make sense of children's drawings, it is important to understand which factors generally affect drawing skills across development, as these basic skills will combine with social and environmental effects to influence the way children draw their families. Drawing abilities are acquired in a specific order, following a cumulative progression common to children as they age, with older children drawing more detailed and complex figures than younger children (Barrett & Eames, 1996). This is likely because increased visuospatial abilities and fine motor skills are related to drawing ability (Toomela, 2002). As children gain greater spatial awareness and ability to visually manipulate patterns as they get older, they can progress from scribbling in a random fashion to the pre-symbolism stage of drawing, a milestone at which they create more directed features and combine circles and lines to represent the human figure (Roland, 1990).

Furthermore, older children may have more extensive drawing skills because of their increased attainment of cognitive abilities (Chappel & Steitz, 1993) and working memory (Cherney, Seiwert, Dickey, & Flichtbeil, 2006; Morra & Panesi, 2017). Working memory is conceptualized as a system that contains the information an individual is processing in a current task (Morra & Panesi 2017). If children are better able to notice, remember, and mentally

maneuver the details in their environment, then it is likely easier for them to visually represent those details (Cherney et al., 2006). Similarly, it makes sense that if children have the vocabulary to label objects in their environment, then they should more likely be inclined to draw those objects, suggesting that language development may also play a role in drawing. One study found a significant correlation between vocabulary level and drawing ability, with both variables also being positively related to age (Toomela, 2002). On the other hand, another study showed no significant relationship between a child's ability to name the head, legs, and arms on a figure and their ability to draw these details on their own figure (Brittain & Chen, 1983). Research suggests that the exclusion of certain body parts in children's figures does not necessarily mean that they are incapable of drawing those body parts (Roland, 1990). As children reach age 5 or 6 years, they have developed a collection of symbols that, to them, stand for things in their environment (e.g., a symbol of a person or a house), and at this age, these symbols serve more as a conceptual understanding than a literal representation of what they see (Roland, 1990).

Then, in the context of family drawings, it makes sense that children of various ages may draw their families differently based not only on their abilities (e.g., visuospatial skills and working memory), but also on the different ways that they symbolically conceptualize a family. At younger ages, children often base their definition of family on common residence (Mann et al., 1992). As they get older, however, they begin to describe family in terms of kinship, expanding their definition to include those who may not necessarily live with them, but are still biologically related, or those who have become related by law (Mann et al., 1992).

Gender Considerations

Drawing differences across gender. These general drawing abilities, however, may present differently in girls and boys. For instance, girls have been shown to draw the human

figure larger (La Voy et al., 2001) and more proportionate (Cherney et al., 2006) than boys. Looking at family drawings specifically, boys more often omit a mother figure and place themselves at the center of their drawings (Reznikoff & Reznikoff, 1956). Girls, on the other hand, include more details when drawing their family members, including more gender-stereotyped details such as fingernails and jewelry (Cherney et al., 2006), and more facial details such as mouths (Gernhardt, Rubeling, & Keller, 2011).

Conceptions of family across gender. These observed differences may be due to different socialization pressures under which girls and boys grow up, affecting the way they conceptualize their environments. Girls are trained to be more conscientious of emotions, and parents talk about emotions more often with their female children than their male children (Dunn, Bretherton, & Munn, 1987). This attentiveness to emotion could explain why girls were more likely to add facial details to their family drawings, especially with regards to those details that indicate emotion, such as a mouth (Gernhardt et al., 2011). Furthermore, while boys have an independent self-construal, valuing the distinction of themselves from others, girls have a more interdependent self-construal, placing greater value in relationships (Cross & Madson, 1997).

Girls, having a more relational orientation than boys, often spend a greater amount of time with their families and have more responsibilities within the household (Fuglini & Masten, 2010). Women in the United States are also likely to have more caregiving responsibilities than men (Cross & Madson, 1997). By seeing their mothers in these positions, girls may in turn view themselves as being more family-oriented as well. Children are more likely to imitate models who are similar to themselves (Bandura, 1977), so daughters likely look up to their mothers as same gender role models. For these reasons, family relationships may be a more salient aspect of a girl's social environment, which could provide another explanation for why girls include more

details in their drawings of their families (Cherney et al., 2006). Much of this research, however, has been done using American samples. Thus, it will also be important to consider whether these gender differences in drawings exist across cultures and whether conceptualizations of family in general differ across cultures.

Cultural Considerations

Drawing differences across culture. Research does indeed suggest that the general content of children's drawings differs across culture. For instance, a sample of children from Thailand included a greater percentage of religious content in their human figure drawings than a comparison group of children from other cultures, displaying the emphasis of religious values in Thailand (Gardiner, 1974). Similarly, Dennis (1966) found that a group of boys from Germany included more masculine features (e.g., facial hair and shoulder emphasis) in their human figure drawings than other groups, reflecting the country's historic mythology of Germanic men as strong warriors. Additionally, children from Japan were found to draw fewer smiling faces than American children, reflecting differences in cultural socialization, as children in Japan are taught to express themselves cautiously, whereas Americans place a greater emphasis on the public display of emotions (La Voy et al., 2001).

Conceptions of family across culture: Understanding the Hispanic value of familism. Moving beyond drawings of the human figure in general to family drawings specifically, it is important to consider the ways that different cultures conceptualize the family as well as the interactions among its members. In particular, it is important to investigate family drawings from cultures that place special emphasis on the institution of the family, such as Hispanic cultures found in places such as Nicaragua (Campos, Ullman, Aguilera, & Schetter, 2014). In Western urban contexts, value is placed on independence, and thus family members are regarded as

separate and unique individuals (Gernhardt, Rubeling, & Keller, 2015). On the other hand, Hispanic culture embraces a more communal orientation that values the prioritization of the family above the self (Campos et al., 2014). This forms the basis for *familismo*, or familism, a value which encompasses a strong sense of familial obligation and the utilization of family as the principle source of emotional support (Campos et al., 2014). Both U.S. born and non-U.S. born Hispanic populations report higher levels of familism than European Americans (Campos et al., 2014).

Interactions among individual family members may also be shaped by the value of familism. For example, a study comparing mother-infant interactions in families from Nicaragua and families from Italy found that Nicaraguan mothers placed greater emphasis on physical proximity with their children, and thus were more likely to co-sleep with their infants and breastfeed on demand (Moscardino, Bonichini, & Valduga, 2009). Then, during an observation period, Nicaraguan mothers were found more likely to engage in physical and body stimulation with their infants, thus instilling a sense of closeness to family from a young age (Moscardino et al., 2009).

In addition to affecting the parent-child relationship, familism values can promote close relationships between siblings as well. Due to high fertility rates, Latin American children often grow up with more siblings in their households when compared to their European American counterparts (Updegraff, McHale, Whiteman, Thayer, & Delgado, 2005). These children report spending more time with their siblings in shared activities, as well as greater levels of intimacy and closeness to them (Updegraff et al., 2005). Additionally, the scope of familism extends beyond simply the nuclear family, with extended family members often playing a role in the raising of children (Moscardino et al., 2009).

