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**When Maya children do not see power as more masculine: evidence from self-perception and gender-power association tasks**

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### Abstract

Recent research has shown that by the age of 4, preschool children tend to associate social power with the male gender. The present study examined this association with a group of children from a Maya community in Guatemala, where gender inequalities are high, and tested the prediction that a strong gender hierarchy reduces girls' perception of themselves as being dominant in dyadic power situations. However, contrary to our predictions, we did not find that children associated power with the male gender. In Experiment 1, we asked 4 to 7 years-old children (N = 70) to identify themselves with a dominant or subordinate character in same-gender and mixed-gender relationships. In contrast, to what was previously observed with French children, the results showed no significant difference between male and female participants, both of whom strongly identified with the dominant character. In Experiment 2, we asked 4 to 6 years-old participants (N = 70) to assign a gender to a dominant and subordinate character and found a strong own-gender effect, with all participants, males and females, assigning their own gender to the powerful character. Again, this contrasts with previous findings indicating that children from France, Norway and Lebanon did consistently associate power with the male gender. The absence of a male-power association in Maya children is discussed in terms of cultural differences regarding exposure to gender stereotypes, power values and representations of female-male comparisons.

*Keywords:* Dominance, Gender, Self-perception, Maya, Preschoolers

**When Maya children do not see power as more masculine: evidence from self-perception and gender-power association tasks**

In most human groups, the gender distinction is grounded on a system of social hierarchy that tends to guarantee more resources and more power roles to men than to women. Psychological stereotypes that attribute a higher status to men than to women tend to legitimize this asymmetry and thus contribute, along with structural factors, to the maintenance of this system (Eagly et al., 1992; Ridgeway, 2011; Rudman et al., 2012). The influence of gender hierarchy norms on gender representations is evident from early childhood. Preschoolers are already aware of the hierarchical connotations of their gender groups, which is likely to influence their self-perception in mixed-gender interactions. For example, in such contexts, preschool girls see themselves as less dominant than boys (Charafeddine et al., 2020), and with age the internalization of status differences between genders seems to lead girls to ask for fewer resources from a male evaluator than from a female evaluator in a negotiation game (Arnold & McAuliffe, 2021). Although gender hierarchies are a ubiquitous phenomenon, they are more or less pronounced depending on cultures. Given that cultures partly influence early gender stereotypes (Williams & Best, 1990), the question arises as to whether culture influences children's conceptions of gender hierarchies. The aim of the present study was to examine whether children's self-concepts and gender stereotypes in a more gender differentiated culture, such as the Maya community in Guatemala, reflect the male power norm even more strongly than in Western cultures.

*Early conceptions of gender and social hierarchies*

From the earliest age, both gender and hierarchy are fundamental characteristics of the environment that profoundly shape social life and the way others are perceived (Gender: Halim et al., 2017; Maccoby, 2000; Martin, & al., 1999; Hierarchy: Sluckin & Smith, 1977; Edelman & Omark, 1973). Even before the age of 1, infants can differentiate individuals based on their gender (Quinn et al., 2019) and dominance status (Pun et al., 2017). At preschool age, children demonstrate a fairly rich understanding of these two concepts. From the age of 3-4, when they are explicitly asked "Who's the boss?" or "Who's in charge?", they interpret differences in size, age, body posture, resources or facial features as cues to power (Charafeddine et al., 2015; Enright et al., 2020; Lourenço et al., 2016; Terrizzi et al., 2019). In more interactional contexts, preschoolers also designate the power-holder as the individual who imposes their preferences, sets standards, grants permissions, physically dominates another, or the one who is imitated (Charafeddine et al., 2015; Gülgöz & Gelman, 2017; Over & Carpenter, 2015).

Regarding gender, research has shown that at 2-3-year-old children categorize individuals according to their gender, and acquire gender stereotypes for items and activities (Kuhn et al., 1978). Knowledge of gender stereotypes about appearance, toys and activities peaks in preschool years (Martin & Ruble, 2010). Moreover, children use gender labels before the age of 2 (Zosuls et al., 2009). When children begin to think that they have an immutable gender identity, they strive to align their preferences, behaviors and social attitudes with gender stereotypes (Aubry et al., 1999; Halim et al., 2017; Ruble et al., 2007; Liben et al., 2002; Yee & Brown, 1994). Children's self-perception –characterized by their assessment of their own abilities in various areas (academic, sporting, social relationships, physical appearance), their motivation to engage in tasks requiring certain skills and their general sense of self-esteem (Harter, 2003) –also reflects gender stereotypes (Martin & Ruble, 1997; Wilgenbusch & Merrell, 1999). For example, in elementary school, girls

develop a self-perception more oriented towards close friendships than boys, while boys see themselves as more athletic and less anxious than girls (Wilgenbusch & Merrell, 1999).

