This is a repository copy of *Stick with your group : Young children's attitudes about group loyalty*.

White Rose Research Online URL for this paper:
https://eprints.whiterose.ac.uk/80791/

Version: Submitted Version

**Article:**
Misch, Antonia, Over, Harriet orcid.org/0000-0001-9461-043X and Carpenter, Malinda (2014) Stick with your group : Young children's attitudes about group loyalty. Journal of Experimental Child Psychology. pp. 19-36. ISSN 0022-0965

https://doi.org/10.1016/j.jecp.2014.02.008

**Reuse**
Items deposited in White Rose Research Online are protected by copyright, with all rights reserved unless indicated otherwise. They may be downloaded and/or printed for private study, or other acts as permitted by national copyright laws. The publisher or other rights holders may allow further reproduction and re-use of the full text version. This is indicated by the licence information on the White Rose Research Online record for the item.

**Takedown**
If you consider content in White Rose Research Online to be in breach of UK law, please notify us by emailing eprints@whiterose.ac.uk including the URL of the record and the reason for the withdrawal request.

eprints@whiterose.ac.uk
https://eprints.whiterose.ac.uk/

Running head: CHILDREN'S ATTITUDES ABOUT GROUP LOYALTY

# Stick with your group: Young children's attitudes about group loyalty

Antonia Misch[a], Harriet Over[a], & Malinda Carpenter[a,c]

[a] Department of Developmental and Comparative Psychology,

Max Planck Institute for Evolutionary Anthropology, Leipzig, Germany

[b] Department of Psychology, University of York, UK

[c] School of Psychology and Neuroscience, University of St. Andrews, UK

In press at: *Journal of Experimental Child Psychology*

Please do not cite or quote without permission.

Corresponding Author:
Antonia Misch
Department of Developmental and Comparative Psychology
Max Planck Institute for Evolutionary Anthropology
Deutscher Platz 6
04103 Leipzig
Germany
e-mail: misch@eva.mpg.de
phone: 0049-341-355-0469

Abstract

For adults, loyalty to the group is highly valued, yet little is known about how children evaluate loyalty. We investigated children's attitudes about loyalty in a third-party context. In the first experiment, 4- and 5-year-olds watched a video of two groups competing. Two members of the losing group then spoke. The disloyal individual said she wanted to win and would therefore join the other group. The loyal individual said she also wanted to win, but would stay with her group. Children were then asked five forced-choice questions about these two individuals' niceness, trustworthiness, morality, and deservingness of a reward. Five-year-olds preferred the loyal person across all questions; results for 4-year-olds were considerably weaker but in the same direction. The second experiment investigated the direction of the effect in 5-year-olds. In this experiment, children answered questions about either a loyal individual, a disloyal individual, or a neutral individual. Children rated both the loyal and the neutral individuals more positively than the disloyal individual across a number of measures. Thus, whereas disloyal behavior is evaluated unfavorably by children, loyal behavior is the expected norm. These results suggest that, at least from the age of five, children understand that belonging to a group entails certain commitments. This marks an important step in their own ability to negotiate belonging and become trustworthy and reliable members of their social groups.

*Keywords:* loyalty, group membership, group norms, social-cognitive development, morality

**Stick With Your Group: Young Children's Attitudes About Group Loyalty**

As adults, loyalty to the group is very important to us. We stick with our group even when it costs us to do so and, at least at times, we punish individuals who leave harshly (e.g., by executing deserters in times of war). Both of these things can be explained by the fact that successful cooperation within a group can only take place if group members can trust and rely on each other (Tomasello, Melis, Tennie, Wyman, & Herrmann, 2012). Furthermore, each group member contributes to the functioning of the group with his or her skills, knowledge, and work, and every defecting group member harms the group by taking these valuable resources with them (and maybe even contributing them to another group) (Levine & Moreland, 2002). Consequently,, the loyalty of every member is important for the survival of the group as a whole. Haidt and Graham (2007) even describe loyalty as one of the five psychological foundations of morality (see also Haidt, 2007). Thus, group members are expected to follow the norm of staying with the group, even when they have to sacrifice personal goals in order to benefit the group (Levine & Moreland, 2002). Indeed, Brewer and Silver (2000) describe loyalty as the "willingness of group members to exert effort, pay costs, or sacrifice personal benefits on behalf of the group as a whole" (p. 162). Although it is also possible to feel a sense of loyalty to the group without making any such sacrifice, in fact without engaging in any overt behavior at all, the definition above describes a situation in which loyalty is visible in a particularly strong form.

Despite the importance of loyalty to successful group functioning, surprisingly, there has been little developmental research on this topic, and no research at all on young children's judgments of people who leave their groups. The few studies on related topics investigated children's reactions to group members who play with or say positive things about members of their own versus other groups. Castelli, De

Amicis, and Sherman (2007), for example, found that 4- to 7-year-old White children prefer White children who play with an in-group member (i.e., a White child) to white children who play with an out-group member (i.e., a Black child). In a related series of studies, Abrams and colleagues asked 5- to 12-year-old children to judge their in-group and out-group peers according to their normative vs. deviant statements (i.e., saying positive things only about the in-group vs. saying positive things about both the in- and out-group). They found that in general children favored normative to deviant in-group members (Abrams, Rutland, & Cameron, 2003; Abrams, Rutland, Cameron, & Ferrell, 2007; Abrams, Rutland, Cameron, & Marques, 2003; Abrams, Rutland, Ferrell, & Pelletier, 2008; Abrams, Rutland, Pelletier, & Ferrell, 2009). However, none of these studies examined loyalty in the sense of staying with the group and thereby paying a cost for the sake of the group (i.e., staying even when leaving would be beneficial for the individual). Also, in most of these studies children belonged to the groups themselves (see Abrams et al., 2009, for an exception) and thus it is possible that they were responding based simply on their positive feelings for their own groups, rather than based on an understanding of loyalty more generally.

Work from other areas has shown that preschool-aged children understand something about norms of conduct in social situations, including norms about leaving. For example, children realize that when one is committed to participating in a collaborative activity with someone else, one cannot just leave in the middle of it without taking leave or making some excuse, and more generally they expect collaborative partners to stick with each other until the activity is finished (Gräfenhain, Behne, Carpenter, & Tomasello, 2009; see also Gräfenhain, Carpenter, & Tomasello, 2013). Other research from Hamann, Warneken, and Tomasello (2012) found that 3.5-year-old children stick to a collaborative activity until both collaboration partners

have received their reward. These findings suggest that young children have some understanding of the commitments inherent in some types of dyadic interactions. However, commitments that come with dyadic interactions might be easier to understand than similar types of commitments at the group level (Tomasello et al., 2012).

In the current study we tested 4- and 5-year-olds' understanding of loyalty to the group more directly than has been done previously, following the strict definition of Brewer and Silver (2000), in which loyal behavior involves a personal sacrifice for the benefit of the group. In addition, to rule out the possibility that children were responding based on their own positive feelings about their group, and to tap into children's abstract moral reasoning about loyalty in an agent-neutral way, we tested children's judgments of third-party interactions. In line with the previous work of Castelli et al. (2007) and Abrams et al. (2003a, 2007, 2009), in which the youngest subjects were 4 and 5 years old, respectively, we chose to test 4- and 5-year-olds. Recent research has suggested this is an important period for the development of intergroup relations (e.g., Dunham, Baron, & Carey, 2011; Dunham & Emory, in press).

We asked children to watch a video in which two groups competed with each other. The video was paused when it became clear that one of the groups was losing the competition. Two members of the losing group then spoke. In counterbalanced order, the disloyal individual said she wanted to win and would therefore join the other group, whereas the loyal individual said she also wanted to win, but would stay with her group. Thus, in the current experiment, losing the competition was the sacrifice the loyal individual made to stay with her group (see Baker-Ward, Eaton, & Banks, 2005, for evidence that children associate losing with negative emotions).

Following the videos, we examined children's attitudes about these two individuals by asking them a series of forced-choice questions about niceness, trust, morality, and deservingness of rewards. We chose these dimensions to ask about based on the following assumptions. First, we predicted that a positive evaluation of loyalty should be reflected in a general positive evaluation of the loyal person (i.e., perceiving her as a nice person; see Branscombe, Wann, Noel, & Colemann, 1993). Second, since being able to rely on one's group members is crucial for successful cooperation (Tomasello et al., 2012), we included a question examining trust. We were careful to ask about a situation that was unrelated to the competitive group task in the video, to assess children's judgments about the actors' general trustworthiness rather than the likelihood that she would complete that particular task. Third, following Haidt and Graham (2007), we were interested in whether children understand loyalty as a moral obligation, so we asked which of the two individuals did the right thing. Fourth, in line with the differential group inclusion measure of Abrams et al. (e.g., 2003a, 2007, 2009, 2011), we investigated children's predictions about how the other group members of the loyal and disloyal individuals would feel about those individuals. Finally, we included a question designed to assess how deserving children thought the loyal and disloyal individuals were of rewards. This question thus investigated whether children's evaluation of others' loyalty has any consequences for children's own behavior toward those individuals. For each question we asked children to justify their answer, to make sure that their choices were based on the individuals' loyalty or disloyalty, rather than some other factor.

