



## Short Communication

# What is in a name? The development of cross-cultural differences in referential intuitions

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## ABSTRACT

Past work has shown systematic differences between Easterners' and Westerners' intuitions about the reference of proper names. Understanding when these differences emerge in development will help us understand their origins. In the present study, we investigate the referential intuitions of English- and Chinese-speaking children and adults in the U.S. and China. Using a truth-value judgment task modeled on Kripke's classic Gödel case, we find that the cross-cultural differences are already in place at age seven. Thus, these differences cannot be attributed to later education or enculturation. Instead, they must stem from differences that are present in early childhood. We consider alternate theories of reference that are compatible with these findings and discuss the possibility that the cross-cultural differences reflect differences in perspective-taking strategies.

## 1. Introduction

At birth, we are all given a name, which usually follows us through life. When people use your name, they typically refer to you. But what is the mental link that ties a name to a person and allows it to refer?

Two well-known proposals in the philosophical literature seek to answer this question. The descriptive view, defended by Frege (1892/1948), Russell (1905) and Searle (1958) among others, holds that a name gets its referent through definite descriptions. When competent speakers use a name, they refer to whoever uniquely satisfies the description associated with that name. For instance, the name “Barack Obama” refers to Barack Obama because he is the person best fitting the definite description “the 44th President of the United States”. On this account, names refer indirectly, mediated by definite descriptions in the speaker's mind. The second proposal, Kripke's causal-historical view, contends that a name refers to a person because it was linked to her in the initial act of naming and this link is then passed down through a community of speakers. Kripke argues that proper names are rigid designators; they continue to refer to the entity initially given the name, even when that individual turns out to have none of the properties we associate with that name (Kripke, 1972/1981). On this account, names refer directly without the mediation of definite descriptions.<sup>1</sup>

Kripke supported his proposal with a famous thought experiment. He noted the only thing most people have heard about mathematician

Kurt Gödel is that he was *the person who proved the incompleteness of arithmetic*, so this is the only possible definite description that they could associate with Gödel. Now, imagine that Gödel actually stole the theorem from someone named Schmidt, who did all the work. According to descriptivism, when people use the name “Gödel”, they really refer to Schmidt, who is the unique person satisfying the definite description they have. Kripke's intuitions, in contrast, tell him that speakers use the name “Gödel” to refer to whoever was given that name initially (Kripke, 1972: 83–4).

Kripke's intuitions about the Gödel case were widely shared among philosophers, and thus the descriptive theory lost favor. Machery, Mallon, Nichols, and Stich (2004), however, questioned the universality of Kripkean intuitions. They presented stories modeled on the Gödel case to undergraduates in the U.S. and China and discovered considerable variation in people's semantic intuitions. While some people have causal-historical intuitions, others have descriptivist intuitions. Additionally, these intuitions vary systematically by culture: while American participants generally endorsed the causal-historical view, Chinese participants mostly endorsed descriptivism. Subsequent experiments, varying the stimuli and the populations, have replicated this pattern (e.g., Beebe & Undercoffer, 2015; Beebe & Undercoffer, 2016; Machery, Sytsma, & Deutsch, 2015; Machery et al., 2010; Sytsma, Livengood, Sato, & Oguchi, 2015).

To date, however, researchers have not investigated the specific

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<sup>1</sup> There are other theories of reference in the philosophical literature, some of which we consider in the General Discussion. We focus on these two because they are addressed directly by Kripke's thought experiment (1972) and the subsequent work in experimental philosophy.

causes of the cross-cultural variation. Determining when in development these differences appear is a critical first step in doing so, as it will help us to identify potential causes. For example, differences emerging in college years would suggest formal education in science or philosophy plays a role. In contrast, if the difference is present by age seven, it is likely to arise from cross-cultural differences in early social interaction and communication. Exploring the developmental trajectory of the differences could also inform us about the initial basis of reference. We hypothesize that there are four possible developmental pathways:

- I. *Initial Descriptivism*: Children begin with a descriptivist theory of reference regardless of culture. English-speaking children move towards the causal-historical view during development. This suggests that referential links are based primarily on descriptions, and causal-historical intuitions result from later education and socialization.
- II. *Initial Causal-Historical*: Children begin with a causal-historical theory of reference regardless of culture. Chinese-speaking children shift towards descriptivism as they grow. This pattern suggests that causal-historical chain serves as the initial basis for reference, with descriptivist intuitions arising from subsequent socialization and education.
- III. *Early Differentiation*: Children in both groups possess a culturally specific theory of reference at a young age, acting like adults from their culture and exhibiting systematic differences in their referential intuitions. This indicates that divergence takes place in early childhood.
- IV. *Initial Ambivalence*: Children in neither culture have developed a specific strategy for fixing the reference of names, and are equally likely to rely on descriptive intuitions and causal-historical intuitions. This pattern could arise because individual children hold both theories or because different children utilize different theories.