A recent contribution on this matter is the work by Bian, Leslie and Cimpian (2017). In some of their experiments, they asked participants aged between 5- to 7-year-old to indicate to what extent they would be interested in a novel game “for children who are really, really smart”. At the age of 5, girls were just as interested in such a game as boys, but by the age of 6-7 their interest diminished in comparison with boys. Importantly, the authors found that the ‘male = brilliance’ stereotype, which emerged at 6, mediated this effect. Similarly, studies with Western adult populations show that men’s and women’s self-perceptions diverge in ways coherent with gender stereotypes of independent, dominant male and dependent, other-oriented female (Fiske, Cuddy, Glick & Xu, 2002; Josephs et al., 1992; Cross & Madson, 1997; Markus & Oyserman, 1987; Guimond et al., 2006).

#### *Developmental origins of male power expectations*

Regarding the perception of gender hierarchy, a key question is then to identify when children begin to form stereotypes of male power and whether they integrate this stereotype into their self-perception. While gender hierarchies based on occupations or general positions of men and women in the society began to be captured at school age (Liben et al., 2001; Neff et al., 2007; Weisgram et al., 2010), recent research has shown that in concrete interactions, even preschoolers believe that male figures are endowed with more power than female figures. For instance, in one of their experiments, Charafeddine et al. (2020) presented preschoolers with two *non-gendered* interacting characters who displayed a dominance or a submission body posture (Experiment 1; see also Figure 1). By age 4, a majority of children estimated that the dominant character was more likely to be a boy than a girl. This result was

observed for both female and male participants but also in countries that differed in terms of gender inequality (i.e., Norway, France and Lebanon).

However, an influence of the participant's gender was observed in tasks highlighting the gender of the characters used as stimuli (i.e., a female vs. a male), unlike tasks using non-gendered characters. For instance, when 4-5-year-old-children from Lebanon and France had to guess who between a male puppet and a female puppet imposed their will on the other, and who was endowed with more money, about 70% of boy participants in both countries considered that it was the male puppet, while girl participants were at chance (Charafeddine et al., 2020, Experiment 3). Likewise, using a vertical rope to symbolize status, Mandalaywala et al. (2020) observed that U.S. boys (3.5-6.9 y.o.) believed that a boy character was more likely to access more resources and hold decision-making power than a girl character, while U.S. girls were at chance. A similar finding was also reported with Indian children (5-10 y.o.) in an election prediction task, and in a task requesting to draw a leader (Santhanagopalan et al., 2022).

These studies show that, overall, children attribute more power to males than to females, but in some tasks, girls are less likely to do so than boys. This gender difference indicates that children exhibit an own-gender preference leading them to attribute more power to their gender group (Bian et al., 2017; Halim et al., 2011; Powlishta, et al., 1994; Yee & Brown, 1994; Zosuls et al., 2011) but also suggests that this preference interacts with their representation of gendered power. In particular, the representation of the male power norm and the own-gender preference act in the same direction in the case of boys, leading to a high level of male-power association, but in opposite directions in the case of girls, resulting in a lower level of male-power association. These results invite us to question the way in which children's representations of power affect their own self-perception according to their gender, in other words, how boys and girls perceive themselves in gendered situations of power.



*Self-perception in power situations*

A common observation is that children, at least in Western countries, show a positivity (self-enhancement) bias when evaluating their cognitive and social skills (Boseovski, 2010; Harter & Pike, 1984; Stipek & Mac Iver, 1989). This bias has been also found in the case of power and status. Indeed, early developmental studies on the perception of dominance showed that children from kindergarten tend to overestimate their status when they answer questions such as “Who is tougher between You and X (a classmate)?” (Edelman & Omark, 1973; Sluckin & Smith, 1977; Strayer et al., 1978). More recently, in a study in which children (3.5-6.9 y.o.) were asked to indicate their social position on a vertical rope symbolizing status, both girls and boys placed themselves at the top of the rope (highest status position; Mandalaywala & Rhodes, 2020). Likewise, Santhangolapan et al. (2022) reported that both girls and boys (5-10 y.o.) prefer holding a leadership position (i.e., President) than a position with less leadership (i.e., Treasurer, Welcomer, Notetaker; see also Mandalaywala & Rhodes, 2020). Finally, Charafeddine et al. (2020, Experiment 2) observed that when French children (4-5 y.o.) were fictionally placed in *same-gender* dyadic relationships, both girls and boys view themselves as dominant rather than subordinate.