## Experiment 1a

In Experiment 1a we investigated whether 5-year-old children value loyal over disloyal behavior. We predicted that children would favor the loyal over the disloyal person, despite the fact that wanting to win might be seen as a justifiable goal for the disloyal individual to have.

### Method

**Participants.** Participants were 49 five-year-old children (24 girls and 25 boys, age range 5;0;09-5;11;26, *M*=5;5;15). One additional child was tested but excluded for failing the memory check at the end of the study. All children (in each experiment reported here) were recruited and tested in their daycare centers in a medium-sized German city. Children were predominantly White, native German speakers with mixed socio-economic backgrounds.

**Materials and design.** Children were seated at a table in front of a laptop computer (Lenovo ThinkPad, 14" screen) with loudspeakers attached. The experimenter sat to the right of the child. Children watched one of two full-screen videos depicting two groups of female actors competing to build towers out of plastic cups, and then two members of the losing group responding loyally and disloyally, respectively. Across the two videos we counterbalanced the identity and the side (left or right) of the loyal individual, as well as whether the loyal or the disloyal individual spoke first. After watching the video, children were asked a series of five forced-choice test questions, each with a follow-up justification question. All but one of these questions were presented in counterbalanced order: Following a similar type of procedure used by Vaish, Carpenter, and Tomasello (2011), the question involving distribution of a reward was always presented last, because it was a more active task,

with props that could have been distracting to children. There were also two questions designed to check children's memory of what happened in the videos, which were presented both before and again after the test questions.

**Procedure.** All children were tested by a female experimenter (E), who picked them up from their classroom and explained that she wanted to show them a video. After sitting them down in front of the laptop, E explained that in the video there were two groups, a yellow group and a green group. First of all, they would see the yellow group. E started the video and children watched as the four (female) members of the yellow group walked into sight from the left side, each of them wearing a yellow scarf and a yellow armband. They came to a halt behind a small table on the left side, waved to the camera, and one of them said, "We are the yellow group!" Then they all gave each other a high five to demonstrate the team spirit of the group. At this point E paused the video and said to children, "Look, this is the yellow group. All the members of the yellow group are wearing yellow scarves and yellow armbands. They are all in the yellow group. Now let's see the green group." She started the video again and children watched as the four (female) members of the green group walked in from the right side and presented themselves to children in exactly the same manner. All members of the green group were wearing green scarves and armbands (see Figure 1a). E paused the video again and told children, "Look, this is the green group. All the members of the green group are wearing green scarves and green armbands. They are all in the green group."

E then explained, "Now both groups are going to have a tower-building contest. Each group will sit at their table and build a tower out of cups. The group who is faster, and who has the higher tower in the end, wins." E restarted the video and children watched as the two groups knelt at their tables, upon which 28 large blue

plastic cups were scattered upside-down on either side, and prepared for the competition. After a start signal, each group began to build a tower out of the cups. It was soon clear that the green group was faster and therefore more likely to win (see Figure 1b).

Just before the green group placed their last few cups on the tower, E stopped the video again and asked children, “What do you think, which group is going to win?” If children answered correctly (“the green group”) she said, “Exactly, the green group is going to win, because their tower is much higher already.” If children answered incorrectly, she corrected them, saying, “No, look, the green group is going to win, because their tower is much higher already.” Before starting the video again, E told children, “Now let’s see what the members of the yellow group think about that!”, and restarted the video.

The camera zoomed in on the two members of the yellow (losing) group who would become the loyal and disloyal group members, with the green group and their tower visible in the background but frozen in mid-action (see Figure 1c). These two individuals both looked over to the winning green group and then spoke, in counterbalanced order. The loyal individual said, “The green group is winning! I would also like to win, but I’ll stay with my yellow group.” The disloyal individual said, “The green group is winning! I would also like to win, so I’m going over to the green group.” After this, the camera zoomed in more closely, now just featuring the loyal and disloyal individuals (see Figure 1d). They both repeated their intentions in the same order as for the previous statement: The loyal individual said, “I’ll stay with my group!” and the disloyal individual said, “I’m going over to the other group!” The video then ended and a still frame of the loyal and disloyal individuals (both with neutral facial expressions, looking directly at the camera) remained on the screen for

the duration of the question phase. The video was approximately 1 minute, 20 seconds in length.

*Figure 1a.* Introduction of the groups.

*Figure 1b*. Building towers.

*Figure 1c.* Loyal and disloyal statements of yellow group members.

*Figure 1d.* Repetition of loyal and disloyal statements and still frame during test phase.

*Figure 1.* Still shots from the test video.

After the video finished, E asked children two memory questions. First she asked, “Who is staying with her group?” If children pointed correctly to the loyal group member, E asked the second question, “And who is going into the other group?” If children did not point to the correct person in response to the first question, E pointed to the correct person and said, “She is staying in her group. And who is going into the other group?” After children had pointed to the correct person (they never

answered this second question incorrectly), E then asked the five test questions, each of which was followed by a justification question:

1. Nice: "Which one is nicer?"

   Nicer justification: "Why do you think she is nicer?"

2. Trust: [while showing the child a picture of a hamster] "Look, this is my hamster. Cute, isn't he? But when I go on holiday I can't take him with me. Then I will need someone to take care of my hamster. What do you think, which one can I trust to take good care of my hamster?"

   Trust justification: "Why do you think I can trust her more?"

3. Moral: "Which one is doing the right thing?"

   Moral justification: "Why do you think this was the right thing to do?"

4. Disliked: "Which one do the others in the yellow group *not* like anymore now?" Note that for this question only, in order to answer in favor of the loyal person, children had to point to the disloyal person. This question was reverse-scored in order to assess the flexibility of children's responding and to help us interpret the degree of consistency in their responding.

   Disliked justification: "Why do you think the others don't like her anymore?"

5. Reward: "Look, I have a beautiful flower that you can give to one of them. But first think about who you want to give the flower to. If you want to give the flower to her [E pointed to the individual on the left], you can put it in here [E placed a little vase in front of the left individual]. And if you

want to give the flower to her [E pointed to the right individual], you can put it in here." [E placed another little vase in front of the right individual].

Reward justification: "Why did you give the flower to her?"

As a response to the forced-choice questions children were expected to point to one of the individuals or, in the case of the reward question, to put the flower in one of the vases. If children did not respond, or indicated that they did not know the answer, E asked the question again with the request "Show me!" If children still did not respond, the question was posed again and E pointed to the individuals herself, asking "Her or her?" She always pointed to the person on the left first. If children did not answer for the third time, or if they refused to choose one individual (answering "both"), E moved on to the next question. For the justification questions, children were allowed to answer freely, and if they did not respond they were not probed further. During all questions, E remained friendly but neutral and did not provide any feedback concerning the correctness of the answers. At the end, E repeated the memory questions in order to check whether children remembered the manipulation.

**Coding and reliability.** We counted both verbal and pointing responses to the memory check and the five test questions, as well as which vase children put the flower into for the reward question, and coded children's responses as either loyal (i.e., favoring the loyal person) or disloyal (i.e., favoring the disloyal person) for these questions. For question 4, which was reversed, children's responses were coded as favoring the loyal person when they pointed to the disloyal person.

For all responses we also looked at children's answers to the corresponding justification questions, to see whether they chose the loyal person (or disloyal person in question 4) for the hypothesized reasons. For these questions, our main interest was in whether children referred to staying with the group or leaving the group. Examples

of answers that children gave that counted in this category were “Because she is staying with the yellow group” or “Because she did not go to the other group.”

In addition to coding responses that referenced loyalty/disloyalty, we also inspected children’s other justifications and noticed that they sometimes seemed to value winning over loyalty. We thus coded responses that referenced winning (or losing for question 4), for example, “Because she is winning” or “Because the green group is faster.”

Finally, we coded all the other types of justifications children gave to see what additional reasons children gave to explain their choices. Based on the most common answers received, we divided these other responses into three further categories: *liking/disliking* (e.g., "Because I like her" or "Because she is nicer"), *superficial features* (e.g., "Because she looks pretty" or "Because she has a nice voice"), and *other* (e.g., "I don't know"; but also nonsense statements such as “Because I want to" or "Because my dad told me this").

A second coder who was unaware of both the hypotheses of the study and which individual was the loyal vs. disloyal person coded a random 25% of the sample for reliability. Reliability for children’s choice as well as for their justification answers was excellent, with $\kappa$ =1.00 and $\kappa$ =.94, respectively.

**Results**

**Memory check.** Two of the 49 children failed the memory check at the beginning of the test phase (and were corrected). All children included in the sample passed the two memory questions at the end of the experiment.

**Forced-choice questions.** Our main question of interest was whom children chose in response to the five test questions. Visual inspection of the data revealed that the order of the questions, the identity of the experimenter who played the loyal

person, the side on which she sat, and which of them spoke first had no influence on children's responses. We thus collapsed across these counterbalancing variables and do not consider them further.