Family drawings across culture. Despite this broad understanding of the conceptualization of family in Hispanic cultures, there has thus far been a dearth of research investigating children's family drawings in these cultures. However, one study has pointed in a similar direction by comparing the family drawings of children from Germany, an urban, individualistic culture (i.e., a culture viewing individuals as autonomous and independent agents), with those from Nso children in rural Cameroon, a collectivist culture (i.e., a culture that values relatedness within groups) (Gernhardt, Rubeling, & Keller, 2011). It was found that Nso children included significantly more people in their drawings and included more relatives outside of the nuclear family (Gernhardt et al., 2011). Their figures were also more crowded (Gernhardt et al., 2016), smaller, and had less differentiation in height between adults and children in the family (Gernhardt et al., 2011). They more often omitted mouths and, when including mouths, drew fewer smiling faces (Gernhardt et al., 2011). These differences between the family drawings of children from an individualistic culture and those from a collectivist culture could inform which drawing features might be relevant to investigate in other cultures as well.

Current Study

The purpose of the current study was to examine the characteristics present in the family drawings of school-aged children as a function of their gender and culture (i.e., nationality). Specifically, we investigated drawings completed by children from the United States and Nicaragua, with the United States representing a culture focused on individualism and autonomy (La Voy et al., 2011), and Nicaragua representing a culture focused on the values of familism (Moscardino et al., 2009). Drawings can serve as symbols representing a child's conceptual understanding of the world around them, and these symbols can take on distinct characteristics

based on one's social context (Roland, 1990). So, there is reason to believe that the way children depict their families will change based on their environments.

In Nicaragua, 37% of the population faces chronic poverty (Vakis, Rigolini, & Lucchetti, 2015) and 16% is malnourished (Food and Agriculture Organization of the United Nations, 2016). In rural areas of the country, especially, children attend schools with no electricity or running water (Forno & Boren, 2017), which has been shown to affect both health and educational outcomes (Jordanova et al., 2015), leading Nicaragua to have one of the highest illiteracy rates in Latin America (Dammert, 2010). However, in the face of these disadvantages, the emphasis on familism in Nicaraguan culture can serve as a major protective factor for children. In fact, it has been found that higher levels of familism lead to greater family closeness and perceived social support, which in turn lead to greater psychological outcomes in terms of general mental health, perceived stress, and depressive symptoms (Campos et al., 2014).

Thus, it can be argued that the family is the most vital institution in the lives of Nicaraguan children, which is why it is so important to understand the way that these children might view their families differently than children in the United States. While much research has investigated family structures in general across cultures, there is still a need to explore the conceptualization of family from the perspective of the children themselves, as well as the ways that gender might influence their representations.

Hypotheses

We hypothesized that, due to cultural differences in family sizes (Updegraff et al., 2005), Nicaraguan children would include a greater total number of family members in their drawings than American children. Further, we hypothesized that, because of their greater exposure to the values of familism (Moscardino et al., 2009), Nicaraguan children would be more accurate than

American children in matching this total number of family members in their drawings to the actual number of people living in their household. We also predicted that girls would be more accurate than boys, as literature describes girls to be more relationally oriented (Cross & Madson, 1997).

Likewise, we hypothesized that Nicaraguan children would include more overall details in their family drawings than American children and that girls would include more overall details than boys, again because family may be a more salient aspect of these groups' environments (Cross & Madson, 1997; Moscardino et al., 2009). More specifically, we predicted that girls would include more details concerning emotions (e.g., mouths and smiles), in line with research showing girls to be more emotionally conscientious than boys (Dunn et al., 1987).

In terms of how the figures were arranged within the pictures, we hypothesized that, due to parents' early emphasis on closeness and physical proximity in Nicaraguan culture (Moscardino et al., 2009), Nicaraguan children would draw their family members closer together in comparison to American children. On the other hand, we hypothesized that American children would draw their figures with greater average height and with greater differentiation in height, due to their culture's emphasis on individualism (La Voy et al., 2001) and previous research showing modern Western cultures to draw their figures with more differentiation in height (Gernhardt et al., 2011).

Method

Participants

One hundred fifty-nine total children were recruited from two populations, one being from a database of public birth records in Durham County, North Carolina (n = 135), and the second being from a school in the community of Jiquelite, within the municipality of El Sauce, in

Nicaragua (n = 24). Caregivers gave written consent for their children to participate in the study, as approved by the Duke University Institutional Review Board and the State University of New York at Geneseo Institutional Review Board. Parents and infants were reimbursed for their participation with a book or t-shirt and were given the option of receiving $5 to $10 in gas compensation. Children were excluded from the sample if they did not complete the drawing task (n = 16), leaving final sample sizes of 127 children from the United States (63 female, M = 5.06 years, range = 4.11 to 5.51 years) and 22 children from Nicaragua (13 female, M = 8.68 years, range = 3 to 14 years). The two samples did not differ significantly in gender distribution, $\chi^2(1, N = 149) = 0.68$, $p > .05$. However, the children in the Nicaraguan sample were significantly older than those in the American sample, $F(1, 148) = 149.84$, $p < .001$, $\eta_p^2 = .51$. The American sample consisted mainly of White children (84.3% White, 5.5% Black, 8.6% Multiracial, 1.6% other), who came from predominantly middle or upper-middle class backgrounds, with 88.2% living in households with an annual income of $50,000 or above, and 90.5% having a parent with at least a college degree.

Materials and Procedures

Before beginning the experiment, parents completed the informed consent process and forms requesting basic demographic information in order to determine the total number of people living in their households. As a part of a larger study on language development, participants then completed a drawing task. Each child was given an assortment of colored crayons and a piece of paper. The children from the American sample were all given a blank piece of white printer paper (8.5 inches x 11 inches), and the children from the Nicaraguan sample were either given a blank piece of white printer paper of the same size or a piece of lined notebook paper (7.4 inches x 9.5 inches). The experimenter asked each child in his or her native language to draw a picture

of his or her family (see Figure 1 and Figure 2 for examples). The experimenter sat with the child while he or she was drawing, but did not otherwise engage with the child or the picture.

Analysis Strategy

In order to analyze the children's family drawings, a coding scheme was developed based on Cherney et al. (2006), which included three categories: (1) *family members*, (2) *details*, and (3) *spatial arrangement*. A randomly selected 25% of participants' drawings were analyzed by an independent coder to achieve interrater reliability (intraclass correlation; ICC = .99).

Family Members. First, the total number of figures in the drawing was recorded. Then, the coder determined whether the total number of figures drawn matched the number living in the child's household, as reported in the parent demographic form. If this number did not match, the coder then determined whether the child included more or less people in the drawing than the number living in the household. Next, we evaluated whether a mother figure was included in the drawing. Because the people in the drawings were not labeled, this piece of information had to be extrapolated using indications such as height and gender details. This variable was coded categorically as "1" (mother figure present), "0" (mother figure absent), or "na" (unclear whether mother is included). We also investigated whether a father figure was included using the same coding procedure. Pets were also coded as being either "1" (included) or "0" (excluded).

Details. Furthermore, we examined the inclusion of details on the people in the drawings. Within each participant's drawing, we examined all of the depicted family members individually to determine whether they were drawn with eight essential details (i.e., hair, nose, mouth, eyes, hands, feet, arms, and legs). Each of these items were given one point for inclusion, and then these points were summed to determine the total number of details per family member, with a maximum score of 8.

