Cognitive Development 48 (2018) 190–202

Contents lists available at ScienceDirect

Cognitive Development

journal homepage: www.elsevier.com/locate/cogdev

# Follow my point? Preschoolers' expectations about veridicality disrupt their understanding of deceptive points☆

Carolyn M. Palmquist[a,*], Robyn L. Kondrad[b], Megan N. Norris[c]

[a] AC#2236, Amherst College, Amherst MA, 01002, United States
[b] James Madison University, United States
[c] Appalachian State University, United States

ARTICLE INFO

*Keywords:*
Deception
Pointing
Veridicality
Inhibitory control

ABSTRACT

Preschoolers struggle to correctly interpret deceptive pointing. Does this difficulty stem from a bias to follow pointing gestures or a bias to believe those who point? Four-year-olds saw either deceptive pointing (which violates both biases) or true negative pointing (which only violates children's bias to follow pointing). A hider hid a sticker under one of two cups and pointed to the empty one. In the deceptive condition, the hider falsely claimed she would point to where the sticker was, whereas in the true negative condition, she truthfully claimed she would point to where the sticker was not. Preschoolers correctly interpreted true negative, but not deceptive, pointing. Even when a reliable speaker repeatedly reminded them about the deceptive intentions of the hider, children failed to search correctly. Inhibitory control helped children understand true negative points. Explaining how they were tricked helped children understand deceptive points. Children follow a deceptive point because they cannot overcome the bias to believe the pointer is truthful. Violations of this bias overwhelm other cognitive abilities that otherwise help children interpret others' communication.

## 1. Introduction

Children have difficulty interpreting deceptive points. They search for hidden objects in locations indicated by deceptive pointing, even after multiple demonstrations that the information being provided is false (Couillard & Woodward, 1999) and explicit reminders that the informant is deceptive (Heyman, Sritanyaratana, & Vanderbilt, 2013). The current study explores two possible explanations for children's difficulty with interpreting deceptive pointing. One explanation stems from children's bias to believe people who point. That is, children's early experience with pointers may lead them to believe that people who point share truthful information (e.g., Coady, 1992; Gilbert, 1991; Grice, 1975). Therefore, when confronted with false information, children go along with it because they are unable to overcome this truthful-pointer bias (Csibra & Gergely, 2006; Palmquist, Burns, & Jaswal, 2012). This bias to believe that pointers are truthful is generalizable to other forms of communication, such as verbal testimony (Jaswal, Croft, Setia, & Cole, 2010). Although we acknowledge that this bias is applicable to more than just pointing, we are specifically interested in exploring why children have difficulty with deceptive pointing. We therefore refer to this bias as the truthful-pointer bias.

Another explanation stems from children's expectations about the pointing gesture itself. That is, in children's experience, the

☆ We thank the children, parents, and preschools who participated in these studies. Thanks also to the many undergraduate and graduate students who helped create stimuli, collect and code the data.

* Corresponding author.
*E-mail address:* cpalmquist@amherst.edu (C.M. Palmquist).

https://doi.org/10.1016/j.cogdev.2018.08.009
Received 6 June 2017; Received in revised form 25 January 2018; Accepted 17 August 2018

world is filled with many objects, events, and pieces of information, and pointing is typically used to guide attention towards or highlight something in particular in the environment (Csibra & Gergely, 2006). Therefore, by the time children reach preschool, they may have developed a point bias: a default behavior in which they search in pointed-to locations. Importantly, acting on a point bias would not require children to consider anything about the pointer – such as her honesty – or the context surrounding the gesture. Indeed, although several of the studies that have demonstrated children's propensity to search in pointed-to locations have argued that this process involves intention understanding, it has never been explicitly measured (e.g., Behne, Carpenter, & Tomasello, 2005; Couillard & Woodward, 1999; Lee, Eskritt, Symons, & Muir, 1998). Therefore, it remains unclear whether children follow pointing because of their expectations about the person providing the gesture (a truthful-pointer bias) or because of their expectations about the gesture itself (a point bias).