For the first three questions requiring a verbal response above, children chose the loyal person significantly more often than the disloyal person (see Figure 2): They thought that the loyal person was nicer (binomial test, $p$=.019, $g$=.18), judged the loyal person as more trustworthy (binomial test, $p$=.04, $g$=.15), and thought that the loyal person did the right thing (binomial test, $p$=.004, $g$=.21). For the reverse-scored disliked question, in contrast, children chose the disloyal person significantly more often than the loyal person, assuming that the yellow group would now dislike the disloyal person (binomial test, $p$=.01, $g$=.19). For the reward question, a majority of the children gave the flower to the loyal person, but this was only a trend (binomial test, $p$=.085). Overall, across all five questions together, children responded significantly more often in favor of the loyal person than the disloyal person; 67% of the time ($t(48)=3.71$, $p$=.001, $d$=0.53).

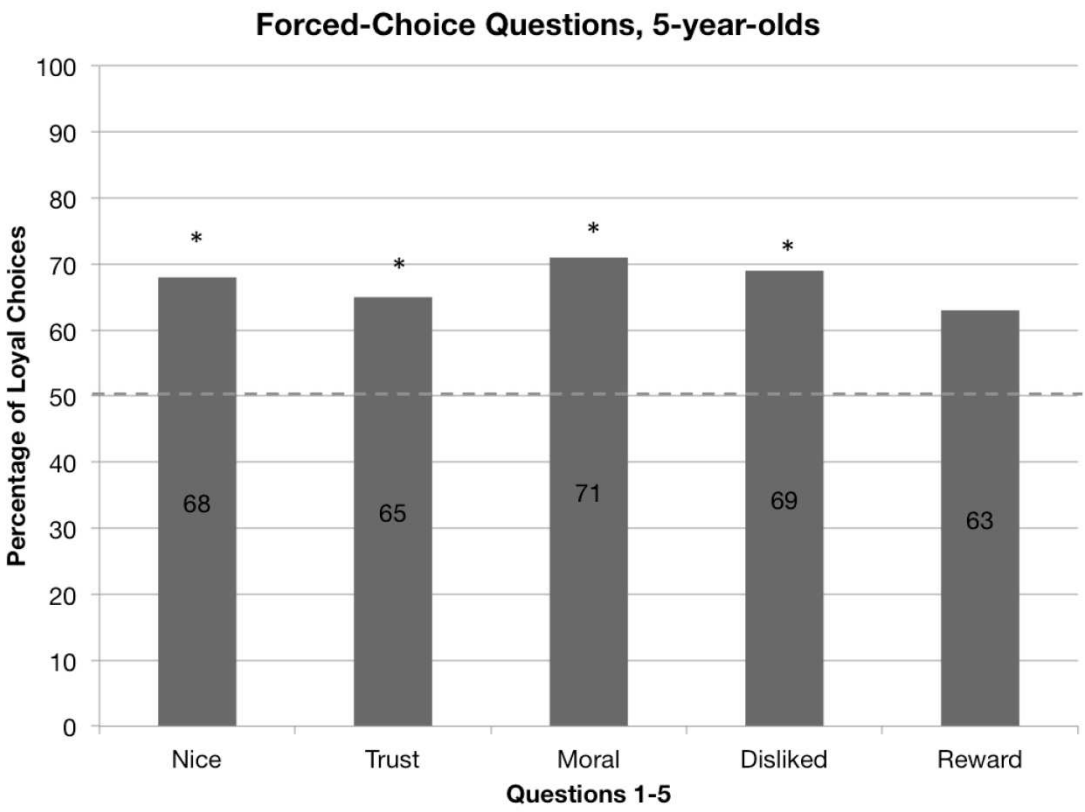


*Figure 2.* Forced-choice responses for 5-year-olds in Experiment 1a.

**Response patterns.** An inspection of children's response patterns showed that 55% of children consistently responded in favor of the loyal person (i.e., preferring the loyal person in at least four of five questions), 16% consistently responded in favor of the disloyal person (i.e., preferring the disloyal person in at least four of five questions), and 29% showed no consistent response pattern (i.e., not preferring one person clearly over the other).

**Justifications.** An additional question of interest was how children justified their responses. Below we describe the pattern of justifications given by children. Figure 3 shows the distribution of the different types of justifications children gave for both their loyal and their disloyal responses. In the trials in which children answered in favor of the loyal person, children justified their responses with reference to the actors' loyal or disloyal behavior in more than half of the trials (55%).

Justifications involving liking/disliking, superficial features, and winning/losing made up only a small proportion of responses (2%-9% of trials each). The category 'other' made up only 26% of justifications for loyal responses, compared to 51% for disloyal responses. In their justifications of their answers favoring the disloyal person, further common responses were references to loyalty/disloyalty (in 22% of trials) and winning/losing (19% of trials).

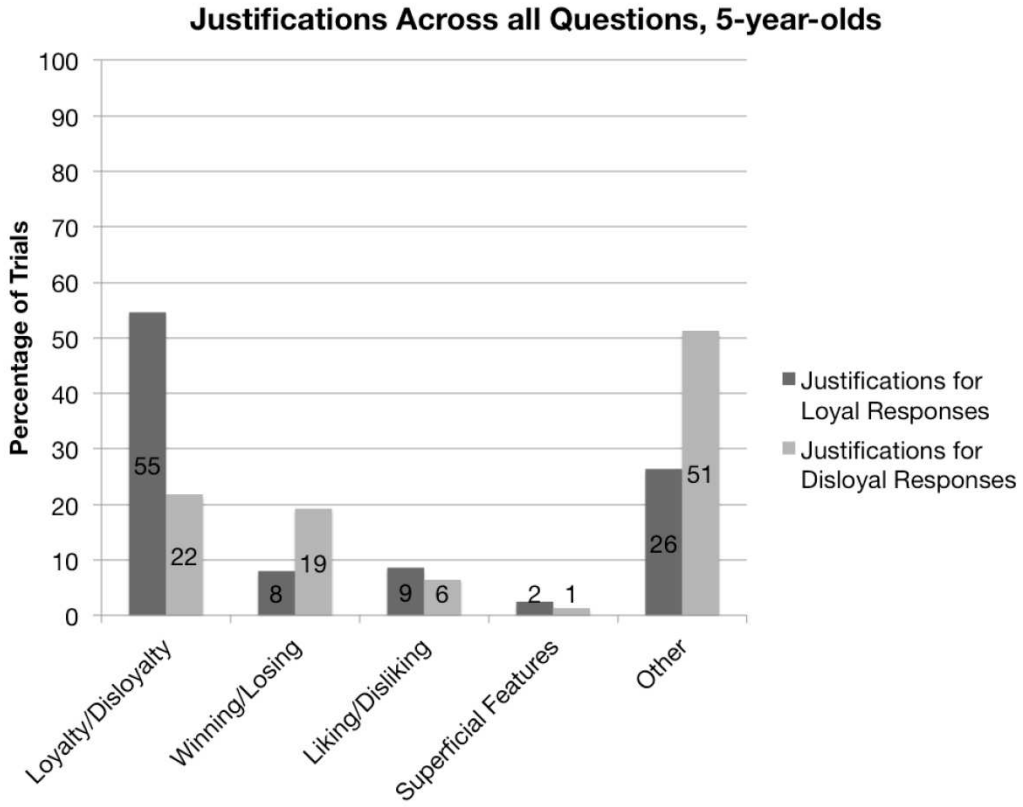


*Figure 3.* Justifications across all questions for 5-year-olds in Experiment 1a.

Looking at children's justifications for each question separately, it is noteworthy that when children answered in favor of the loyal person (see Figure 4a), in four out of the five questions, the predominant type of justification that children gave involved references to loyalty/disloyalty, with an overall majority of children

referring to loyalty/disloyalty in the questions involving niceness (78%) and doing the right thing (66%).

In contrast, when justifying their choices in favor of the disloyal person (see Figure 4b), the most common response in all four questions fell into the category 'other', although in four of the five questions a minority of children (20%-36%) did mention loyalty/disloyalty. The question that stood out as having a different pattern of results was the moral one regarding who did the right thing. When answering that the disloyal person did the right thing, 50% of children referred to winning/losing and none referred to loyalty/disloyalty. A fair number of children (17%-27%) also referred to winning/losing when answering that the others would dislike the loyal person and when giving the reward to the disloyal person.