We then looked at these details individually, coding the details of hair, noses, mouths, eyes, hands, feet, arms, legs, and ears as either "1" (included) or "0" (omitted). Within each participant's drawing, an average score was computed for each detail to determine the proportion of family members depicted with that detail (e.g., if a participant drew four total people, two of whom had hands and two of whom did not, then that participant would have an average hand score of 0.5). Beyond these essential details, we also investigated the inclusion of smiles, coded as either "1" (any figure in the drawing is smiling) or "0" (no figure in the drawing is smiling), as well as the inclusion of clothing, coded as "1" (all figures in the drawing are wearing clothing) or "0" (all figures in the drawing are not wearing clothing).

Spatial arrangement. To investigate the spatial orientation of figures in the drawings, we first measured the distance between each figure in centimeters, measured as the length of the line connecting the closest points on their respective bodies. Additionally, we measured the height of each figure in inches as well as the differentiation in height among figures, measured as the difference between the heights of the tallest and smallest figures in each drawing. We further examined the placement of the tallest figure in each drawing by coding whether they were "placed at the end of a row" or "not placed at the end of a row." Lastly, we examined the way that the children grounded their figures on the page, coding whether they lined up their figures using "feet as a baseline," "heads as a baseline," or "no baseline."

Statistical Analysis

Chi-square analyses were run in order to determine if there were cultural or gender differences in terms of whether participants accurately depicted the correct number of family members living in their households, as well as to determine whether children included more or less people in their drawings than the number in their households. Next, 2 (Culture: American

and Nicaraguan) X 2 (Gender: male and female) between-subjects analyses of covariance (ANCOVAs) were run in order to investigate whether the inclusion of certain essential details (e.g., limbs and facial features), smiles, or clothing differed by culture or gender, as well as to determine if any significant interactions between culture and gender were present. Then, to analyze spatial orientation, univariate between-subject ANCOVAs were computed with the independent variable being culture and the dependent variables being (1) the average distance between figures, (2) the heights of the figures, and (3) the differentiation in heights of figures. Additional chi-square tests were run to compare the percentages of children from each cultural group that placed the tallest figure at the end of a row, as well as the ways that the figures were anchored in the drawings.

Because there were significant age differences between the American and Nicaraguan samples, and because older children generally include more details in their drawings and have different concepts of family than younger children (Barrett & Eames, 1996; Mann et al., 1992) age was used as a covariate in all calculations. Furthermore, an alpha level of .05 was used for all analyses.

Results

The current study sought to examine the ways that children from the United States and Nicaragua represent their families through their drawings, as well as the ways that these representations may vary by gender. In order to analyze the drawings, we investigated the family members included, the details included, and the spatial arrangement of the figures in the drawing.

Family Members

First, we investigated the total number of figures included in the drawings. Nicaraguan children included significantly more people ($M = 6.05$, $SD = 1.94$) than the American children ($M = 3.09$, $SD = 1.70$), $t(146) = 7.38$, $p < .001$. When determining whether this total number of figures matched the total number of family members living in the participant's household, we found no significant difference between American and Nicaraguan children, $\chi^2(1, N = 147) = 0.65$, $p > .05$ (see Table 1). However, there are two reasons why the children's drawings might have been inaccurate: either they included less people in their drawings than actually lived in their households, or they included more. Among the children whose drawings did *not* match reality, a significantly larger percentage of American children (84.9%) than of Nicaraguan children (53.9%) included less people in their drawings than the number living in their households, whereas a larger percentage of Nicaraguan children (46.1%) than American children (15.1%) included additional people beyond the number living in their households, $\chi^2(1, N = 79) = 6.46$, $p = .01$.

Then, looking across gender, girls (56.0%) were significantly more likely than boys (36.1%) to have their drawings match reality, $\chi^2(1, N = 147) = 5.85$, $p = .02$ (see Table 1). Among those whose drawings did not match, the gender patterns differed by culture (see Table 2). In the American sample, there was no significant difference across gender, $\chi^2(1, N = 66) = 2.45$, $p > .05$. Both American girls and American boys more often included less people in their drawings than the number actually living in their households. Among Nicaraguan children, however, girls were more likely to draw more people than actually lived in their households, while boys more often included less people, although this difference did not reach statistical significance, $\chi^2(1, N = 13) = 2.24$, $p = .14$.

Furthermore, when examining which specific family members were included or excluded, American children were marginally more likely to include a mother figure than a father figure in their drawings, $t(58) = 1.93$, $p = .06$. On the other hand, the Nicaraguan children were equally likely to include a mother figure and a father figure ($p > .05$). In fact, all Nicaraguan children whose drawings did not match reality either included both a mother and father figure or excluded both, while no children were found to exclude one but not the other, showing a significantly different observed distribution of mother-father combinations than expected by chance, $\chi^2(1, N = 7) = 7.00$, $p = .008$. Participants were excluded from these calculations if it was unclear whether a particular person in the drawing was a parent figure or not. American children were also more likely to include pets in their drawings compared to Nicaraguan children, none of whom included a pet as a member of their family, although this difference did not reach statistical significance, $F(1,146) = 2.24$, $p = .14$, $\eta_p^2 = .016$.

Details

In addition to examining the inclusion of certain people in the family drawings, we also examined the inclusion of certain essential details in each drawing, accounting for the presence of limbs and facial features. Results showed no significant difference between the overall number of details in the American ($M = 4.63$, $SD = 1.77$) and Nicaraguan ($M = 4.84$, $SD = 1.95$) drawings, $F(1, 127) = 0.13$, $p > .05$, $\eta_p^2 = .001$. Although there were no differences in the overall amounts of details included in the drawings, there were differences in the types of details included (see Table 3). Nicaraguan children more often drew ears on their figures, whereas American children more often drew mouths. Furthermore, American children were more likely to draw their figures smiling ($M = .85$, $SD = .42$) than Nicaraguan children ($M = .41$, $SD = .95$), $F(1, 132) = 24.05$, $p < .001$, $\eta_p^2 = .15$.

When examining gender effects, girls included more overall details (M = 5.22, SD = 3.56) than boys (M = 4.26, SD = 4.02), $F(1, 139) = 5.57$, $p = .02$, $\eta_p^2 = .04$. Specifically, they were more likely to draw their figures with hair, noses, and ears (see Table 3). Furthermore, there was a significant interaction between gender and culture for the inclusion of ears, $F(1, 128) = 7.00$, $p < .01$, $\eta_p^2 = .05$ (see Figure 3). Nicaraguan girls drew ears more often (M = .66, SD = .47) than American girls (M = .03, SD = .14), $F(1, 72) = 12.13$, $p = .001$, $\eta_p^2 = .15$, but the difference between Nicaraguan boys (M = .43, SD = .42) and American boys (M = .05, SD = .20) was nonsignificant, $F(1, 59) = 0.26$, $p > .05$, $\eta_p^2 = .004$. No other interaction effects between gender and culture were significant (all ps > .05).

Beyond these essential details of limbs and facial features, we also examined the inclusion of clothing on the figures in the drawings. There was no significant main effect for culture, $F(1, 133) = 0.09$, $p > .05$, $\eta_p^2 = .001$. However, girls were more likely to draw all of their figures wearing clothing (M = .41, SD = .86) than boys (M = .12, SD = .98), $F(1, 132) = 7.91$, $p = .006$, $\eta_p^2 = .06$. Furthermore, there was a significant interaction between gender and culture in terms of whether the participants drew all of their figures wearing clothing, $F(1, 132) = 4.65$, $p < .05$, $\eta_p^2 = .04$ (see Figure 4). Looking within cultures, it was found that Nicaraguan girls (M = .61, SD = .59) were more likely than Nicaraguan boys (M = .11, SD = .73) to draw all of their figures wearing clothing $F(1, 21) = 6.50$, $p = .02$, $\eta_p^2 = .26$. However, there was no significant difference between American girls (M = .27, SD = .44) and boys (M = .19, SD = .40), $F(1, 111) = 0.91$, $p > .05$, $\eta_p^2 = .008$.