However, the tendency to perceive oneself as having a high-power position also depends on culture and on the gender of the interactants. Indeed, Charafeddine et al. (2019) reported that contrary to French children, Japanese children overall showed no preference to identify more with the dominant than with the subordinate character. Moreover, when French children were placed in *mixed-gender* dyadic relationships, girls self-enhanced to a lower extent than did boys (Charafeddine et al., 2020, Experiment 2). In particular, when girls imagined they were interacting with a boy, they identified less with the dominant position (see Figure 1) than did boys when they imagined that they were interacting with a girl (63%

for girls and 87% for boys). It should also be emphasized that girls did not identify more with the subordinate character than with the dominant character. Hence, on the one hand, the results of Charafeddine et al. (2020, Experiment 1) showed that girls did consider the dominant position to be more likely that of a male, but on the other hand they did not consider that a boy would exert power over them when they imagined that they themselves were interacting with him (Experiment 2). In other words, although girls were aware of the prevalence of male power, their self-perception did not fully align with this awareness, suggesting that the self-enhancement mechanism attenuated this alignment.

However, it is important to note that these results were obtained with a group of participants from France, a Western, Educated, Industrialized, Rich, Democratic (WEIRD; country (Henrich et al., 2010), where the level of gender inequality is lower than in other countries (see Gender Inequality Index - United Nations Development Program) and where individuals develop self-reliance and self-independent values (Markus & Kitayama, 1991; Triandis, 1995). Cultural norms that encourage girls to view power as more masculine may have been counterbalanced by individualistic self-construal values. One might expect that in societies with greater gender inequality, the male power norm would more strongly affect children's self-perception related to gendered power; more specifically, girls may identify more with the subordinate character than with the dominant character while boys will identify more with the dominant character.

#### *The current sample and the current experiments*

Although previous work (Charafeddine et al., 2020; Santhanagopalan et al., 2022) has investigated children's associations of gender and power in different cultural contexts, the preschooler's self-perceptions in a mixed-gender power relation has only been examined with

French children (Charafeddine et al., 2020). In the current work, we explore this issue with children from a Maya society, where gender inequality is striking, and where men and women have markedly different roles. We interviewed a sample of Maya children from indigenous Kaqchikel Guatemalan families. In Guatemala, the wage gap between indigenous and non-indigenous people is high and this gap is even higher in the case of women as indigenous women suffer from various employment discrimination and lower wage for the same job (Vásquez, 2011). At a general level, Guatemalan women also face a high level of daily violence and have little political power (Menjívar, 2008; Ogrodnik & Borzutzky, 2011). Gender inequality is also salient in terms of education. In 2014, female literacy was about 10% lower than male literacy among adults (World Bank, see Tarallo, 2019). Although the gender gap in school enrollment has significantly narrowed (Tarallo, 2019), indigenous girls are the least likely to enroll in school and when they do, they do so at a later age than boys (Hallman et al., 2006).

The children who participated in this study were all from Kaqchikel indigenous families living in three villages around the Lake Atitlan in the department of Sololá, Guatemala (see Castelain et al., 2016 for an example of another study with the same population). In these villages, the majority of the population is illiterate (INE, 2002). At the age of 4, children start gender-mixed pre-school where they participate in educational activities for approximately four hours a day (UNDP, 2005). The experiments described below required the participation of almost all the residents in the relevant age-group. The limited sample size available affected data collection in two ways. First, in Experiment 1 on self-concepts we had to assign more participants to one of the experimental conditions than to the other. We gave priority to the condition in which mixed-gender dyadic power relations were presented. Second, in Experiment 2, we had no choice but to recruit participants who had already participated in Experiment 1 in order to have a satisfactory sample size. This was

the case for 49% of the children who participated in Experiment 2. Note that Experiment 2 was run 2 weeks after Experiment 1 and that the data were collected in August/September 2014.