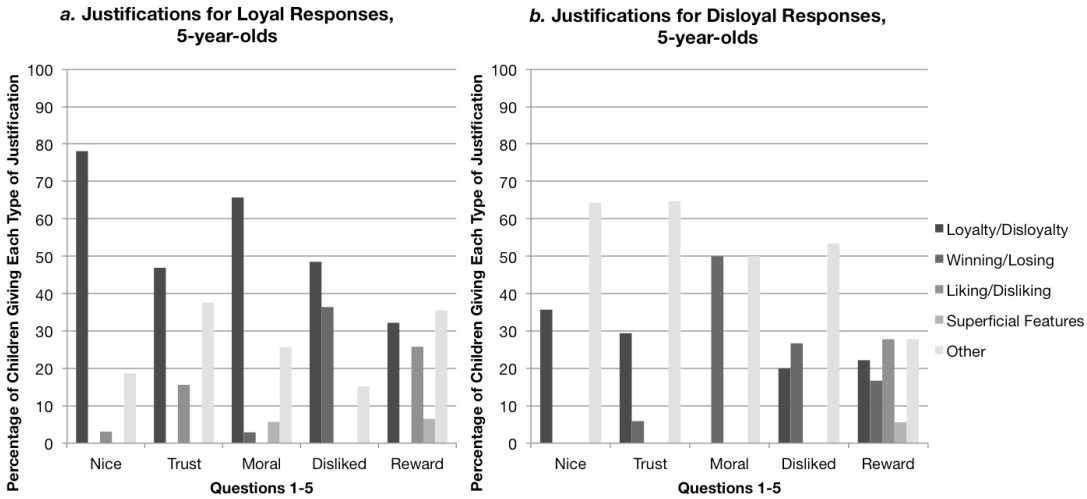


*Figure 4.* Justifications for 5-year-olds: a) For loyal responses, b) for disloyal responses.

**Linking response patterns and justifications.** Looking at children's justifications in relation to their consistency in responding to the forced-choice questions, it is noteworthy that 89% of the children who consistently answered in favor of the loyal person referenced loyalty at least once, compared to only 41% of

the children who did not give consistent answers ($X^2(1, 49)=12.69$, $p<.01$, $\Phi=.51$). This suggests that the children who responded consistently in favor of the loyal person really did so based on her loyal behavior.

**Discussion**

The aim of this experiment was to examine young children's attitudes about group loyalty. Results showed that 5-year-old children clearly prefer loyal to disloyal individuals, and that they do so even when they themselves are not a member of one of the groups. Analysis of children's justifications for their responses showed that when children answered in favor of the loyal person, they justified their choice by referring to her loyal/disloyal behavior over half of the time. Children were particularly likely to reference loyalty/disloyalty when justifying their choice of the loyal person in the questions involving niceness and who did the right thing. When children chose in favor of the disloyal person, their justifications were more mixed. Although they sometimes referenced loyalty/disloyalty or winning/losing, the majority of their responses were irrelevant to the test scenario.

## Experiment 1b

Since results with 5-year-olds were so clear, we wondered whether even younger children would show a preference for loyal over disloyal behavior in third-party interactions. In Experiment 1b the same procedure was thus repeated with 4-year-olds.

**Method**

**Participants.** Participants were 49 four-year-old children (24 girls and 25 boys, age range 4;0;05-4;11;20, *M*=4;06;22). One additional child was tested but

excluded because of uncooperativeness, and five children had to be excluded for failing the memory check at the end of the study.

**Procedure.** The design, materials, and procedure of Experiment 1b were identical to those in Experiment 1a.

**Coding and reliability.** Coding and reliability procedures were also identical to those in Experiment 1a. Reliability for children's choice as well as for their justification answers was excellent, with $\kappa$=1.00 and $\kappa$ =.93, respectively.

**Results**

**Memory check.** Nine of the 49 children failed the memory check at the beginning of the test phase (and were corrected). All children included in the sample passed the two memory questions at the end of the experiment.

**Forced-choice questions.** Visual inspection of the data revealed that the order of the questions, the identity of experimenter who played the loyal person, the side on which she sat, and which of the individuals spoke first had no influence on children's responses, thus we collapsed across these counterbalancing variables.

The performance of 4-year-olds was weaker than that of 5-year-olds (see Figure 6). Although the majority of 4-year-olds responded in favor of the loyal person for each question, their results were non-significant in each case (binomial tests for nicer, $p$=.111; for trustworthy, $p$=.253; for did the right thing, $p$=.193; for disliked, $p$=.392; for reward, $p$=.152). However, overall, across all five questions together, children responded in favor of the loyal person 60% of the time, and this was significantly above chance level ($t(48)$=2.09, $p$=.042, $d$=0.29).

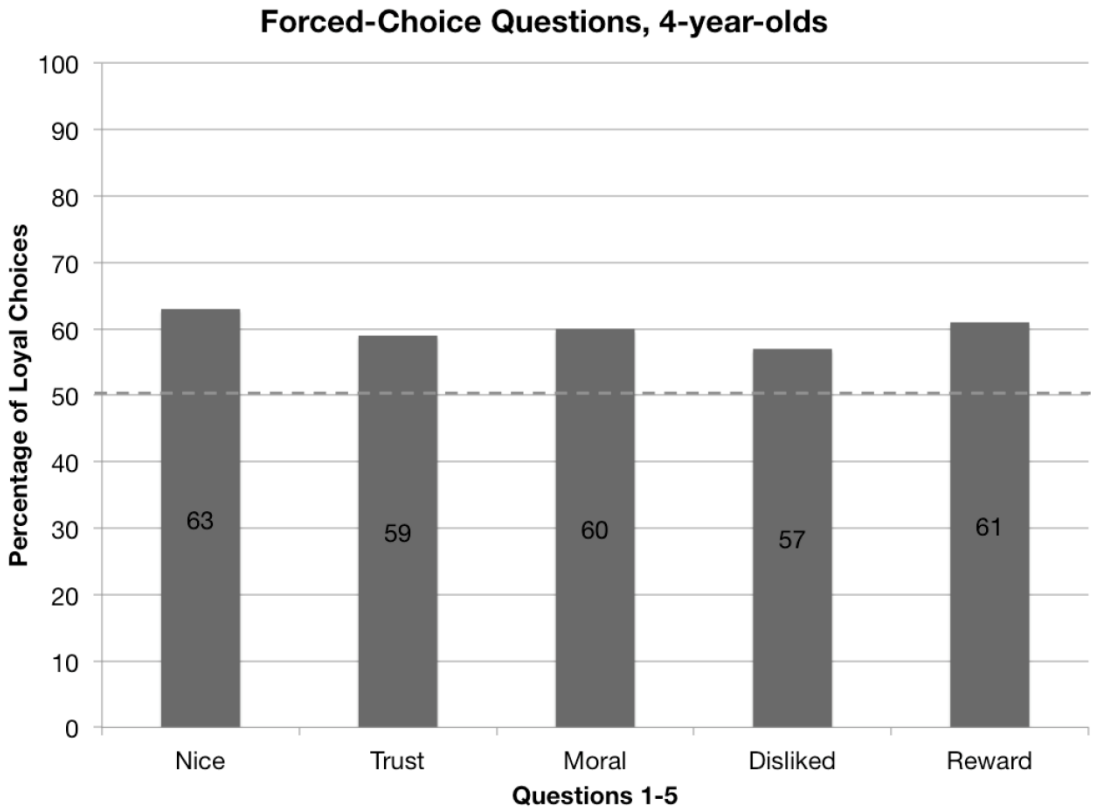


*Figure 5.* Forced-choice responses for 4-year-olds in Experiment 1b.

**Response patterns.** An inspection of children's response patterns showed that 47% of children consistently responded in favor of the loyal person (i.e., preferring the loyal person in at least four of five questions), 29% consistently responded in favor of the disloyal person (i.e., preferring the disloyal person in at least four of five questions), and 24% showed no consistent response pattern (i.e., not preferring one person clearly over the other).

**Justifications.** Figure 6 shows the distribution of the different types of justifications 4-year-olds gave for both their loyal and their disloyal choices. For each type of choice, only around 20% of the children referred to loyalty/disloyalty. Winning was mentioned three times as often in justifications for disloyal than loyal choices (18% vs. 6%, respectively). For both loyal and disloyal choices, about half of the time 4-year-olds justified their choice with 'other' responses.

