



Contents lists available at ScienceDirect

Cognitive Development



Category coherence in children's inductive inferences with cross-classified entities



Simone P. Nguyen*, Tess Chevalier

University of North Carolina Wilmington, Department of Psychology, United States

ARTICLE INFO

Article history:

Received 25 September 2014

Received in revised form 27 April 2015

Accepted 4 May 2015

Keywords:

Category coherence
Inductive inferences
Cross-classification
Categorization

ABSTRACT

Items rarely belong to a single category, but rather can be cross-classified into many categories, each serving a very different basis for induction. Presently, little is known about how children determine which category to use for induction in cross-classification situations. This research examined the role of category coherence in children's and adults' ($N = 329$) inductive reasoning about cross-classified entities. In Study 1 and 2, participants were presented with a person who could be cross-classified into two categories, one coherent and the other incoherent. Category coherence is the extent to which members of a category and/or the properties of a category make sense together, given one's background knowledge. The results showed that by age 5 years, children are systematic in their use of coherence, tending to select the coherent category to inform their inference about the person. There is weaker evidence for 4-year-olds. Study 3 and 4 revealed that 4-year-olds have an appreciation for coherence in tasks of categorization. The results of Study 5 demonstrated 5-year-olds' and adults' tendency to use coherence when reasoning about cross-classified entities across different induction tasks. Overall, these results contribute to our emerging understanding of how and why children select some categories versus others during induction with cross-classified items.

© 2015 Elsevier Inc. All rights reserved.

* Corresponding author at: University of North Carolina Wilmington, Department of Psychology, 601 South College Road, Wilmington, NC 28403-5612, United States.

E-mail address: nguyens@uncw.edu (S.P. Nguyen).

Category-based induction is a key way through which we use categories to broaden our knowledge, using a premise category to make inferences about the properties of unfamiliar instances of a category (see Heit, 2000, 2007, for a review). There is a tremendous amount of research showing that young children are capable of inductive reasoning (see Gelman & Davidson, 2013; Hayes, 2007; Murphy, 2002, for a review) with much of this research focusing exclusively on children's ability to use single category membership as a basis for induction (see Gelman, 2003; Krackow & Gordon, 1998; Nguyen, 2008 for discussion). However, items rarely belong to a single category, but can be cross-classified into many categories, each serving a very different basis for induction (Murphy & Ross, 1999; Nguyen & Murphy, 2003; Nguyen, 2012; Ross & Murphy, 1999). This is especially the case for categories pertaining to people, where a person can potentially belong to several categories with different bases (e.g., age, gender, occupation, hobbies) (see Baron, Dunham, Banaji, & Carey, 2014; Shutts, Pemberton Roben, & Spelke, 2013 for a review of children's acquisition and use of social group membership). Each of these bases can lead to very different inferences about that person, and subsequently affect interactions with that person.

Therefore, cross-classification raises a number of questions about children's inductive reasoning. When children are faced with an entity that is a member of several categories, how do they decide which category to use for induction? Do children use only a single category or all of the categories? For example, if a person can be cross-classified into different categories based on their occupation and hobby, do children use their knowledge of the former or latter category to inform their inferences?

There is small body of research that is beginning to document how and why children select some categories over others when making inferences in cross-classification contexts. This research has found that children's category selection is influenced by context, specifically the relevance of the property to the inductive inference. That is, with cross-classified concepts, children tend to select the category that is most relevant to the property that is being generalized in the induction task (Heit & Rubinstein, 1994; Kalish & Gelman, 1992; Nguyen & Murphy, 2003; Nguyen, 2008, 2012; Shafto, Coley, & Vitkin, 2007; see also Medin & Waxman, 2007 for a discussion regarding the relevance of targets in induction). For example, Nguyen (2012) has found that by 4 years of age, children know that taxonomic and script categories are informative of different kinds of properties, and if one category is more relevant in a given moment, then children will use it as a basis for induction. Specifically, on one trial, when children are asked to make a biochemical inference about an item that can be cross-classified into both categories (e.g., a clown is a person and a part of the circus), children know to use the item's taxonomic category membership, which is defined by shared common properties, as a basis for induction (e.g., inferring that a clown and person have the "same stuff inside"). On a different trial, when children are asked to make a situational inference about the same cross-classified item, children also know to use the item's script category membership, which is defined by common roles in a routine or event, as a basis for induction (e.g., inferring that the clown and circus tent belong to the "same special time").

Although this body of research shows that property relevance helps children select the appropriate category to use on different trials, it does not address what children do when *more than one category* remains relevant for induction *at the same time* during the same trial. Research from the adult concepts literature has begun to address this issue by investigating how the structure of the category, particularly category coherence, might also play a role in the induction of cross-classified concepts (e.g., Hayes, Kurniawan, & Newell, 2011; Patalano, Chin-Parker, & Ross, 2006; Patalano, Wengrovitz, & Sharpes, 2009). *Category coherence* is the degree to which members of a category and/or the properties of a category hang together and make sense within the context of one's greater knowledge about their underlying origins or purpose. In other words, category coherence is the extent to which category members and their features go together in light of an individual's prior knowledge (Medin, 1989; Murphy & Medin, 1985).

For example, using cross-classified job and hobby categories, Patalano et al. (2006) operationalized coherence as the extent to which category members share causal features that give rise to surface level features, such as uniformity in behaviors. These researchers found that adults tend to use the high coherence category more often than the low coherence category to make inferences about people who could be cross-classified into both categories. For instance, in this study, adults were told that the majority of feminists (high coherence) prefer Coke to Pepsi, whereas the majority of waiters (low coherence category) prefer the opposite. When asked to predict the drink preferences of someone

Download English Version:

<https://daneshyari.com/en/article/916447>

Download Persian Version:

<https://daneshyari.com/article/916447>

[Daneshyari.com](https://daneshyari.com)