Spatial Arrangement

Lastly, we looked at the spatial arrangement of the depicted figures. When examining how close participants drew their figures to one another in their drawings, we found no

significant cultural differences, $F(1, 125) = 0.62$, $p > .05$, $\eta_p^2 = .005$. However, differences did exist with regards to the heights of the figures. The American children on average drew their figures taller ($M = 4.20$, $SD = 1.55$) than the Nicaraguan children ($M = 2.51$, $SD = 1.04$), $F(1, 132) = 7.57$, $p = .007$, $\eta_p^2 = .06$. American children also drew their figures with greater differentiation in height ($M = 2.04$, $SD = 1.60$) than the Nicaraguan children ($M = 1.17$, $SD = 0.79$), as measured from the tallest figure in the drawing to the smallest figure in the drawing, $F(1, 124) = 3.59$, $p = .02$, $\eta_p^2 = .04$. Looking further at the arrangement of figures by heights, the two samples also differed in terms of where they placed their tallest figure, $\chi^2(1, N = 107) = 5.01$, $p = .03$ (see Table 4). American children were equally likely to place the tallest person at the end of a row (i.e., as the first or last person in the row of family members) as they were to place them somewhere in the middle, $\chi^2(1, N = 86) = 1.16$, $p > .05$. The Nicaraguan children, however, were less likely to have their tallest person placed at an edge of a row than they were to have them placed somewhere in the middle, $\chi^2(1, N = 21) = 3.86$, $p = .05$.

To further examine the placement of family members in relation to the other figures in the drawings, we then analyzed the way participants chose to anchor their figures (i.e., the plane that they used to line up figures with one another). Among the children whose drawings included a baseline, American children were more likely to anchor figures using their feet as a common baseline, whereas Nicaraguan children were more likely to anchor figures using their heads, $\chi^2(1, N = 98) = 27.87$, $p < .001$ (see Table 5).

Discussion

The current study investigated cross-cultural differences in children's representations of their families and examined the moderating effects of gender on these representations. A sample of children from a suburban community in the United States as well as a sample from a rural

community in Nicaragua were chosen for this investigation. Previous research has shown that Nicaraguan families emphasize the socialization goals of interconnectedness among family members, while modern Western families more often emphasize goals of autonomy and assertiveness (Moscardino, et al., 2009). However, little research has compared the conceptualization of family from the perspective of children themselves. In this study, therefore, participants were asked to draw pictures of their families, and then these drawings were coded to determine the family members drawn, the details included on the figures, and the spatial arrangement of the figures.

Family Members

First, with regards to the family members included in the drawings, we hypothesized that Nicaraguan children would include a greater total number of family members in their drawings than American children. Results supported this hypothesis, in line with statistics showing family sizes in Nicaragua to be significantly larger than those in the United States (United Nations, 2018).

Because of the emphasized value of familism in Nicaraguan culture, we also hypothesized that that the Nicaraguan children would be more accurate than American children in including the correct number of people from their households in their drawings. We further hypothesized that girls overall would be more accurate than boys. While results showed the expected gender differences, they did not show the expected differences between American and Nicaraguan children. However, despite there being no difference in accuracy across culture, we did find that when American children's drawings did not match reality, it was more likely because they left family members out. On the other hand, when Nicaraguan children's drawings

did not match, it was often because they included additional people in their drawings beyond the number actually living in their households. This was true for the Nicaraguan girls in particular.

One possible interpretation for the greater overall accuracy of girls in depicting their family members might be explained by research showing that girls place greater importance on harmony in groups, displaying a more interdependent self-construal (Cross & Madson, 1997). Because girls emphasize relational values more than boys, it makes sense that the symbols of family might be particularly prominent for girls, as family members are some of the primary people with whom children share relationships. Girls, in fact, have also been found to more often describe themselves in terms of other people, such as family members (McGuire & McGuire, 1982).

Alternatively, the girls in the current study may have simply drawn more complete depictions of their family members because they were more thorough in following the experimenter's instructions. Girls are in general better at following the instructions of adults than boys, and they are more likely inhibit the urge to switch tasks when distracted (Wanless et al., 2013). Thus, when asked to draw pictures of their families, girls may have interpreted the directions more literally and kept working until they had drawn all their family members, while boys may have been less likely to complete the task.

Looking next at cultural differences, although Nicaraguan children were not more accurate than American children, they were overall less likely to omit family members from their drawings. This finding could be explained by research showing children from Hispanic families to spend more time with their siblings and to report greater closeness with them (Updegraff et al., 2005). If the Nicaraguan participants in this study had more intimate relationships with their siblings, they may have paid special attention to include each one of them in their drawings.

Furthermore, some children included even more people in their family drawings than the actual number living in their households. Since Nicaraguan children were more likely than American children to include additional people in this way, results suggest that the concept of family in Nicaragua may often extend beyond simply the nuclear family. This makes sense because children in Nicaragua often see their aunts, grandparents, and other relatives providing additional emotional and material support to their own parents (Espinoza, 2002). *Compadrazgo*, or godparents, also play important roles in Nicaraguan children's lives and can provide an additional source of social support (Moscardino et al., 2009).

However, these findings were qualified by gender such that the Nicaraguan girls more often added people to their drawings while Nicaraguan boys more often omitted people. This is in line with research showing that, even within Hispanic cultures where sibling relationships are highly valued, sisters usually spend more time with their siblings than do brothers (Updegraff et al., 2005). Girls in these cultures also often have more domestic responsibilities, with older sisters having a large portion of the caregiving responsibilities for other family members (Killoren, Wheeler, Updegraff, Rodriguez de Jesus, & McHale, 2015).

In rural regions of Nicaragua where agriculture is the principle economic activity, such as the community examined in the present study, 15% of children must work to support their families (Forno & Boren, 2017). Youth in these communities have reported farming, doing household chores, and helping relatives as the primary ways in which they spend their free time (Forno & Boren, 2017). If girls are more often doing work at home, it makes sense that they may be spending large parts of their days with relatives, such as grandparents and aunts, who live nearby. They may take care of or spend time with cousins just as they would with siblings. Thus, these girls may be more inclusive of who they consider part of their primary family group. Boys,

on the other hand, who do more work in the fields helping with farming, likely spend time around workers who are both related and unrelated to them. Boys therefore may have a greater conceptual separation between the individuals they work with and the individuals whom they consider their family.