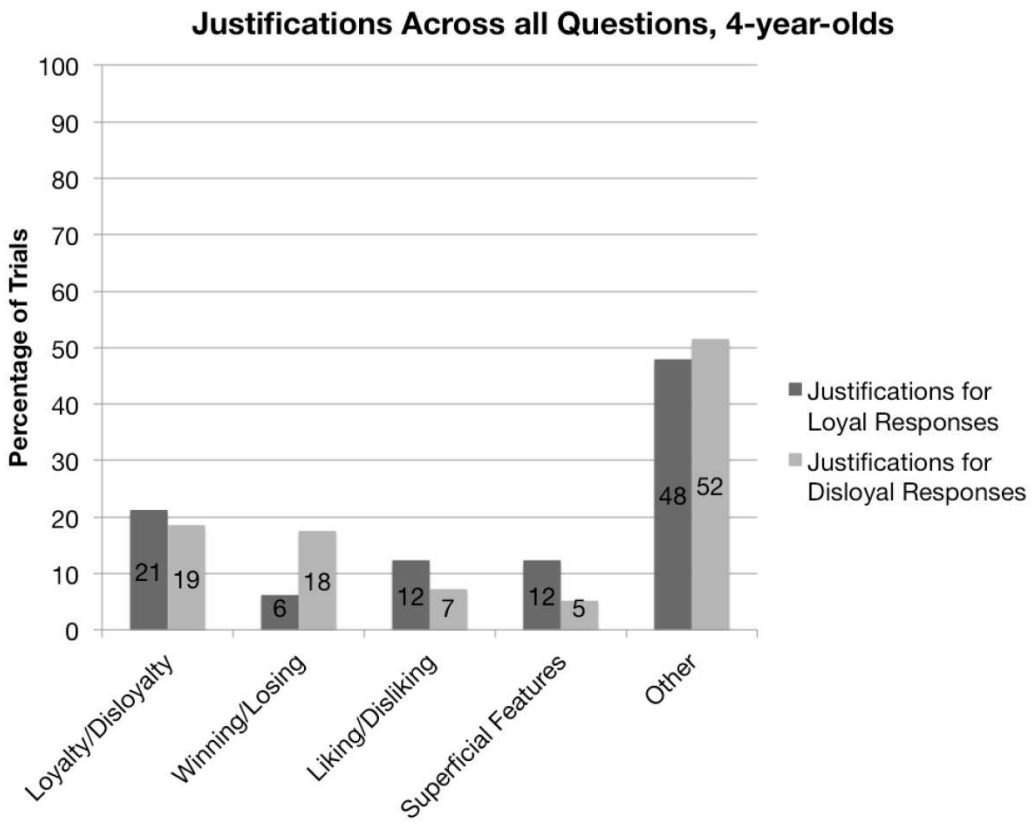


*Figure 6.* Justifications across all questions for 4-year-olds in Experiment 1b.

Looking at children's justifications for each question separately (see Figures 7 a and b), the predominant response for 4-year-olds across most questions, both when they answered in favor of the loyal person and when they answered in favor of the disloyal person, fell into the category 'other.' Although 4-year-olds only referenced loyalty/disloyalty in a minority of their justifications for their choices favoring the

loyal person, it is interesting to note that the three questions that elicited the most loyalty/disloyalty justifications for the 4-year-olds were the same three questions that elicited the most loyalty/disloyalty justifications for the 5-year-olds: the questions involving niceness, doing the right thing, and who the others would dislike. For these questions 21%-37% of 4-year-olds produced loyalty/disloyalty justifications. When justifying their choices favoring the disloyal person, across all five questions 15%-21% of children referenced loyalty/disloyalty. Following disloyal choices, the two questions that elicited the most winning/losing justifications were also the same across age groups: the questions involving who did the right thing and who the others would dislike.

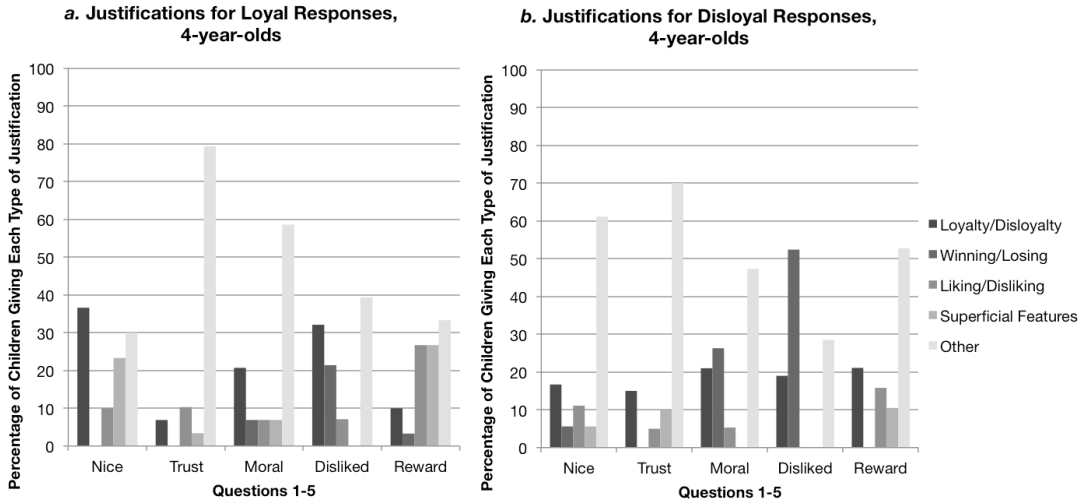


*Figure 7.* Justifications for 4-year-olds: a) For loyal responses, b) for disloyal responses.

**Linking response patterns and justifications.** Looking at children's justifications in relation to their consistency in responding to the forced-choice questions, 52% of the children who consistently answered in favor of the loyal person referenced loyalty at least once, compared to only 19% of the children who did not

give consistent answers ($X^2(1, 49)=5.85$, $p<.05$, $\Phi=.35$). This suggests that a subset of the children who responded consistently in favor of the loyal person did so based on her loyal behavior.

**Discussion**

Experiment 1b showed that 4-year-old children are beginning to show some understanding of loyalty, and preference for loyal individuals, when observing third-party interactions, although their pattern of results was much weaker than that of 5-year-olds. Still, overall, on a total score comprising all five questions, they responded significantly in favor of the loyal person. Further hints that some 4-year-olds are starting to understand and value loyalty comes from their justification responses. Just over half of the children who consistently favored the loyal person referred to loyal/disloyal behavior, suggesting that some subset of 4-year-olds already understand and value loyalty.

It is noteworthy that in both of these experiments (and especially Experiment 1a), children's attitudes about loyalty did not seem to be very well reflected in their responses to the question about reward allocation. One possible reason for this is that, for practical reasons this question was always presented last. Thus, children might have been less focused on the task at that point. In addition, in hindsight, giving flowers might be associated with other things too, such as rewarding a winner. Still, it is important to note that at both ages, although results were not significant, they did go in the direction of favoring the loyal person for this question as well.

Taken together, the results of Experiment 1 suggest that, at least by 5 years of age, children clearly value loyalty to the group. However, because we used forced-choice questions in this Experiment, several open questions remain about the nature of children’s understanding, and, in particular, the direction of the effect: Do children

favor loyal individuals or disfavor disloyal individuals? We address these questions in Experiment 2.

## Experiment 2

In Experiment 1, children were forced by the questions to choose between the loyal and disloyal individual; thus they could not express equally positive attitudes about both, or give flowers to both – they had to choose just one of them. This is potentially a weakness as it could be that children naturally have no strong preference for loyal individuals but only express a preference when asked to make a choice. Therefore, in Experiment 2 we showed children the same videos but changed the nature of the test questions, asking children about only one of the individuals (the loyal individual for some children and the disloyal individual for others). Consequently, across conditions, children could hypothetically express equally positive attitudes about both individuals.

In addition, in this Experiment we investigated the direction of children's responding. That is, in Experiment 1, children's preferential choices in favor of the loyal person could have come about either because they value loyal behavior or because they disapprove of disloyal behavior (or both). Thus here we included a comparison to a neutral individual who had expressed no loyal or disloyal behavior. The comparison to this baseline individual enables us to determine whether loyal behavior leads children to see a person as more positive, or whether disloyal behavior leads children to see her as more negative, or both.

### Method

**Participants.** Participants were 96 five-year-old children (48 girls and 48 boys, age range 5;0;0-5;09;08, *M*=5;05;17). Additional children were tested but excluded

for the following reasons: uncooperativeness (1), camera malfunction (1), experimenter error (6), and failing the memory check at the end of the study (11).

**Materials, design, and procedure.** Apart from the test questions, the design, materials, and procedure of Experiment 2 were identical to those of Experiment 1 for children in the two experimental conditions (i.e., the loyal and disloyal conditions, *n*=32 per condition). However, children in the neutral condition (*n*=32) watched a modified version of the same video in which the still image with the two test characters appeared right after the group competition (i.e., after E stopped the video and asked children which group they thought would win). Consequently, children in the neutral condition did not hear any statements by these individuals at all, and did not have to pass the memory check.

After the video, children were asked a series of five questions, with subsequent justification questions, about just one of the individuals. These questions were as follows:

1. Nice: "Do you think she is nice, or not nice?" [while pointing to the relevant person]

   Nice justification: "Why do/don't you think she is nice?"

2. Trust: [while showing the child a picture of a hamster] "Look, this is my hamster. Cute, isn't he? But when I go on holiday I can't take him with me. Then I will need someone to take care of my hamster. What do you think, can I trust her to take good care of my hamster, or can I not trust her?"

   Trust justification: "Why do you think I can/can't trust her?"

3. Moral (For this question only, the questions differed across conditions. We wanted the question in the experimental conditions to be similar to the

question in Experiment 1, and this change was needed in order to make the question in the neutral condition make more sense):

a. Right thing (experimental conditions only): "What do you think, is she doing the right thing, or not the right thing?"

   Moral justification: "Why do you think that's the right thing/not the right thing to do?"

b. Good person (neutral condition): "Do you think she is a good person or not a good person?"

   Moral justification: "Why do you think that she is/is not a good person?"

4. Liked: "What do you think, will the others in the yellow group still like her now, or not like her anymore?"

   Liked justification: "Why do you think the others will still like her/won't like her anymore?"

