



## Spite and cognitive skills in preschoolers

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### ARTICLE INFO

#### Article history:

Received 24 January 2014

Received in revised form 26 August 2014

Accepted 1 October 2014

Available online 13 October 2014

#### JEL classification:

C90

C99

D03

J24

#### PsycINFO classification:

2260

2340

3020

#### Keywords:

Spite

Other-regarding preferences

Cognitive skills

Child experiments

Household survey studies

### ABSTRACT

Other-regarding preferences in adults have been examined in depth in the literature. Research has shown that spiteful preferences play a crucial role in the development of human large-scale cooperation. However, there is little evidence of the factors explaining spiteful behavior in children. We investigate the relationship between children's cognitive skills and spiteful behavior in a sample of 214 preschoolers aged 5–6 and their mothers. Here, other-regarding behavior in children is elicited through four simple allocation decisions. A key advantage of our study is that we have information about children's cognitive and non-cognitive skills as well as maternal and household characteristics. We find that higher cognitive skills are associated with more spiteful behavior in children. This relationship is even more pronounced among boys. Moreover, we find further gender differences that depend on the measure of cognitive skills and the degree of spite displayed.

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## 1. Introduction

There is ample evidence of the importance of other-regarding behavior in human social interaction. Other-regarding preferences are recognized to be important for various economic and social outcomes including participation in public life and willingness to cooperate in groups at school, in the workplace, and in other institutional and non-institutional settings (e.g., Fehr & Fischbacher, 2002; Fong, Bowles, & Gintis, 2006). While the existence and development of some other-regarding preferences, such as prosocial behavior, is well documented in the literature (see, e.g., Meier, 2007, for a survey), there has been less research on the emergence of spiteful behavior. Spiteful behavior can be regarded as contrary to positive preferences such as altruism in that a spiteful person always experiences decreasing utility with the increase of the payoff of a reference agent. Thus, a spiteful person is willing to incur costs to reduce the other person's payoff (Fehr & Schmidt, 2006).

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The relative dearth of research on spiteful behavior is surprising, as spite has been shown to play an integral role in human large-scale cooperation—for example, by inducing altruistic punishment (Hauser, McAuliffe, & Blake, 2009; Jensen, 2010). Spiteful preferences are related to punishment of social behavior (Falk, Fehr, & Fischbacher, 2005; Herrmann, Thöni, & Gächter, 2008) and lead to a reduction of subjects' willingness to cooperate (Fehr, Hoff, & Kshetramade, 2008). In adult samples, Balafoutas, Kerschbamer, and Sutter (2012) report that 13% of their subjects behave spitefully, and Levine (1998) finds that 20% of his population can be classified as spiteful. Also, spite may, theoretically, be the underlying motive for behavior in an "ultimatum game" (Kirchsteiger, 1994). Furthermore, spite has been argued to have an important link to competitiveness (e.g., Balafoutas et al., 2012; Levine, 1998) and thus to individual economic success. Balafoutas et al. (2012) showed that spiteful individuals perform significantly better than efficiency-oriented or inequality-averse subjects when completing a task under competitive pressure. Interestingly, spiteful subjects tend to avoid direct competition when given a choice. It is argued that in general people care about their position relative to others and that spiteful individuals might be more competitive because they want to avoid being at a disadvantage. Jensen (2010) suggests that spite evolved as an integral part of altruistic punishment and that feeling good about another person's misfortune may be the driving force behind hyper-competitiveness.

All of the aforementioned studies, however, focus on spiteful behavior in adults. There is much less evidence on spiteful behavior in children (for a general discussion of other-regarding preferences in children, see, e.g., Sutter et al., 2010). This is despite the research showing that at preschool age, spiteful behavior is pronounced while other other-regarding preferences are less prevalent. This is also reflected in the data we use for this study; other types of other-regarding preferences are rather weakly represented (for example, only 3% of children are classified as strongly egalitarian). As children get older, spite decreases, while altruism and egalitarianism increase (see Section 2). Fehr, Bernhard, and Rockenbach (2008), for instance, report that 22% of 3–4 year olds behave spitefully. This percentage drops to 14% at the age of 7–8. In the study by Bauer, Chytilová, and Pertold-Gebicka (2014), the percentage of very spiteful children drops from 9% to 4% between the ages of 4–12. As this past research indicates, it is of particular interest to study spiteful behavior of children in a phase when these preferences seem to be stronger than in subsequent phases.