In addition to investigating how often participants omitted or added family members to their drawings, we looked more specifically at whether certain people, such as mother or father figures, were included. American children were marginally more likely to include a mother figure than a father figure in their drawings. Nicaraguan children, on the other hand, were equally likely to include both parents. The reason for this finding could be because women in the United States are more likely to be in a position of raising children, having more caregiving responsibilities than men (Cross & Madson, 1997). In Nicaragua, such caregiving responsibilities may be more spread out amongst older siblings and other extended family members in addition to mothers (Espinoza, 2002; Killoren et al., 2015). Thus, there might have been a sharper distinction between mothers and fathers for the American children when creating their family drawings than there was for the Nicaraguan children. Alternatively, American children could have been more likely to omit a father figure because growing divorce rates in the United States mean that many children are living in single-parent households, often with their mothers being their primary caregivers (Pew Research Center, 2015). Thus, it is likely that some of the American participants omitted a father figure in their drawings because they did not have a father living in their household at the time of the study.

Furthermore, American children were marginally more likely to include pets in their family drawings than Nicaraguan children, none of whom included pets in their drawings. This is likely because Americans have a more sentimental attitude towards animals, and often consider

them to be members of the family. In fact, six in 10 Americans own a pet of some kind (Newport, Jones, Saad, & Carroll, 2006). In rural communities of Nicaragua, such as the one examined in the present study, animals are likely used as part of the farming process or are otherwise seen as nuisances.

Details

In addition to examining the inclusion of certain people in the drawings, we also examined the inclusion of certain details on the people in the drawings. We hypothesized that girls would include more overall details than boys and that Nicaraguan children would include more overall details than American children. Again, the results showed expected gender differences, but showed no significant cultural differences when accounting for the age of participants.

Although we found no significant differences between American and Nicaraguan children in the *amount* of details included in their drawings, we did find differences in the *types* of details included. Nicaraguan children more often drew ears, whereas American children more often drew mouths and smiles. Other studies have similarly shown that American children include more smiles in their human figure drawings than other cultural groups (e.g., Japan), and they have suggested that this may be because American culture places an emphasis on the public display of emotion and on individual expression (La Voy et al., 2001). American individuals have in fact reported being more comfortable expressing emotions than individuals from other countries, such as Costa Rica (Stephan, Stephan, & De Vargas, 1996). Some research has even suggested that a greater inclusion of mouths and smiles in family drawings could be due to the emphasis of assertiveness and face-to-face communication in urban Western contexts (Gernhardt, Rubeling, & Keller, 2011).

However, the differences found in the present study may also be explained by the fact that the Nicaraguan children examined here did not have access to cameras or photographs, and before the experimenter visited them, they had never seen a picture of themselves. The American children, however, have likely had experiences throughout their childhood of "smiling for the camera" and posing for pictures. When drawing their families in this study, then, they likely were drawing *pictures* of their families similar to the pictures they would have taken when posed and smiling. Nicaraguan children, on the other hand, were likely drawing their family members as they would see them in real life as opposed to the particular way they might look in front of a camera.

Nevertheless, the higher rate of mouths and smiles in the American children's drawings cannot be simply attributed to greater use of detail, because the Nicaraguan children included equivalent amounts of overall details, and as mentioned above, even drew higher rates of the specific detail of ears. There are no current theories as to why Nicaraguan children might more often include ears in their drawings. This may simply be because children in Nicaragua are taught that this is the proper way to draw the human figure. Other more speculative explanations might suggest that if children are being taught to include ears in their human figure drawings, ears must be a part of the broader symbolism in Nicaraguan society. This in turn might be reflective of a value placed on listening in their culture, as Nicaraguan mothers in previous research have reported their main socialization goals to focus on respect and obedience within the family (Moscardino et al., 2009). Furthermore, it was also found that Nicaraguan girls in particular drew ears more often than American girls, demonstrating that this value might have been especially prominent for girls within the family system.

When examining gender effects overall, results supported findings from previous studies showing girls to include more details in their drawings than boys (e.g., Cherney et al., 2006; Gernhardt, Rubeling, & Keller, 2011). Specifically, girls were more likely to draw their figures with hair, a nose, ears, and clothing. These specific details do not necessarily correspond to details depicting emotional expressions, such as smiles or mouths, as was expected from research describing girls as being more attentive to emotions than boys (Dunn et al., 1987). Thus, these features may just be a function of greater overall detail in girls' drawings. One explanation for this greater inclusion of detail could come from gender differences in fine motor skills (Halpern, 2000), increasing girls' abilities to draw fine details. However, as mentioned previously, the fact that girls emphasize relational values more than boys may mean that family relationships are a more salient aspect of a girl's environment, making them more likely to include more details when depicting their family members (Cherney et al., 2006). The inclusion of more hair and clothing in particular may also have been ways for them to denote gender, as the portrayal of long hair and triangle shaped dresses are common ways for children to highlight femininity in their human figure drawings. Because feminine features may have been more relevant for the participants who themselves were girls, the female participants in this study may have been more thorough in including these details.

Furthermore, this gender difference in the inclusion of clothing was more pronounced within the Nicaraguan sample than it was within the American sample. If it is true that Nicaraguan girls have more responsibility within the household than Nicaraguan boys (Dammert, 2010), then they may play a greater role in washing and even making clothing. This may explain why clothing could be a more prominent symbol for them to then include in their human figure drawings.

Spatial Arrangement

Lastly, we looked at the spatial arrangement of figures in the drawings. Due to the early emphasis on physical proximity in Nicaraguan culture (Moscardino et al., 2009), and previous studies showing children in rural traditional contexts to draw their family members more crowded (Gernhardt et al., 2011), we hypothesized that the Nicaraguan children would draw their family members closer together in comparison to American children. However, results showed no significant differences between the two samples with respect to the distances between figures in their drawings. These findings may suggest that even though Nicaraguan mothers emphasize bodily contact with their infants, and even though Nicaraguan children experience close physical proximity to family members, these differences may just not be reflected in the way that they draw their families.

Alternatively, the lack of significant results could be explained by the way that this variable was operationalized in the present study. To determine the distance from one figure to another, we took the measurement between the closest possible points of their bodies. However, sometimes figures were drawn with arms widely extended, so that even if they were drawn more spread out, the small distance between the tip of one figure's arm to the tip of another figure's arm did not accurately represent how spread out they actually were. Perhaps if the distance was measured from the center of one figure's body to the center of the neighboring figure's body, differences between the two samples would have been more apparent.

In addition to looking at the distances between figures, we also investigated the variability in height among figures in each drawing. We hypothesized that American children's figures would be taller and have more differentiation in height than the Nicaraguan children's figures. Results supported this hypothesis, as American children on average drew their figures

significantly taller than Nicaraguan children. They also represented greater differences in height between the adults and children, as measured from the tallest figure to the smallest figure in each drawing.

It is possible that these differences in overall height could be accounted for by the total number of figures in each drawing. Because Nicaraguan children drew significantly more people in their drawings, they may have had to draw their figures smaller simply to fit them on the page. Another explanation could be due to the fact that the Nicaraguan children examined in this study lived in a community suffering from malnutrition, which may in turn mean that the people in their community are generally not as tall as individuals in living in middle-class communities in the United States. In fact, the average height of the Nicaraguan participants in this study (50.2 inches) was found to be below the average height of children of the same age in the United States (about 53 inches) (Cincinnati Children's, 2019). From this information, it can be inferred that the adults in this community have also grown up to be shorter on average than their American counterparts. However, although this might explain why *average* figure height was smaller in the Nicaraguan drawings, it still cannot fully explain why there was such small *variability* in height in the Nicaraguan drawings. Even if people on average are shorter than those in the United States, adults should still be substantially taller than children, yet the Nicaraguan participants often drew their family members so similar in height that adults and children could not be differentiated.