5. Reward: "Look, I have a beautiful flower. If you want to give her the flower as a present, you can put it in here [E placed a little vase in front of the respective individual]. If you don't want to give her the flower as a present, you can put it in here." [E placed another little vase some distance away from the laptop].

   Reward justification: "Why would/wouldn't you like to give her the flower as a present?"

If children did not answer a test question, they were asked again two more times before E moved on to the next question. At the end E repeated the memory questions (only in the experimental conditions).

The identity and the side on which the test characters were presented, as well as whether the loyal or disloyal individual spoke first, were counterbalanced as in

Experiment 1. The individual E asked about in the neutral condition was counterbalanced in a similar way. In addition, we counterbalanced the order of the positive vs. negative part of the question across children. That is, half of the children in each condition heard the sentence with the positive phrase first (e.g., "Do you think she is nice, or not nice?") and half of the children heard it in the reverse order (e.g., "Do you think she is not nice, or nice?").

**Coding and reliability.** We counted children's positive (e.g., "nice") and negative (e.g., "not nice") responses to all questions, as well as which vase children put the flower into for the reward question.

As in the previous experiment, we were interested in whether children judged the loyal person positively (in the loyal condition) and judged the disloyal person negatively (in the disloyal condition) for the hypothesized reasons, and therefore we looked at children's answers to the corresponding justification questions. Responses were coded in the same manner as in Experiments 1a and b.

A second coder who was unaware of both the hypotheses of the study and which individual (in the experimental conditions) was the loyal vs. disloyal person coded a random 25% of the sample for reliability. Reliability was excellent, with $\kappa = 1.00$ for the test questions, and $\kappa = .95$ for the justifications.

**Results**

**Memory check (experimental conditions only).** Two of the 64 children in the experimental conditions failed the memory check at the beginning of the test phase (and were corrected). All children included in the sample passed the two memory questions at the end of the experiment.

**Test questions.** Visual inspection of the data revealed that the order of the questions, the identity and side of the test person, which of the two individual spoke

first, and the order of the positive and negative part of the question had no influence on the responses. We thus collapsed across these counterbalancing variables.

First, we calculated an ANOVA on an overall score summing across all five questions. It revealed significant differences in children's responses across conditions ($F(2)=3.90$, $p=.024$, $\eta^2=.077$). Post-hoc Fisher's LSD tests showed that children responded more positively to the loyal ($p=.011$) and the neutral individual ($p=.032$) than to the disloyal individual. There was no significant difference in their responses to the loyal and neutral individuals ($p=.676$; see Figure 8).

Looking at each of the five questions individually, chi-square tests revealed significant differences for children's responses to three of the questions. Children judged the loyal and neutral individuals as nice ($\chi^2$ (2, 96)=6.13, $p=.047$, $\phi=.25$), as trustworthy ($\chi^2$ (2, 96)=6.95, $p=.031$, $\phi=.27$), and as doing the right thing/being a good person ($\chi^2$ (2, 93)=10.43, $p=.005$, $\phi=.34$) more often than they did this for the disloyal individual. There were no significant differences for the other two questions (for disliked, $\chi^2$ (2, 95)=.88, $p=.65$; for reward, $\chi^2$ (2, 96)=.80, $p=.67$).

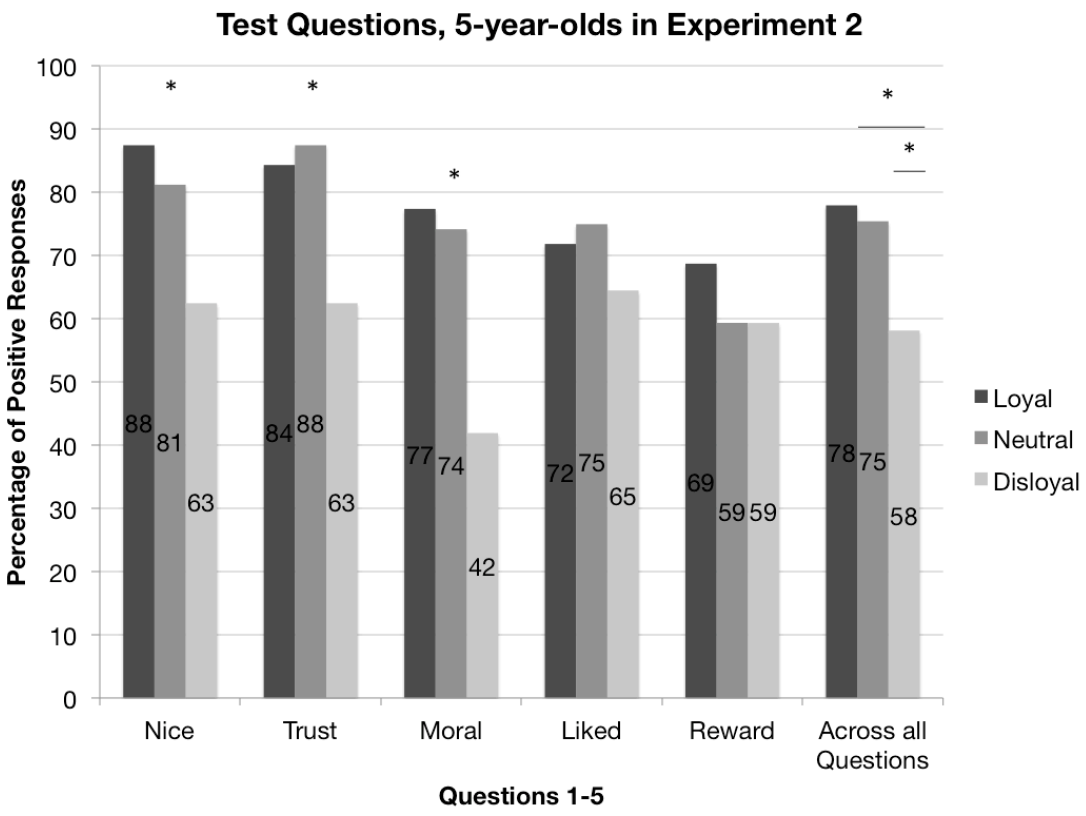


*Figure 8.* Positive responses to the test questions in Experiment 2.

**Justifications.** Figure 9 shows the distribution of the different types of justifications children gave for their positive and negative responses in each condition. In the two most relevant situations (i.e., positive response to loyal person, negative response to disloyal person), children referred to loyalty/disloyalty at relatively high rates. However, they also gave justifications of the category 'other' at quite high rates in all cases in this study too. In the neutral condition, they never referred to loyalty/disloyalty. Since the individuals in these children's video never mentioned that they would like to stay or leave the group, this is not surprising. Instead, in this condition children often referred to superficial features of the individuals or their liking/disliking for them. In addition, occasionally children in the neutral condition referred to the individuals' scarf color or group membership. These were coded under

'superficial features.' Across all three conditions, children rarely mentioned winning/losing.

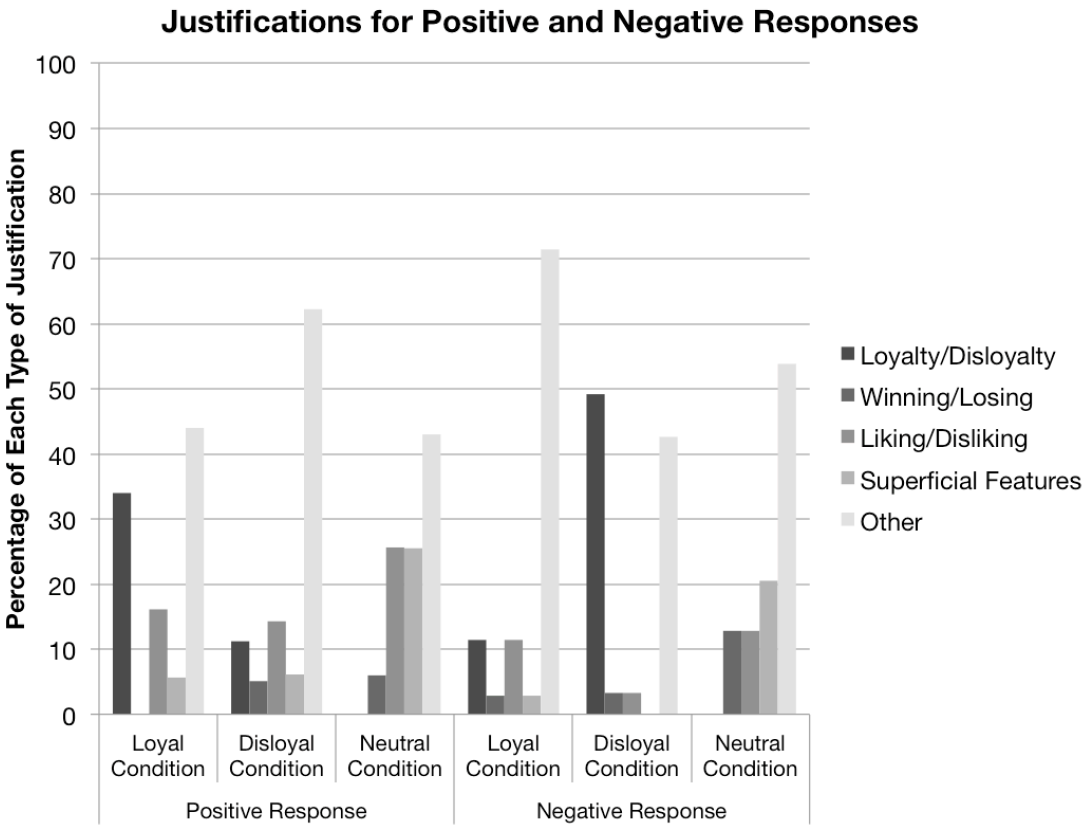


*Figure 9.* Justifications for positive and negative responses in Experiment 2.