## Experiment 1

### Method

**Participants.** Seventy children aged 4 to 7 years-old ( $M_{\text{age}} = 72.5$  months,  $SD = 10.12$ ; 33 girls and 37 boys) from indigenous Kaqchikel families took part in this experiment. Most of them also participated in Castelain et al.'s study (Castelain et al., 2016) dedicated to the development of epistemic vigilance. Participants were recruited in their schools with the approval of the principals, the teachers and the parents.

**Materials and procedure.** The experiment took place in the school of each village and was conducted in Kaqchikel, the children's native language, by two women from the community who were recruited and trained by one of the authors. Each child was interviewed individually in a quiet room for about 5 minutes. Translation of the material and instructions from Spanish to Kaqchikel was done by one of the experimenters, the back-translation by the other experimenter. Discrepancies were resolved through discussion with one of the authors.

There are many ways to implement power relations in tasks presented to children and some cues to power may be easier to grasp for young preschoolers (e.g., Gülgöz & Gelman, et al., 2017). In the study by Charafeddine et al. (2020), children aged 3-4 from three countries (i.e., Lebanon, Norway and France) readily associated a dominance body posture with power statements (see also Charafeddine et al., 2019 for a sample of Japanese children). Other work has also shown that 4-year-old preschoolers use postures to infer power status (Terrizzi et al., 2019) and that children rely more on postures than on other socially relevant

cues such as skin color (Dukler & Liberman, 2022). We thus decided to use postures as stimuli.

The experiment was adapted from Charafeddine et al.'s (2020) Experiment 2 and involved two stages, a power comprehension stage and a self-identification stage. Children were presented with a drawing of two non-gendered characters interacting with each other, one displaying a dominance posture and the other a submission posture (see Figure 1). Then, the experimenter said *"Look, there are two children playing together. We are going to listen to them"* [Original statement in Kaqchikel: Tatz'ita', chiri', jek'o' je ka'e' ak'ala' yetetz'an. Ye qa k'axajna' ye tzijon]. Then she approached her ear to the image and told the children what she heard: *"I am the one in charge, we do everything I want!"* [Jin rin yib'ano' mandar, niqab'an juntir lo que rin niwajo'!] (Power statement) and: *"It is fine, I am not the one in charge."* [Utz k'are', majintarin yi b'ano' mandar.] (Subordination statement). A minor difference with the Charafeddine et al.'s procedure (2020; Experiments 1-2) is that the current dialogue more explicitly assigns power status to the interacting characters: *"I am the one in charge, we do everything I want!"* vs. *"I am not the one in charge"* (instead of *"You have to do everything I say! Do what I want!"* vs. *"Ok! I will do what you want"*). In the first stage, children had to determine who was dominant and who was subordinate by associating each posture with one statement. In particular, the experimenter asked two questions: *"Could you show me who said: 'I am the one in charge, we do everything I want!'"* [Tak'utu' chinuwach, chikaruwach nib'in: "Jin rin yib'ano' mandar!"] and *"Could you show me who said: 'It is fine, I am not the one in charge'"* [In chikaruwach nib'in: "Utz k'are', majinta rin yi b'ano' mandar."]. Participants answered by pointing to the characters. The position of the characters (left vs. right), the order of statements (power vs. subordination) and the order of the questions were counterbalanced across participants. In the second stage, children had to identify themselves with the dominant or subordinate character. Twenty-four participants

were assigned to the *same-gender* condition and 46 children to the *mixed-gender* condition. The experimenter told the children: “*Now, in that picture imagine, that there is you and a boy (girl) [mixed-gender]/another boy (girl) [same-gender].*” [Wikame’, chupan jun ti achib’al ri’, tab’ana’ imaginari ke jat k’o, rat in jun ta (ti) ala’ (xtan) chik]. “*Show me, where are you? And the (other) boy (girl) where is s/he?*” [Tak’utu’ chinuwach, ¿chika jat k’uwa rat? In jun ta (ti) ala’ (xtan) chik, ¿chika k’uwa’?]. The order in which the participant (“you”) and the other child were mentioned was counterbalanced across participants. The material was presented on a binder while the experimenter told the story and asked the questions.