These results could also be reflective of cultural differences. American culture emphasizes independence and the uniqueness of each person (Cross & Madson, 1997). The American children, therefore, may have been more likely to conceptualize the members of their family as separate individuals and to distinguish each person from one another by representing

them with different heights. Their tendency to draw figures in a linear order, by more often placing the tallest figure at one of the edges of their drawings, may indicate a type of hierarchy within the family. These hierarchies may again have been a way to distinguish each individual by emphasizing differences in authority between adults and children in the family. The Nicaraguan children, however, grew up in a more communal culture (Moscardino et al., 2009), and may instead have viewed family members as making up an interdependent unit rather a collection of different individuals. This could explain why they then drew their figures with less variation in height. Furthermore, the Nicaraguan children were more likely to anchor their figures using their heads as the baseline rather than their feet on a ground. This depiction of figures, placing faces on a more even plane with one another, could possibly indicate that authority is more equally distributed within the Nicaraguan family. Research does show that children in Nicaragua often have substantial responsibility contributing to their families even at a young age through both economic activities and household roles (Forno & Boren, 2017).

Alternatively, these differences again could stem from the idea that children in the United States may be more used to taking family portraits or class photos where individuals line up in height order, where differences in height and linear hierarchies are more apparent. Their drawings of their families may then constitute more of a two-dimensional picture, such as one that would be taken with a camera. The Nicaraguan children, on the other hand, may have been more likely to draw their figures as they might be spread out in real three-dimensional space rather than being arranged in a posed configuration.

Limitations

Although the present study demonstrates both cultural and gender differences in the way that children choose to represent their families through their drawings, some limitations still must

be acknowledged when interpreting results. First, there were only 22 children in the Nicaraguan sample, and when running certain tests that involved only certain parts of the sample, this number became even smaller (e.g., when examining only the children whose drawings did not match reality, only eight Nicaraguan children were included in analyses). The fact that the sample size was so small may have decreased statistical power and could also have decreased the likelihood that the participants in the study were representative of the larger population.

This question of generalizability is also relevant when considering that the Nicaraguan children studied came from a specific school in a specific region of the country. The community studied was in a rural area where many families face extreme poverty and malnutrition. These children attended a one-room schoolhouse where students of all ages learned in the same classroom. Because all participants were therefore being exposed to lessons and cultural values from the same teachers or group of teachers, and because they all likely faced similar life experiences and challenges, the way they depicted their families could be specific to the community in which they were living. It is possible that these same trends would not be found if studying children in another more urban city in Nicaragua.

Likewise, the children from the American sample were also not the most representative sample of the larger American population. The participants in this study came from mainly White families of middle class to upper-middle class households living in a suburban area of North Carolina. It is unknown whether children from different racial, financial, or regional backgrounds would choose to depict their families in similar ways.

Furthermore, because the demographic makeup of these two samples was so distinct, the present study inevitably involved many confounding variables. While the central aim was to compare cultural differences in children's representations of their families, the two groups also

differed in race and socioeconomic status. Furthermore, they had different levels of education and time in school, perhaps affecting cognitive and vocabulary skills, which have been previously tied to drawing abilities in children (Chappel & Steitz, 1993; Toomela, 2002). So, it can be difficult to parse apart whether culture in particular was what accounted for the observed differences. Additionally, the two samples had different average ages. While age was included as a covariate in all analyses, this is still a limitation that should be considered for future studies, as older children are shown to draw differently than younger children (e.g., Barrett & Eames, 1996; Roland, 1990). Further confounding variables include the fact some children drew their families with the paper oriented horizontally while others drew with the paper oriented vertically. Some Nicaraguan participants were also given lined pieces of paper to draw on instead of plain white pieces of paper, and these lined pieces of paper were slightly smaller in their dimensions. It is possible that these subtle differences could have changed the way that figures were spatially arranged on the page.

An additional limiting factor of the present study was that children did not label which person was which in their drawings. Thus, when examining children whose drawings did not match reality, we were not able to determine which specific family members they either added or omitted. Additionally, when investigating the inclusion of mother and father figures, we had to make assumptions based on heights and other cues, and participants had to be excluded from this calculation if it was not clear whether a certain person in their drawing actually was a parent.

Lastly, it must be noted that while we are able to demonstrate systematic differences between the way that the American and Nicaraguan children in this study represented their families, we cannot explain why these differences occurred. Although speculative interpretations have been presented based on what was observed and what is currently known about these

cultures in general, these interpretations cannot be proven given the data collected for this particular study.

Future Directions

Taking these limitations into account, more in-depth studies can be done in the future in which, after participants have completed the drawing task, they are asked which specific family member each person in their drawings represents. With this information, further questions can be asked such as which people are placed next to each other, which specific details are included on which people, and which people are drawn to be the tallest or are positioned in the center of the drawing. These variables could provide more precise information on family dynamics. Additionally, it could be beneficial to take into account the birth order of participants in future studies, as older siblings might conceptualize and represent their families differently than younger siblings do, and these birth order effects might look differently in other countries than they do in the United States.

Furthermore, it will be beneficial for future studies to try to make sense of what these cultural differences in family drawings mean. This could perhaps be done by connecting drawing characteristics to family characteristics measured with a questionnaire. Certain interpretations could also be tested by having children draw their families multiple times. If American children, for instance, position their family members the same way over time, while Nicaraguan children change the way they place their figures with each drawing, more support may be provided for the interpretation that the American children were treating their drawings as static pictures while Nicaraguan children were drawing their family members as they might be positioned in three-dimensional space in real life.

Conclusion

The current study was able to demonstrate systematic differences between the ways that children from particular communities in the United States and Nicaragua depicted their families through their drawings in terms of how many people they included, the details they drew, and the ways that they organized family members in spatial relation with one another. These findings suggest that, even at a young age, children from different cultures may think about their families in different ways. This is important because any efforts to improve health and educational conditions in Nicaragua (e.g., Dammert, 2010) must inevitably incorporate the family, as family members are the primary supporters of a child's physical and mental wellbeing (Children's Bureau, 2017). However, these findings indicate that family-based interventions cannot simply be generalized from those known to work in the United States but may need to include additional family members in different capacities when working with children in other cultures.

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Table 1

Children matching number of figures in drawing to number of people in household (%)

	Culture	
Gender	American	Nicaraguan
Girls	60	38
Boys	35	44

Table 2

When drawings did not match, those who added extra people and those who excluded people (%)

		Culture	
		American	Nicaraguan
Girls	Added	24	63
	Excluded	76	38
Boys	Added	10	20
	Excluded	90	80

Table 3

Culture and Gender Main Effects for Inclusion of Each Essential Detail

	Culture					Gender				
	American		Nicaraguan			Girls		Boys		
	M	*SE*	*M*	*SE*	*F*	*M*	*SE*	*M*	*SE*	*F*
Eyes	.96	.02	.85	.05	3.28	.91	.03	.90	.04	0.17
Legs	.92	.03	.89	.07	0.13	.87	.04	.95	.05	2.03
Arms	.78	.04	.76	.10	0.04	.80	.06	.73	.07	0.65
Mouth	.84	.04	.54	.10	6.93**	.75	.06	.63	.07	2.14
Hair	.58	.04	.59	.11	0.01	.73	.07	.44	.08	10.71**
Feet	.36	.05	.48	.13	0.65	.40	.08	.43	.09	0.08
Hands	.37	.05	.42	.13	0.11	.43	.08	.37	.09	0.36
Nose	.34	.04	.37	.12	0.03	.46	.07	.25	.08	4.70*
Ears	.10	.02	.28	.06	7.17***	.24	.04	.13	.04	4.79*

Notes. Means represent the average proportion of figures in each drawing that were represented with each particular detail. *SE* represents standard errors. Age was used as a covariate in all calculations.