**Discussion**

Experiment 2 replicates and extends the results from Experiment 1a. Taken together, these two Experiments show that 5-year-old children prefer loyal to disloyal individuals, and do so not only in a forced-choice situation, but also when given the chance to evaluate each individual on her own. This experiment also provided important information about how, exactly, children see loyal and disloyal individuals. The similar results found in the loyal and neutral conditions suggest that children see loyalty to the group as normal and expected – they showed no increased preference

for the loyal person compared to a neutral person. Rather, it appears that children's disapproval of disloyal behavior is what drove the effects we found, as they judged the disloyal person more negatively than both the loyal and the neutral person in most cases. Again, children's justifications confirmed that at least some of the children could additionally explain their decision with reference to loyal behavior.

It is worth noting that, although children judged the disloyal person more negatively than both the loyal and the neutral person, for the most part it was not the case that children answered negatively (for example, saying "not nice") for the disloyal person. Rather the disloyal person was judged negatively relative to the other two individuals. The morality question was a notable exception here: In this case, the majority of children answered negatively about the disloyal individual. It is still possible to argue, however, that overall children negatively evaluated the disloyal individual. Based on a number of studies demonstrating a positivity bias in children (see, e.g., Boseovski & Lee, 2006; Heyman & Giles, 2004), we did not necessarily expect children's positive responses to the neutral person to be around 50% (e.g., for children to be equally likely to evaluate her as 'nice' or 'not nice'). In line with these previous results, we found that children generally judged the neutral person quite positively. Thus, children's evaluation of the neutral person serves as a sort of calibration point for judging the extent to which children viewed the disloyal individual negatively.

## General Discussion

The aim of these experiments was to examine young children's understanding of, and attitudes about, loyalty, in the sense of sticking with one's group even when it is costly to do so. The findings of Experiment 1 demonstrate that 5-year-old children clearly understand and value loyal behavior. Not only do they judge loyal behavior as

the right way to act, they infer that loyal individuals are nicer, more trustworthy, and more likely to be liked by other members of the group than are disloyal individuals. The number of different situations in which children preferred loyal individuals highlights the consistency and breadth of the effect. Four-year-old children also seem to be beginning to understand and value loyalty, as evidenced by their overall result, but the results from their individual questions were considerably weaker. Experiment 2 replicated and extended the findings for 5-year-olds and, in addition, demonstrated the direction of the effect, namely that disloyal behavior is evaluated negatively, whereas loyal behavior appears to be the expected norm (i.e., it is not evaluated any differently from neutral behavior).

This is the first time that children's preference for individuals who stay with their group has been shown within an agent-neutral set-up, in which children were not involved in one of the groups themselves. The loyal and disloyal individuals' actions neither harmed nor benefited children personally, but still children evaluated the disloyal person more negatively. In addition, we showed that children value loyalty more than winning, and thus seem to understand that loyalty can involve a personal sacrifice for the group.

The findings of Experiment 2 suggest that children see loyalty as the norm and disloyalty as a deviation from acceptable behavior. It is interesting to note that a similar pattern of results is found in other studies of moral behavior. For example, Vaish, Carpenter, and Tomasello (2010) found that children helped a harmful actor less often than a neutral or prosocial actor, but did not help a prosocial actor more often than a neutral one. Similarly, Hamlin and Wynn (2012) found that when deciding what novel food they would like to eat, 16-month-old children took into account food preferences of prosocial and neutral individuals equally, but not of

antisocial individuals. Children's increased sensitivity towards negative compared to positive events has been described in terms of the so-called negativity bias (e.g., Vaish, Grossmann, & Woodward, 2008). Thus, the current study provides additional evidence for a negativity bias in children's moral development (for related findings see also Abrams et al., 2003b; Doebel & Koenig, 2013; and Leslie, Knobe, & Cohen, 2006).

These findings bring up several avenues for future research. For example, it would be interesting to study children's understanding of loyalty in different situations. By using a competitive situation in which one group was winning, we operationalized loyal behavior in a strong form. Rhodes and Brickman (2011) have found that children see more obligations attached to group membership when there is competition between groups. Therefore it is likely that children in the current study viewed it as important that group members stayed with their group, since the group's chances of winning declined further with every member who defected. On the other hand, winning is also highly valued and thus defection might be more understandable in this context than in other contexts. In future work it will be important to clarify the role of competition and winning in children's judgments of loyalty. Research with adults also suggests additional factors that might influence loyalty, such as a threat to the group (Branscombe et al., 1993), identification with the in-group (e.g., Ellemers, Spears, & Doosje, 1997), status and performance of the group, and stability of the group over time or permeability of boundaries (see Levine & Moreland, 2002). It would be interesting to look at these more nuanced aspects of loyalty in young children and thus build a more complete picture of the situations in which they understand and value loyalty.

It will also be important to further investigate the development of children's attitudes about loyalty and disloyalty. Although the pattern of results of the 4-year-olds in our study was somewhat weaker than that of the 5-year-olds, certain aspects of our data lead us to believe that there may be a gradual development of children's understanding and attitudes rather than a qualitative change between age four and five. For example, the analysis linking justifications and consistency of responding across questions suggests that a subset of the 4-year-olds already valued loyalty. Thus it is likely that at least some children's attitudes about loyalty start developing before the age of four. Also, since not all 5-year-olds seemed to value loyalty equally strongly, development of these attitudes clearly continues beyond the age of five. It is interesting to speculate about what might drive this development. One possibility might be that as children gain more experience with group life (e.g., in kindergarten) and as their attachments to their groups become stronger (e.g., Dunham et al., 2011; Nesdale & Flesser, 2001; Patterson & Bigler, 2006), their earlier understanding of commitments from dyadic, cooperative contexts (e.g., Gräfenhain et al., 2009, Hamann et al., 2012) gets extended to the group level. In this context it will also be interesting to investigate children's own feelings of loyalty to the group. Preliminary results from our lab suggest that there is a very similar development between age four and five in children's own sense of loyalty or willingness to pay a cost to benefit their group (Misch, Over, & Carpenter, in preparation).

Young children are already sensitive to a variety of inter- and intra-group dynamics. We know, for example, that children show a preference for their ingroup members over outgroup members (e.g., Nesdale & Flesser, 2001; Dunham et al., 2011), that they trust ingroup members over outgroup members when learning new information (Kinzler, Corriveau, & Harris, 2011), that they are extremely sensitive to

the threat of ostracism from the group (Over & Carpenter, 2009), and that group membership can increase their motivation to learn group-relevant tasks (Master & Walton, 2013). For a successful social group, however, rules and norms are necessary to guide and align people's behavior. Our results extend other recent research on children's expectations about how group members should act (see, e.g., Abrams et al., 2003a, 2003b, 2007, 2008, 2009; Castelli et al., 2007; Killen, Rutland, Abrams, Mulvey, & Hitti, 2013; Rhodes & Chalik, 2013; Rhodes, 2012) by demonstrating that young children understand at least some of the obligations and norms that come with belonging to a group. This understanding of commitments and loyalty both helps children to evaluate others' behavior, as we have seen here, and marks an important step in their own ability to negotiate belonging and become trustworthy and reliable members of their social groups.

*Acknowledgements:* We thank the children and parents who participated, as well as Juliane Richter, Julia Ulber, Esther Klonowski, Eva Siegert, Nadine Kante, and Isabelle Lehn for acting in the video; Claudia Salomo for her help; Silvia Guerrero and three anonymous reviewers for helpful comments on the manuscript; Jana Urban and Christian Kliesch for coding; Roger Mundry for statistical advice, and Petra Jahn and Ronny Barr for technical support. Harriet Over was supported by the Economic and Social Research Council (grant number ES/K006702/1).