To ensure that self-perception as a male or female is comparable to that of western children, we also asked three gender stability questions (adapted from Slaby & Frey, 1975): 1) “When you were a baby, were you a boy, or a girl or sometimes a boy and sometimes a girl?” [Taq xatok pa ti laj nik, ¿jat ala’, o jat xtan, o k’o jantaq ala’ in jantaq xtan?]; 2) “When you will grow up, will you be a man, a woman or sometimes a man and sometimes a woman?” [Taq xkatok nim, ¿yatok jun achi’, o jun ixoq, o jantaq achi’ in jantaq ixoq?]; 3) “If you have kids when you grow up, will you be a mommy, a daddy or sometimes a mommy and sometimes a daddy?” [Wi awilk’a’al pa jun q’ij, ¿ya tok te’ej, o tatixel, o jan taq te’ej o jan taq tatixel?].

As reported in other cultural contexts, in the *same-gender* condition, we expected that girls and boys would equally identify with the dominant character. However, in the *mixed-gender* condition, we would expect in this specific population a difference between boys and girls, girls identifying themselves more with the subordinate character.

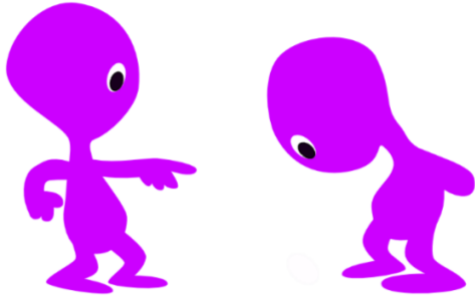


Figure 1. Two characters displaying postures of dominance and submission.

## Results

A total of 63 out of 70 children correctly matched the dominance posture with the power statement and the submission posture with the subordination statement (90%,  $p < .001$ , 95% CI [82.92, 97.08]). A linear regression analysis revealed that this proportion did not significantly differ according to children's age ( $F(1, 68) = 0.320$ ,  $p = .573$ ). No significant difference in gender was found ( $\chi^2(1, 70) = 0.269$ ,  $p = .604$ ). The seven participants who answered inaccurately both dominance questions were excluded from the following analyses. Thus, the final sample was composed of 22 participants in the same-gender condition and 41 participants in the mixed-gender condition.

In the *same-gender* condition, children identified more with the dominant than with the subordinate character (18 out of 22, 81.82%,  $p < .01$ , 95% CI [61.80, 98.20]). This effect was found both for girls (9 out of 11, 81.82%,  $p < .05$ , 95% CI [54.64, 100]) and boys (9 out of 11, 81.82%,  $p < .05$ , 95% CI [54.64, 100]). In the *mixed-gender* condition, children identified more with the dominant than with the subordinate character (37 out of 41, 90.24%,  $p < .001$ , 95% CI [81.05, 99.43]). This effect was found both for girls (17 out of 20, 85%,  $p < .01$ , 95% CI [67.86, 100]) and boys (20 out of 21, 95.24%,  $p < .001$ , 95% CI [85.30, 100]). No significant difference between girls and boys was found ( $\chi^2(1, 41) = 1.220$ ,  $p = .269$ ). A linear

regression analysis revealed no effect of age on the identification to the dominant overall,  $F(1, 61) = .001, p = .974$ , neither in the same-gender ( $F(1, 20) = .031, p = .863$ ) nor the mixed-gender ( $F(1, 39) = .050, p = .824$ ) conditions.

Finally, 100% of the children responded to the three stability questions in a manner consistent with a stable representation of gender, a result that is in line with what is commonly observed in Western populations (Slaby & Frey, 1975).

## Discussion

The results of Experiment 1 showed that children shared intuitions about power and gender identity that are consistent with what has been reported in the literature. Indeed, a large majority of Maya preschoolers associated the dominance body posture with power and the submission posture with a lack of power, a finding that has also been reported with French, American, Norwegian, Lebanese and Japanese preschoolers (Charafeddine et al., 2015; 2019; 2020; Terrizzi et al., 2019). Consistent with previous research, Maya children considered their gender identity to remain stable over time. Moreover, the self-identification task indicated that participants perceived themselves as the dominant individual in the dyad, consistent with the self-enhancement bias in the context of a power relationship.

However, contrary to our prediction, girls did not identify more with the subordinate character than with the dominant one in the mixed-gender condition. Despite the high degree of gender inequality in their cultural environment, they were not significantly less likely than boys to show a self-enhancement bias, and thus largely identified with the dominant character. This finding differs from what was previously observed with French girls who were less likely than boys to identify themselves with the dominant character in the mixed-gender condition (Charafeddine et al., 2020).