### 1.1. Testing the truthful-pointer bias and the point bias

One way to disentangle whether children's difficulty with deceptionhas to do with a truthful-pointer bias or a point bias, or both, is by comparing deceptive points to true negative ones. Imagine that a prize is under the first of two cups. To provide a true negative point, a trustworthy informant first says, "I'm going to show you where *not* to look," and points to the second cup, which is indeed empty. The informant is sharing truthful information (as the informant said, the prize really is not in that cup), and so the truthful-pointer bias is not violated. But the point bias has been violated; children cannot simply follow the pointing gesture to search correctly (the informant indicated a location where something was not). To provide a deceptive point, a deceptive informant says, "I'm going to show you where *to* look," and also points to the empty second cup. In this case, the informant violated the truthful-pointer bias (the prize really was not in that cup), and violated the point bias (children could not simply follow the point to find the hidden prize). As such, comparing interpretations of true negative and deceptive pointing sheds light on whether children's difficulty is rooted in their expectations about the truthfulness of the people who point or their default behavior to search in pointed-to locations.

Children ought to have more difficulty acting appropriately on a deceptive point than a true negative point if their expectations about pointers are more important than their expectations about the gesture itself. Indeed, if this were the case, it would fit nicely with previous work that has shown that children have a general bias to believe those who share information via conventional methods of communication, including pointing (Jaswal, Croft, Setia, & Cole, 2010; Palmquist et al., 2012). It would also support the perspective that it is more efficient for individuals to maintain a default assumption that information from others is true, because this assumption allows for more time to be spent learning rather than evaluating the veracity of all new information (e.g., Coady, 1992; Gilbert, 1991; Grice, 1975). Violations of this truthful-pointer bias, as in a deceptive point, would be particularly difficult for children to interpret because to do so would require them to update their deeply ingrained expectations about how people typically communicate.

Alternatively, children might have difficulty understanding both deceptive and true negative points if the point bias is more heavily weighted than considerations about the person doing the pointing. Both types of pointing violate their specific bias to search in, or select, pointed-to locations. Therefore, when children are confronted with true negative pointing, they are unable to use the context (e.g., the pointer saying "I'm going to show you where *not* to look") and instead rely on their bias to select pointed-to locations. For example, in Lee, Eskritt, Symons, and Muir (1998), 3-year-olds watched a videotaped event of an actor using competing nonverbal cues to indicate different objects. When the actor looked at one object, but pointed to another, children repeatedly selected the object that had been indicated by the actor's point, even when told to ignore the pointing gesture. Children may fail to correctly interpret any task –deceptive, true negative, or otherwise - in which they must ignore locations indicated by pointing.

Importantly, determining which bias has a greater influence over children's interpretations of pointing also sheds light on the means by which preschoolers typically evaluate others' communication and therefore, which biases are most useful in real-world interactions. In other words, if children rely on the expectation that the people who point will be truthful, it suggests that they are more successful when they choose to interpret others' communication by evaluating their mental states and intentions as communicators, which is a perspective that is supported by a great deal of previous research (e.g., Csibra & Gergely, 2006; Heyman et al., 2013; Tomasello, 2009). However, if children tend to rely on the strategy of searching in pointed-to locations, it suggests that preschoolers may be more successful when they evaluate communication without necessarily considering mental states, only superficial features of the gestures, which seems somewhat less likely.

### 1.2. The role of inhibitory control

Individual differences in inhibitory control may also play a role in children's ability to correctly interpret both deceptive and true negative pointing, as both require inhibiting a prepotent response. For the deceptive point, children may need to inhibit their bias that people are truthful. For the true negative point, children may need to inhibit their bias to search in pointed to locations. Exploring the relationship between inhibitory control and performance on these two types of pointing tasks may be particularly useful in better understanding how and when children overcome the point bias and the truthful-pointer bias, if at all. Given that each type of pointing violates children's expectations differently, it is unclear whether inhibitory control would equally predict children's successful interpretation of both kinds of pointing. Indeed, it seems more likely that inhibitory control may play a different role in children's interpretations of true negative and deceptive pointing. If so, this would provide additional insight into the strength of the two biases and whether children are able to equally inhibit both.

Exploring this relationship may also clarify an existing discrepancy in the literature regarding the role of inhibitory control in