References

Abrams, D. (2011). Wherein lies children's intergroup bias? Egocentrism, social understanding, and social projection. *Child Development, 82*(5), 1579-1593. doi: 10.1111/j.1467-8624.2011.01617.x

Abrams, D., Rutland, A., & Cameron, L. (2003a). The development of subjective group dynamics: children's judgments of normative and deviant in-group and out-group individuals. *Child Development, 74*(6), 1840-1856. doi:10.1046/j.1467-8624.2003.00641.x 14669899

Abrams, D., Rutland, A., Cameron, L., & Ferrell, J. (2007). Older but wilier: In-group accountability and the development of subjective group dynamics. *Developmental Psychology, 43*(1), 134-148. doi:10.1037/0012-1649.43.1.134

Abrams, D., Rutland, A., Cameron, L., & Marques, J. M. (2003b). The development of subjective group dynamics: When in-group bias gets specific. *British Journal of Developmental Psychology, 21*(2), 155-176. doi:10.1348/026151003765264020

Abrams, D., Rutland, A., Ferrell, J. M., & Pelletier, J. (2008). Children's judgments of disloyal and immoral peer behavior: subjective group dynamics in minimal intergroup contexts. *Child Development, 79*(2), 444-461. doi:10.1111/j.1467-8624.2007.01135.x

Abrams, D., Rutland, A., Pelletier, J., & Ferrell, J. M. (2009). Children's group nous: Understanding and applying peer exclusion within and between groups. *Child Development, 80*(1), 224-243. doi:10.1111/J.1467-8624.2008.01256.X

Baker-Ward, L. E., Eaton, K. L., & Banks, J. B. (2005). Young soccer players' reports of a tournament win or loss: Different emotions, different narratives. *Journal*

*of Cognition and Development, 6*(4), 507-527. doi: 10.1207/s15327647jcd0604_4

Boseovski, J. J., & Lee, K. (2006). Children's use of frequency information for trait categorization and behavioral prediction. *Developmental Psychology, 42*(3), 500-513. doi: 10.1037/0012-1649.42.3.500

Branscombe, N. R., Wann, D. L., Noel, J. G., & Coleman, J. (1993). In-group or out-group extremity: Importance of threatened social identity. *Personality and Social Psychology Bulletin, 19*(4), 381-388. doi: 10.1177/0146167293194003

Brewer, M. B., & Silver, M. D. (2000). Group distinctiveness, social identification, and collective mobilization. In S. Stryker, T. J. Owens & R. W. White (Eds.), *Self, identity, and social movements* (pp. 153-171). Minneapolis, MN: University of Minnesota Press.

Castelli, L., De Amicis, L., & Sherman, S. J. (2007). The loyal member effect: on the preference for ingroup members who engage in exclusive relations with the ingroup. *Developmental Psychology, 43*(6), 1347-1359. doi:10.1037/0012-1649.43.6.1347

Chalik, L., & Rhodes, M. (2013). Preschoolers use social allegiances to predict behavior. *Journal of Cognition and Development, 24*(6), 999-1006. doi:10.1177/0956797612466267

Doebel, S., & Koenig, M. A. (2013). Children's use of moral behavior in selective trust: Discrimination versus learning. *Developmental Psychology*, *49*(3), 462–469. doi:10.1037/a0031595

Dunham, Y., & Emory, J. (in press). Of affect and ambiguity: The emergence of preferences for arbitrary ingroups. *Journal of Social Issues.*

Dunham, Y., Baron, A. S., & Carey, S. (2011). Consequences of "minimal" group affiliations in children. *Child Development, 82*(3), 793-811. doi: 10.1111/j.1467-8624.2011.01577.x

Ellemers, N., Spears, R., & Doosje, B. (1997). Sticking together or falling apart: In-group identification as a psychological determinant of group commitment versus individual mobility. *Journal of Personality and Social Psychology, 72*(3), 617-626. doi: 10.1037/0022-3514.72.3.617

Gräfenhain, M., Behne, T., Carpenter, M., & Tomasello, M. (2009). Young children's understanding of joint commitments. *Developmental Psychology, 45*(5), 1430-1443. doi: 10.1037/a0016122

Gräfenhain, M., Carpenter, M., & Tomasello, M. (2013). Three-year-olds' understanding of the consequences of joint commitments. *PLoS ONE, 8*(9), e73039. doi:10.1371/journal.pone.0073039

Haidt, J. (2007). The new synthesis in moral psychology. *Science, 316*(998). doi: 10.1126/science.1137651

Haidt, J., & Graham, J. (2007). When morality opposes justice: Conservatives have moral intuitions that liberals may not recognize. *Social Justice Research*, *20*(1), 98–116. doi:10.1007/s11211-007-0034-z

Hamann, K., Warneken, F., & Tomasello, M. (2012). Children's developing commitments to joint goals. *Child Development*, *83*(1), 137–145. doi:10.1111/j.1467-8624.2011.01695.x

Hamlin, J. K., & Wynn, K. (2012). Who knows what's good to eat? Infants fail to match the food preferences of antisocial others. *Cognitive Development*, *27*(3), 227–239. doi:10.1016/j.cogdev.2012.05.005

Heyman, G. D., & Giles, J. W., (2004). Valence effects in reasoning about evaluative traits. *Merrill-Palmer Quarterly, 50*(1), 86-109. doi: 10.1353/mpq.2004.0004

Killen, M., Rutland, A., Abrams, D., Mulvey, K., & Hitti, A. (2013). Development of intra- and intergroup judgments in the context of moral and social-conventional norms. *Child Development*, *84*(3), 1063–1080. doi:10.1111/cdev.12011

Kinzler, K. D., Corriveau, K. H., & Harris, P. L. (2011). Children's selective trust in native-accented speakers. *Developmental Science, 14*(1), 106-111. doi:10.1111/j.1467-7687.2010.00965.x

Leslie, A. M., Knobe, J., & Cohen, A. (2006). Acting intentionally and the side-effect effect: Theory of mind and moral judgment. *Psychological Science*, *17*(5), 421–427. doi:10.1111/j.1467-9280.2006.01722.x

Levine, J. M., & Moreland, R. L. (2002). Group reactions to loyalty and disloyalty. In S. R. Thye & E. J. Lawler (Eds.), *Group cohesion, trust and solidarity* (pp. 203-228). Oxford, England: Elsevier Science/JAI Press.

Master, A., & Walton, G. M. (2013). Minimal groups increase young children's motivation and learning on group-relevant tasks. *Child Development*, *84*(2), 737–751. doi:10.1111/j.1467-8624.2012.01867.x

Misch, A., Over, H., & Carpenter, M. (in preparation). I won't tell: Young children show loyalty to their group by keeping group secrets.

Nesdale, D., & Flesser, D. (2001). Social identity and the development of children's group attitudes. *Child Development, 72*(2), 506-517. doi:10.1111/1467-8624.00293 11333081

Over, H., & Carpenter, M. (2009). Priming third-party ostracism increases affiliative imitation in children. *Developmental Science, 12(3),* 1-8. doi:10.1111/j.1467-7687.2008.00820.x 19371357

Patterson, M. M., & Bigler, R. S. (2006). Preschool children's attention to environmental messages about groups: Social categorization and the origins of intergroup bias. *Child Development, 77*(4), 847-860. doi:10.1111/J.1467-8624.2006.00906.X

Rhodes, M. (2012). Naïve theories of social groups. *Child Development*, *83*(6), 1900-1916. doi:10.1111/j.1467-8624.2012.01835.x

Rhodes, M., & Brickman, D. (2011). The influence of competition on children's social categories. *Journal of Cognition and Development, 12*(2), 194-221. doi:10.1080/15248372.2010.535230

Rhodes, M., & Chalik, L. (2013). Social categories as markers of intrinsic interpersonal obligations. *Psychological Science*, *24*(6), 999–1006. doi:10.1177/0956797612466267

Tomasello, M., Melis, A. P., Tennie, C., Wyman, E., & Herrmann, E. (2012). Two key steps in the evolution of human cooperation. The Interdependence Hypothesis. *Current Anthropology, 53*(6), 673-692. doi:10.1086/668207

Vaish, A., Carpenter, M., & Tomasello, M. (2010). Young children selectively avoid helping people with harmful intentions. *Child Development*, *81*(6), 1661–1669. doi:10.1111/j.1467-8624.2010.01500.x

Vaish, A., Carpenter, M., & Tomasello, M. (2011). Young children's responses to guilt displays. *Developmental Psychology, 47*(5), 1248-1262. doi:10.1037/a0024462

Vaish, A., Grossmann, T., & Woodward, A. (2008). Not all emotions are created equal: the negativity bias in social-emotional development. *Psychological bulletin*, *134*(3), 383–403. doi:10.1037/0033-2909.134.3.383

Figure Captions

*Figure 1.* Still shots from the test video: a) Introduction of the groups, b) Building towers, c) Loyal and disloyal statements of yellow group members, and d) Repetition of loyal and disloyal statements and still frame during test phase.

*Figure 2.* Forced-choice responses for 5-year-olds in Experiment 1a.

*Figure 3.* Justifications across all questions for 5-year-olds in Experiment 1a.

*Figure 4.* Justifications for 5-year-olds: a) For loyal responses, b) For disloyal responses.

*Figure 5.* Forced-choice responses for 4-year-olds in Experiment 1b.

*Figure 6.* Justifications across all questions for 4-year-olds in Experiment 1b.

*Figure 7.* Justifications for 4-year-olds: a) For loyal responses, b) For disloyal responses.

*Figure 8.* Positive responses to the test questions in Experiment 2.

*Figure 9.* Justifications for positive and negative responses in Experiment 2.