Initially, our line of reasoning was that the male-power association, which has been previously reported in the literature, would have prevailed over the self-enhancement bias in a culture where gender inequality is high. Hence, Maya girls would have identified more with the subordinate character than with the dominant one. However, a simple, although unanticipated, reason why this result has not been observed could be that, in contrast with French, Norwegian and Lebanese girls, Maya girls did not view power, as expressed in Experiment 1, to be more exerted by a male than by a female. To examine this issue, Experiment 2 investigated whether Maya children expected the dominant individual to be a male in a gender-power association task. If the male-power association is also present among Maya girls, this would mean that their gendered representations of power did not influence their self-perception in Experiment 1. If the male-power association is not found, this would suggest that only self-enhancement mechanisms operated in Experiment 1. In addition, it would also show that Maya girls differ from Lebanese, Norwegian and French girls (Charafeddine et al., 2020).

## Experiment 2

### Method

**Participants.** Seventy children from the same villages and aged 4 to 6 years-old ( $M_{age} = 68$  months,  $SD = 10.03$ ; 38 girls and 32 boys) were recruited for this experiment. Thirty-four out of the 70 participants (48.57 %) previously took part in Experiment 1 (twelve of them saw the same-gender condition in Experiment 1 and 22 the mixed-gender condition).

**Materials and procedure.** First, children saw the same picture as in Experiment 1 and had to associate the postures of the characters with the power and subordination statements, following the same procedure and verbatim as described in Experiment 1.

Second, participants were told that in the picture there was a girl and a boy: “*Now, in that picture, imagine that there is a boy and a girl.*” [Wikame’, chupan jun ti achib’al ri’, tab’ana’ imaginari ke k’o jun ta ala’ in jun ti xtan chick.]. Then the experimenter asked the children: “*Show me, where is the boy?*” [Tak’utu’ chinuwach, ¿chika k’uwa ri ta ala’?] “*And the girl, where is she?*” [In ti xtan, ¿chika k’uwa’?]. Their task consisted in indicating which one was the boy and which one was the girl by pointing to the character depicting a dominance or submission posture. The order in which the boy and the girl were mentioned and the order of the questions were counterbalanced across participants. The material was presented on a binder while the experimenter told the story and asked the questions.

## Results

A total of 69 out of 70 children correctly associated postures with power and subordination statements (98.57%,  $p < .001$ , 95% CI [95.77, 100]). A linear regression analysis revealed that this proportion did not significantly differ according to children’s age ( $F(1, 68) = 0.346$ ,  $p = .558$ ). No significant difference in gender was found ( $\chi^2(1, 70) = 0.269$ ,  $p = .604$ ). The only participant who answered incorrectly the dominance and subordination questions was excluded from the following analyses.

The analysis of the gender assignment revealed that the male-power association was at chance level (32 out of 69, 46.38%,  $p = .630$ , 95% CI [34.61, 58.15]). This proportion did not significantly differ as a function of children’s age,  $F(1, 67) = 1.04$ ,  $p = .311$ . However, there was a strong difference between boys and girls as all the boys (100%,  $p < .001$ ) and none of the girls (0%,  $p < .001$ ) associated the dominant character with the male gender (Fisher’s exact test,  $p < .001$ ) revealing a strong own-gender bias.

## **Discussion**

The current experiment did not show a clear male-power association. In fact, both boys and girls associated the dominant character with their own gender. The own-gender bias among Maya girls contrasted with the results found with Charafeddine et al. (2020) where about 70% of girls from Lebanon, Norway and France associated the dominant character with the male gender. Here, none of them did so. This obviously sheds light on the results of Experiment 1 as the absence of male-power association and the strong own-gender bias might have largely led girls to identify with the dominant character. We will come back to this issue in the General Discussion.

### **General discussion**

The initial goal of the current study was to examine how the gender of children from a rural, patriarchal, non-Western culture influence their identification to power figures. Given the high level of gender inequality in the Guatemalan Maya society, we expected children to internalize male power so that girls would identify more with the subordinate position and boys with the dominant position. The results of Experiment 1 contradicted this prediction, as girls largely identified with the dominant position, and no significant difference was observed between girls and boys. This prediction was made on the assumption that, overall, Maya children did believe that males were more likely to exert power over females than vice versa. However, this assumption was not confirmed, as in Experiment 2 all the boys judged the dominant character to be a boy and all the girls judged the dominant character to be a girl.