Moreover, there is a dearth of evidence in the existing literature on the factors related to spite. Thus the aim of our paper is to investigate the factors explaining spiteful behavior in children. We concentrate on one potential factor: cognitive ability. This is a factor which was rarely analyzed for children although cognitive abilities have been shown to be related to favorable economic preference parameters and cooperative behavior (Borghans, Meijers, & Ter Weel, 2008; Burks, Carpenter, Goette, & Rustichini, 2009; Dohmen, Falk, Huffman, & Sunde, 2010; Frederick, 2005). However, the nature of their relationship to other-regarding behavior, especially spite, remains weakly documented.

*Ex ante*, it is not clear whether the association between spite and cognitive skills is positive or negative. On the one hand, children with higher cognitive skills might act in strictly profit-maximizing manner regardless of the other child's payoff. Higher cognitive skills might therefore prevent children from acting spitefully since this would reduce their payoff. This hypothesis is in line with the theory developed by Burks et al. (2009) on the relationship between cognitive skills and social behavior. They state that individuals with higher cognitive ability might have a better understanding of the social consequences of their behavior, especially when these are uncertain or complex. In a sequential Prisoner's Dilemma, they show that among adults, cognitive ability is positively correlated with predictions about the other player's behavior as well as cooperative behavior. Along the same line, Hauser and Schunk (2009) report that children between 8 and 10 tend to give more in a dictator game if they perform better in mathematics. On the other hand, higher cognitive skills could also be positively related to spite. Certain cognitive capacities, as well as a degree of inhibitory control, are prerequisites for spite, since risks, costs, and benefits of spiteful behavior must be computed (Hauser et al., 2009). Thus it is an empirical question which explanation is more accurate.

Furthermore, we focus on gender differences in this relationship. Recent advances in the experimental economics literature have documented gender differences along various dimensions of other-regarding preferences (see e.g. Bertrand, 2011, chap. 17; Croson & Gneezy, 2009, for overviews of the literature).<sup>1</sup> These gender differences already emerge in childhood. In a study with children between ages 8 and 17, Fehr, Glätzle-Rützler, and Sutter (2013) find that girls behave in a significantly more egalitarian manner than boys. Martinsson, Nordblom, Rützler, and Sutter (2011) show overall in a sample of 10–15 year olds, that girls are more difference averse and display weaker social welfare preferences. Similarly, Sutter et al. (2010) find that with age, efficiency concerns increase among boys, whereas girls seem to care more about maximizing the payoff of the worst-off subject.<sup>2</sup>

However, differences in spiteful behavior between boys and girls are not our main interest: instead, we focus on factors explaining spiteful behavior. We are primarily interested in whether there are gender differences in the factors related to spite, in particular in the relationship between cognitive skills and spite. The literature suggests that such a relationship may exist, and that it could be driven by gender differences in cognitive abilities—however this relation depends on the dimensions of cognitive skills used (e.g., Deary, Thorpe, Wilson, Starr, & Whalley, 2003; Weiss, Kemmler, Deisenhammer, Fleischhacker, & Delazer, 2003). Thus in the following, we ask: What factors explain spiteful behavior and are there gender

<sup>1</sup> In their review of the experimental literature, Croson and Gneezy (2009) hypothesize that this variance is explained by a differential sensitivity of men and women to the social conditions of the experiment.

<sup>2</sup> This is also confirmed in a study by Almas, Cappelen, Sorensen, and Tungodden (2010), where efficiency considerations play a significant role for male teenagers in particular.

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