Testing these hypotheses in young children calls for tools that do not require counterfactual reasoning or meta-linguistic judgments as the standard probes do (see Machery et al., 2004: B6-7). The truth-value judgment task (Crain & McKee, 1985), adopted widely in developmental psychology, can be used with children as young as three.<sup>2</sup> If there are genuine cross-cultural differences in intuitive judgments about reference, then we should see a similar pattern when asking questions about truth, since judgments about the truth of a name-containing statement depend on what the referent of the name is (see Machery, Olivola, & de Blanc, 2009 for related arguments).

## 2. Experiment

### 2.1. Participants

Forty English-speaking children in the U.S. (age: 6;6–8;4; mean 7;4; 22 girls) and thirty Mandarin-speaking children in China (age: 6;6–8;3; mean 7;2; 17 girls) participated. There was no reliable age difference between these groups ( $t(68) = -1.15, p = 0.25$ ). Additionally, forty-seven adult English speakers in the U.S. (mean age = 21.4; 32 female) and forty-seven adult Mandarin speakers in China (mean age = 20.7; 32 female) participated.

### 2.2. Materials

The stimuli consisted of two critical stories and three familiarization stories (see [Supplementary materials](#)). We constructed stories similar to

<sup>2</sup> We are aware of the controversy over the appropriate approach to gauge intuitions about reference in the philosophical and experimental philosophy literature (see Devitt, 2011; Devitt, 2012; Devitt, 2015; Domanschi, Vignolo, & Di Paola, 2017; Martí, 2009; Martí, 2012). But due to space limitations, we will not plunge into the debate in this brief article.

the original Gödel case about topics that are more appropriate for young children. A simplified version of one critical story is given below:

### Super Dog Race

Long ago, there was a race called the Super Dog Race. Max, Pickles and Blaze participated in the race. Max crossed the finish line first, winning the race, but he got too excited and ran all the way to the North Pole. Pickles crossed the finish line second. He stopped and watched Max run away. The race announcer mistakenly thought that Pickles won the race. He told every newspaper in the world that Pickles won. He also told them that another dog, Blaze, ran very fast despite his short legs. Since then, everyone learned that Pickles won the race. They don't know anything else about Pickles.

Tom and Emily learned at school that Pickles won the Super Dog Race. This is the only thing they know about the dog race and Pickles. They don't know anything about Max. That night, their dad asked: Do you know who won the Super Dog Race?

Tom replied: Blaze was the dog that won the Super Dog Race.

Emily said: Pickles was the dog that won the Super Dog Race.

Tom's clearly false statement is a control. Emily's statement is the critical statement that elicits participants' referential intuitions. It is true if the name "Pickles" gets its reference from the definite description in her head ("the dog that won the Super Dog Race"). It is false if reference is based on a causal-historical chain such that "Pickles" necessarily picks out the original bearer of this name, regardless of any associated descriptions. Accordingly, a "Yes" answer is considered a descriptive response, while a "No" answer is considered a causal-historical response.

The familiarization stories are similar, but the reference of the names in Tom and Emily's statements is unambiguous. Both statements are true in one story, both false in another, and one is true and one is false in the third. Thus, including the two control statements in the critical stories, there are eight statements with determinate answers, three that are true and five that are false. We label them as *Yes-controls* and *No-controls* respectively.

The stories are accompanied by clipart pictures to engage participants. We randomized the order of the familiarization stories and the critical stories for each adult participant. For child participants, we created two lists with the stories appearing in different orders. The order of the two statements in each story was counterbalanced. A native speaker (J.L.) translated the probes into Chinese for use with Chinese-speaking participants. All names in the translated probes were typical Chinese names.

### 2.3. Procedure

Children sat in front of a screen in the lab and saw the pictures while an experimenter read the stories aloud from a script and recorded their verbal responses. Adult participants accessed the study on Qualtrics through an anonymous survey link. They read each story, with the pictures interspersed, and answered the relevant questions before proceeding to the next. After all five stories, they completed a short demographic questionnaire.

### 2.4. Results and analysis

Table 1 displays the percentage of correct responses to the control questions. While children in both cultures made more errors than adults, no group answered less than 80% of the questions accurately, indicating that the task was manageable even for the children.

To determine whether there were any cultural differences in the responses to the control statements, a binomial mixed-effects model was constructed using the R programming language, with culture, age and their interaction as fixed effects and participant and statement as random effects.<sup>3</sup> We found a main effect of age ( $z = 6.274, p < 0.001$ ) but no main effect of culture ( $z = 0.031, p > 0.1$ ) and no interaction

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