The results of these two experiments differ from previous findings on the early representations of power in other populations of children. First, when a mixed-gender condition of a self-identification task was presented to French children, boys largely

identified with the dominant character while girls were at chance (Charafeddine et al., 2020). Second, the most striking difference with previous studies is the one we found between the results of Experiment 2 and those reported with Norwegian, Lebanese and French children in Charafeddine et al.'s study (2020, Experiment 1). In these three groups, a significant majority of girls and boys associated the dominance posture with a male character. None of the Maya girls did so. This is paradoxical considering that Norway is one of the countries with the lowest gender inequality and that Maya society is patriarchal and imbued with gender roles. In other populations of preschoolers, such own-gender bias is typically observed for other stereotypes such as niceness and brilliance (Bian et al., 2017) and in other types of situations such as trust, decision making and partner choice (Shutts, 2015). What is striking here is that it occurs in a situation where it usually does not appear. Even in tasks where girls attribute less status to male characters than do boys, they do not however attribute more status to female than to male characters (Charafeddine et al., 2020, Experiment 3; Mandalaywala et al., 2020; Santhanagopalan et al. 2022).

The difference with past studies is probably not due to a lack of understanding of the concepts involved in the task. First, Maya children answered the gender stability questions in a way consistent with children from other populations. Second, Maya children perfectly associated dominance and submission postures with their corresponding statements, and in another study, they considered also the character who prevails in a conflict to be the boss (Castelain et al., 2016). Third, by associating power holding with elements relevant to themselves, namely their own identity (Experiment 1) or their own gender (Experiment 2), children have assigned a positive valence to power.

*Accounting for the absence of a 'power = male' association in Maya children*

If, as we just argued, the divergence between Maya preschoolers and preschoolers from other cultures is not due to differing perceptions of gender or power, how then can we explain the non-replication of previous results? In this section, we put forward several propositions, which will need to be tested in future research. The first possibility relates to the validity of our initial cultural hypothesis. We reasoned that children reared in more gender differentiated cultures would be more exposed to environmental input about the gender hierarchy in the daily interactions in which they are passively or actively engaged. However, this may be counterbalanced by the diversity of sources of information about gender roles and relations.

While the study by Charafeddine et al. (2020) focused on urban children exposed to a range of gender role cues from television, advertising, illustrated stories and magazines, at the time of the study the Maya population had only limited access to the internet and electricity, and no libraries or bookstores. Exposure to mass media is a powerful catalyst in the formation of gender stereotypes and this media still convey simplistic gender roles in Western cultures (see for example Leaper, Breed, Hoffman & Perlmann, 2002 for TV and Spinner, Cameron & Tennenbaum, 2023 for magazines). Consequently, lack of access to mass media could explain why Maya children do not acquire stereotypes of male power as early as previous urban groups.

The second possibility emphasizes the relatively harsh living conditions of the Maya population. People who live in uncertain and difficult environments are more likely to value dominant personalities and dominant self-concepts (Kakkar and Sivanathan, 2017; Safra et al., 2017; Schwartz and Rubel, 2005). Children are sensitive to the values prescribed by their culture and they often demonstrate self-enhancement biases on the traits that are adaptive in their environment before nuancing them according to those prescribed for their gender category. If Maya children place a higher positive value on dominance than children from

wealthier and safer societies, then our results may reflect higher levels of self-enhancement and own-gender bias on this dimension. In other words, the valuing of dominance among Maya girls may have delayed the emergence of the association between power and the male gender.

A third possibility is based on the proposal by Guimond et al. (2007) that gender differences in values and stereotypes are more pronounced in societies where people tend to engage in between-gender comparisons, as is the case in more gender equal countries. This approach relies on intergroup theory (Tajfel et al., 1979) and states that the way people consider their self is not absolutely fixed and immutable, but varies according to the comparisons they make between ingroup and outgroup characteristics. In particular, when people evaluate their own traits and attributes while considering the traits and attributes of the other gender, they enter in a comparison process that leads them to stereotyping themselves further in order to better distinguish themselves from the comparison group.

According to Guimond et al (2007), a cultural factor that influences between-group comparison is the Power Distance (PD; Hofstede, 1980, 2001) as high PD cultures tend to discourage comparisons between social groups. When it comes to gender, high PD cultures legitimize the gender hierarchy and do not promote interactions and comparisons between genders whereas in low PD cultures, people tend to challenge the relevance of the gender hierarchy and accept comparisons between genders (Hofstede, 1980, 2001; Sidanius & Pratto, 1999). In their study, Guimond et al. (2007) asked adults to rate self-attributes in two critical conditions. In the “intragroup condition”, they rated themselves on different attributes in comparison to people of their own gender, and in an “intergroup condition”, they rated themselves in comparison to people of the other gender. In most cultures, the intergroup condition yielded more differences between ratings of men and women than the intragroup condition. However, the authors also showed that in Malaysia (PDI = 104), the highest PD

culture according to Hofstede's criteria (<https://clearlycultural.com/geert-hofstede-cultural-dimensions/power-distance-index/>), women characterized themselves as less relational and more agentic than Dutch women (PDI = 38), even in the intergroup condition.

