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# Children's second-order lying: Young children can tell the truth to deceive



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#### ABSTRACT

The current study investigated the development of second-order lying and its relation to theory of mind and executive function. Previous studies have examined only first-order lying, in which a child makes an untruthful statement to intentionally deceive an unsuspecting opponent. As opposed to first-order lying, secondorder lying requires the use of both lies and truths to deceive an opponent because the opponent is fully aware of the liar's deceptive intention. Here, we used a modified hide-and-seek task, in which children were asked to hide a coin in either one of their hands for opponents to find. In this task, the opponents did not consistently look for the coin in the location indicated by the children. Thus, children could not win the desirable reward if they only told lies to deceive; they needed to switch between telling lies and telling truths (i.e., second-order lies) to deceive opponents. The results showed that children could tell second-order lies by 4 years of age, and their ability to do so was significantly related only to the second-order ignorance scores (early second-order theory of mind understanding). The current findings suggest that secondorder ignorance, but not second-order false belief understanding, contributes to children's second-order lying.

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#### Introduction

Lying is a pervasive social behavior among adults, as well as children, because it serves important, albeit sometimes immoral, interpersonal functions. It is well established that children as young as 3½ years of age are capable of telling lies in a variety of social situations. For example, from ½ years of age, many children are able to conceal their rule violations (e.g., denying peeking at a toy) following noncompliance (Evans & Lee, 2013; Evans, Xu, & Lee, 2011; Fu, Evans, Xu, & Lee, 2012; Lewis, Stanger, & Sullivan, 1989; Polak & Harris, 1999; Talwar & Lee, 2008); they are also able to tell "white lies" to flatter the lie recipients (Fu & Lee, 2007) or to avoid hurting the lie recipient's feelings (Talwar & Lee, 2002; Talwar, Murphy, & Lee, 2007). From 3 years of age, children can also tell lies for their own benefit (e.g., pointing to a wrong location to win gifts in a competitive situation; Carlson, Moses, & Hix, 1998; Chandler, Fritz, & Hala, 1989; Fu, Sai, Yuan, & Lee, 2018; Hala, Chandler, & Fritz, 1991; Hala & Russell. 2001: Peskin. 1992).

However, the previous studies have examined only first-order lying, in which the child makes an untruthful statement to intentionally deceive an unsuspecting target (e.g., Ding, Wellman, Wang, Fu, & Lee, 2015; Ding, Heyman, Fu, Zhu, & Lee, 2018; Evans & Lee, 2013; Evans et al., 2011; Talwar & Lee, 2008). For example, in the classic hide-and-seek paradigm, the child is instructed to hide a treat in one of the two cups provided while the experimenter is not looking. Thereafter, the experimenter inquires about the location of the treat. To win the treat, the child needs to point to the empty cup to mislead the opponent, and the opponent would consistently look for the treat in the location indicated by the child. Although this task sheds light on the development of children's deceptive behaviors, a lie recipient would not always naively follow the child's direction in real life, especially if the lie recipient is suspicious of the child's intentions. Hence, a child might need to adjust his or her strategy by occasionally switching between lying and telling the truth in order to successfully deceive another person. In such situations, the deceiver is fully aware that the opponent (listener) is aware of his or her deceptive intentions, but the opponent does not know whether the deceiver's statement is truthful. Consequently, the deceiver carries out the intentional deceptive act by alternating between making truthful and untruthful statements, and this is called "second-order lying" (Ding, Sai, Fu, Liu, & Lee, 2014). Second-order lying, or "reverse psychology" as it is colloquially called, occurs most frequently in highly competitive situations such as political rivalry and elections, sports, warfare, gambling (e.g., poker games), and even business transactions and diplomacy. In second-order lying, both untruthful statements (i.e., lies) and truthful statements serve to deceive the opponent. This is because the deceiver is aware that the opponent knows him or her to be deceptive. If the deceiver tells the truth to the opponent, the opponent might mistake it to be deceptive and, therefore, believe the opposite to be true. That is, in second-order lying, the deceiver also accomplishes his or her ultimate goal—to deceive the opponent—by telling the truth. To date, there is only one study that has examined the neural correlates of second-order lying in adults (Ding, Sai, et al., 2014). To the best of our knowledge, there have been no studies related to children's second-order lying. Thus, the current study aimed to examine the development of children's second-order lying.

The second aim of the study was to examine what cognitive factors are related to children's ability to tell second-order lies. As Lee (2013, p. 91) mentioned, "Lying is theory of mind in action." Both first-order and second-order theory of mind understanding have been suggested to be related to children's first-order lying behavior (Carlson et al., 1998; Evans et al., 2011; Hala & Russell, 2001; Talwar & Lee, 2008; Williams, Moore, Crossman, & Talwar, 2016; for a review, see Lee, 2013). For example, Talwar and Lee (2008) found that in the temptation resistance paradigm, children's initial false denials (lying about peeking) are related to their first-order false belief understanding. In addition, Ding et al. (2015) found that first-order false belief training can promote children's ability to deceive. These findings suggested that lying requires the intention of instilling a false belief into the mind of the opponent (Lee, 2013). Other studies found that children's ability to maintain their lies is related to their second-order false belief understanding (Talwar & Lee, 2008; Talwar, Gordon, & Lee, 2007). For instance, when asked about the identity of the object in the temptation resistance task, children

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