*$p < .05$. **$p < .01$. ***$p < .001$.

Table 4

Children who drew their tallest family member at the end of a row (%)

	Culture	
	American	Nicaraguan
Tallest at End	55.8	28.6
Tallest not at End	44.2	71.43

Table 5

Method used by children to anchor their figures (%)

	Culture	
	American	Nicaraguan
Anchored by Feet	65.0	18.2
Anchored by Heads	12.6	63.6
No Anchor	22.3	18.2

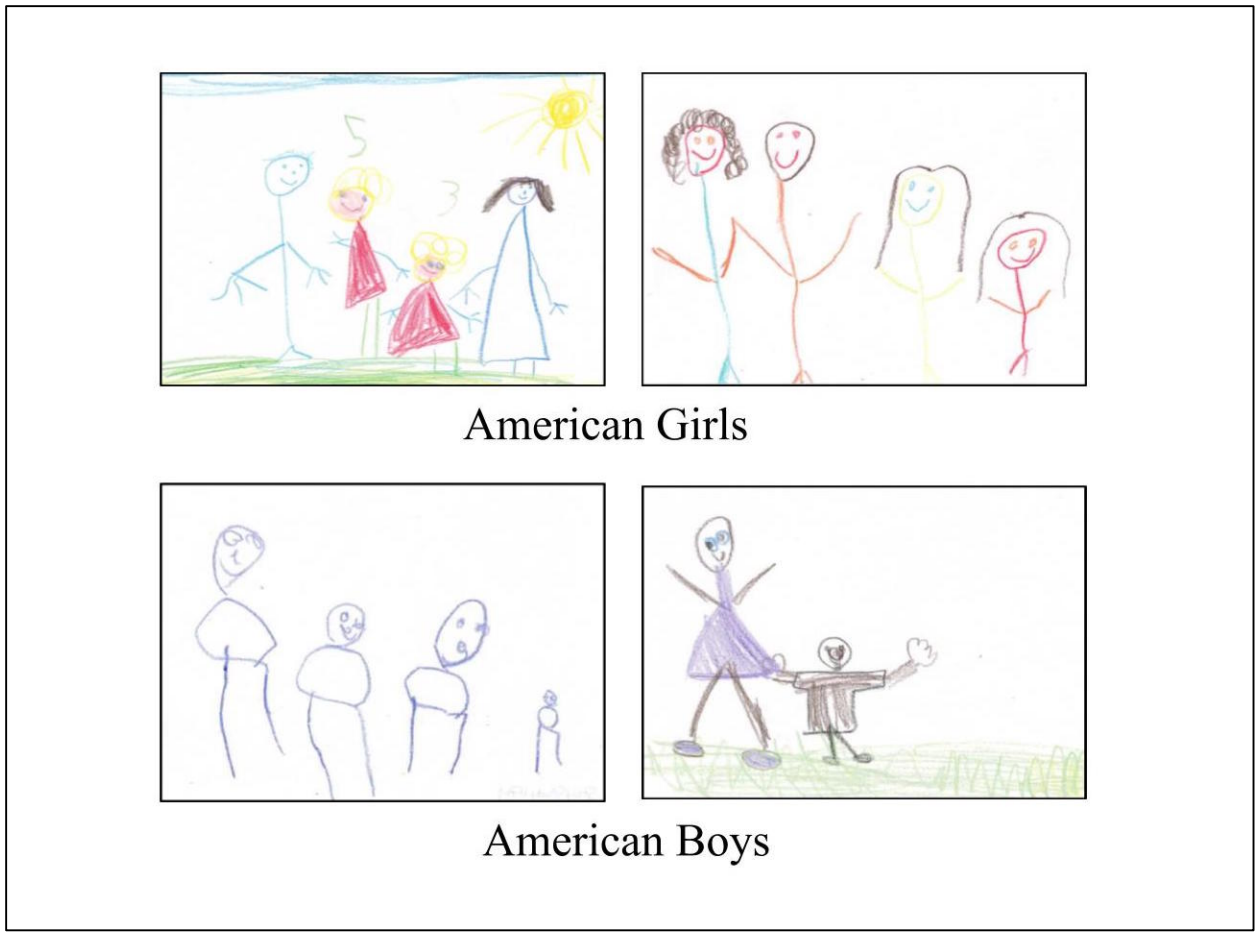

Figure 1. Example family drawings from the American sample.