These considerations allow a fairly straightforward interpretation of the results of Experiment 1. Indeed, in Guatemala, which ranks second on the PD dimension (just behind Malaysia), Maya children may consider gender comparisons as less relevant than French children, which may explain why, at the same age groups, they do not self-stereotype in a way coherent with the male power norm. In particular, Maya girls may have been less sensitive to the mixed gender nature of the power relation than French girls.

With regard to the results of Experiment 2, the model of Guimond et al. (2007) offers a less direct interpretation, as it focuses on the mechanisms of self-perception. However, the logic of between-gender comparisons may still apply at the level of stereotypes. When gender comparisons are less important, as it is the case in the high PD Maya culture, references to gender and gender comparison such as “girls are nicer than boys” or “boys are tougher than girls” are less frequent in the environment and therefore less important for self-definition. Tenants of the developmental intergroup theory (Bigler and Liben, 2006; Liben & Coyle, 2018) argue that what makes the gender category such important to children is its salience in the environment. When the salience of gender is experimentally enhanced by frequent labeling of gender categories (e.g., “Good morning, boys and girls!”) or by adding functional significance to these categories (e.g., boys' drawings vs. girls' drawings), then gender stereotyping increases (Bigler, 1995). According to this interpretation, our results suggest that gender comparisons may already influence the development of the male power stereotype. Future work should investigate these hypotheses and propose a characterization of societies that can account for developmental differences in the formation of expectations about gender and power.

*Limitations*

Due to the limited number of accessible children in our target population, we had to make certain methodological choices that constrained data collection. Firstly, in Experiment 1, we included more participants in the mixed-gender condition than in the same-gender condition, as the former was the main condition of interest. Secondly, some of the children who participated in Experiment 1, also participated in Experiment 2. With regard to the first point, although the number of participants was small in the same-gender condition (Experiment 1), the results showed that participants nevertheless identified significantly with the dominant character. As for the second point, the children gave the same answers to Experiment 2, whether they had participated in Experiment 1 or not.

In addition, to better understand gendered representations of power in Maya children, the use of other types of stimuli should be considered. In the current study, we only used postures-related cues to power, in line with previous research showing that children from various countries were sensitive to such cues (Terrizi, et al., 2019; Charafeddine, et al., 2015: 2019). Maya children also understood these cues very well and even considered them as desirable characteristics of the self and the ingroup. However, it may be possible that these cues do not reflect how social dominance between genders is expressed in the Maya culture.

Finally, the stimuli we used involved non-gendered characters, which somehow make the gender dimension less salient. This may have blurred the distinction between male and female characters, and in particular the power differential that may be associated with them. In a society where gender comparisons are less salient, the presentation of more explicit interactions between clearly identified male and female characters could facilitate the activation of gender-differentiated representations.



*Conclusion*

Studying the environmental-cultural variables that influence gendered self-perceptions in childhood, in particular those stereotypes that may undermine girls' perceptions of their abilities to hold dominant positions is an important issue. Our understanding of these mechanisms can benefit greatly from investigating how they operate in children outside of urban, Western or Westernized cultures. In this work, we originally made the simple and directional hypothesis that gender inequality of Maya society would have an impact on Maya preschool girls' self-perceptions reflecting the 'female = submissive' trait. However, this study failed to show that Maya children exhibit male power stereotypes in both the self-perception and the third-party task. It does, however, show that Maya children's self-perceptions in mixed-gender power situations (namely, 'dominant = me') are consistent with their expectations third-party (namely, 'dominant = my gender'). Similarly, French girls' inferences in the first-person task were also consistent with their stereotypical expectations of male power, as they were more reluctant to perceive themselves as dominants when they were in the mixed-gender condition (i.e., when they imagined interacting with a boy; Charafeddine et al., 2020 Experiment 2). This indirect finding is in line with the hypothesis that self-perceptions are, in some cases, a result of the application of social stereotypes to the self.

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