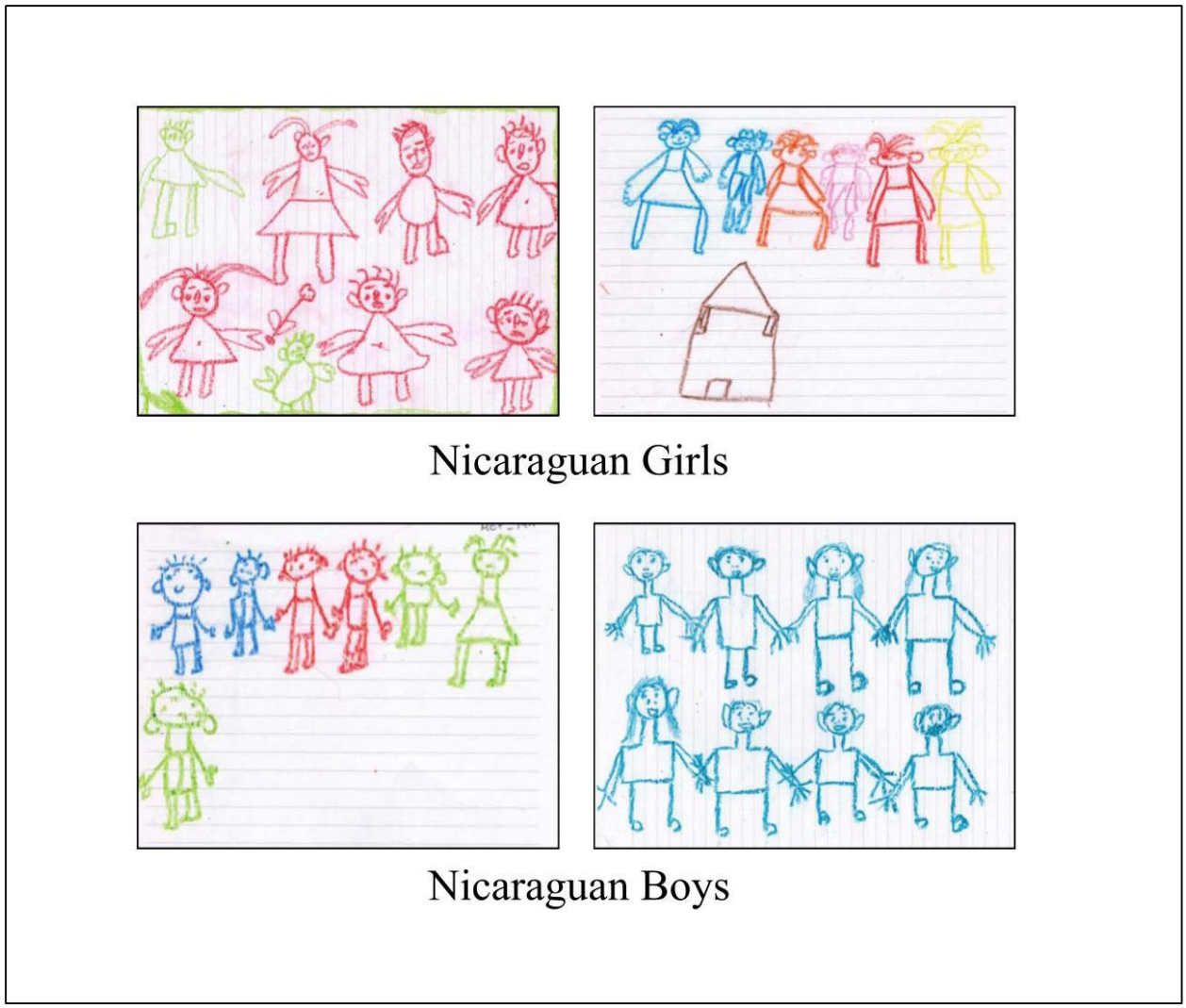

Figure 2. Example family drawings from the Nicaraguan sample.

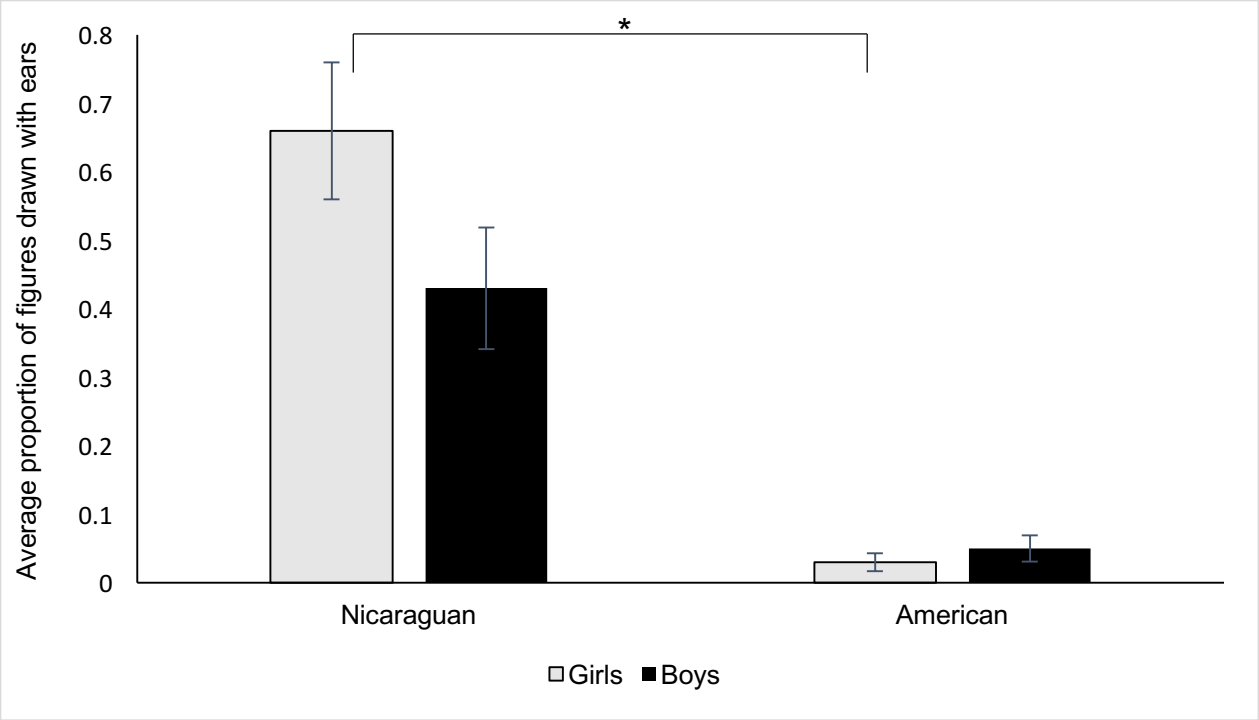

Figure 3. Average proportion of figures drawn with ears in terms of culture and gender. Error bars represent standard errors. Asterisk indicates significant difference between groups, $p < .01$.

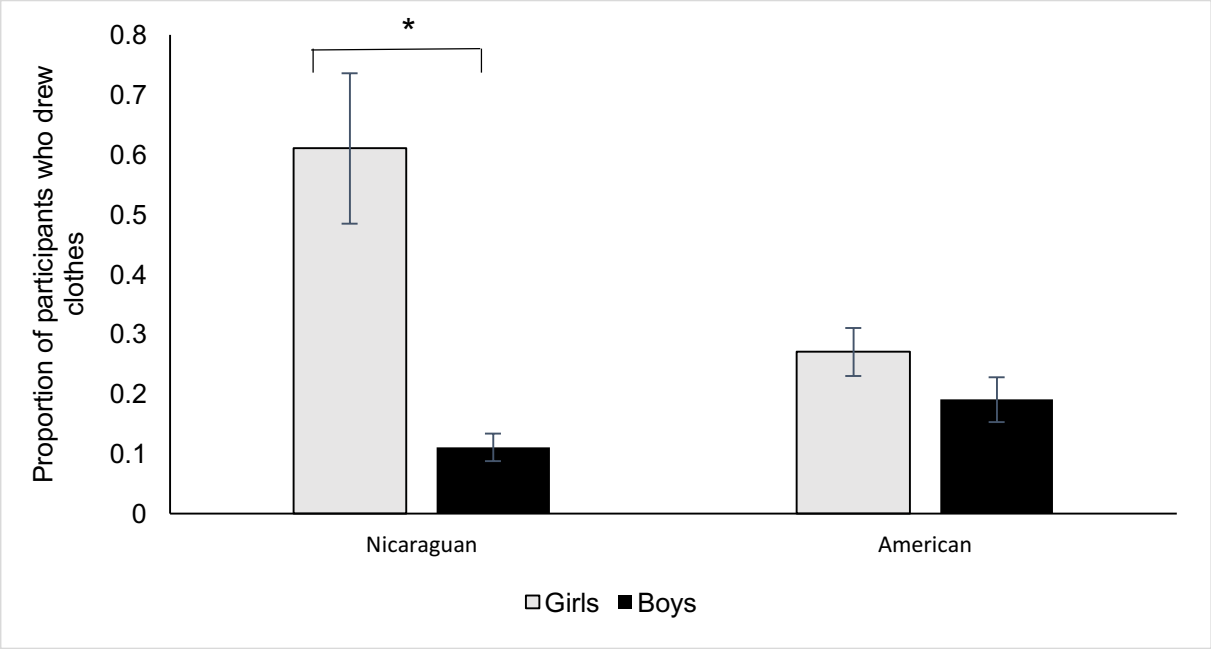

Figure 4. Proportion of participants who drew all figures wearing clothing in terms of culture and gender. Error bars represent standard errors. Asterisk indicates significant difference between groups, $p < .05$.