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Effects of "we"-framing on young children's commitment, sharing, and helping

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ABSTRACT

By around 3 years of age, collaboration induces in young children a normative sense of "we" that creates a sense of obligation (e.g., commitment, fairness) toward their collaborative partner. The current study investigated whether this normative sense of we could be induced purely verbally in 3- and 4-year-old children. Children joined a puppet at a table to draw. In one condition the puppet repeatedly framed things as "we" are going to sit at the table, "we" are going to draw, and so forth, whereas in the other condition the pronoun used was always "you." Dependent measures gauged children's commitment, resource distribution, and helping behavior toward their partner. Results showed that both 3- and 4-year-olds felt a greater sense of commitment to their partner after "we"-framing than after "you"-framing. The 4-year-olds evidenced this commitment by showing a greater reluctance to abandon their partner for a more fun game compared with the 3-year-olds. The 3-year-olds did not share this reluctance, but when they did abandon their partner they more often took leave following we-framing by "announcing" their leaving. There were no effects of we-framing on children's sharing with their partner or helping behavior. These results suggest that verbal we-framing, as compared with you-framing, is an effective means of inducing in children a sense of shared agency and commitment with a partner.

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Introduction

When partners collaborate interdependently, they often feel committed to one another. This feeling can be solidified with an explicit joint commitment in which one partner explicitly proposes that they collaborate and the other agrees. In such cases, if one partner then reneges on the commitment, the other is entitled to protest normatively (e.g., "You shouldn't have done that"). To preempt such legitimate protest, a partner who needs to renege for a good reason may "take leave" by asking for permission to opt out, announcing that he or she is opting out, or apologizing after the fact, possibly citing a good excuse in the process.

Young children's sense of commitment in collaborative activities develops significantly from 1 to 3 years of age. Toddlers can collaborate productively with an adult beginning at 18–24 months of age and with peers a bit later (Brownell & Carriger, 1990; Eckerman, Davis, & Didow, 1989). As a kind of precursor to a sense of commitment, toddlers at this age expect their partner to persist in a collaborative activity until the end, so that if the partner stops collaborating before the end, they make active attempts to reengage the partner in the activity (Warneken, Chen, & Tomasello, 2006).

At around 3 years of age children undergo a kind of "normative turn" (Tomasello, 2018) that manifests both in the ways they initiate and maintain a joint activity and in the ways they share the spoils of a joint activity. First, when 3-year-olds have made a joint commitment with a partner (as opposed to when they have not), they expect their partner to play his or her role, and so they protest normatively when the partner does not (Kachel, Svetlova, & Tomasello, 2018). They do this more often when they have made an explicit joint commitment as opposed to when the joint commitment is only implicit, based on interdependent collaboration (Kachel & Tomasello, 2019). In the complementary direction, 3-year-olds themselves feel committed to their partner and so are more likely to wait for, help, and make excuses for the partner, and so forth, if the two partners have previously made a joint commitment (as opposed to when they have not) (Gräfenhain, Carpenter, Tomasello, & Kendal, 2013). Even more striking in this direction, after a joint commitment with a partner, 3-year-olds who wish to pursue a more attractive activity on their own often take leave from their partner by notifying him or her of their intention to leave, making an excuse for leaving, and so forth (which they do not do if they have not made a joint commitment). Taken together, these studies indicate that following a joint commitment, 3-year-olds feel a heightened sense of commitment to collaborative partners, presumably as a result of their developing a normative sense that "we" are in this together.

Second, at around 3 years of age, children also undergo a normative turn when dividing resources. This shows up specifically in young children's beginning to prefer fair (i.e., equal or equitable) resource distributions—rather than simply being more generous—especially when the resources to be shared have been obtained during collaboration (e.g., Hamann, Warneken, Greenberg, & Tomasello, 2011; Kanngiesser & Warneken, 2012; Ng, Heyman, & Barner, 2011). For instance, Corbit, McAuliffe, Callaghan, Blake, and Warneken (2017) found that children tended to reject resource distributions that favored themselves, but only if the resources were obtained collaboratively; if resources were obtained during parallel work, then children would less frequently reject distributions that favored themselves (and if the distributions favored the partner, then children rejected them at equal rates in both conditions). Indeed, children protest unfair distributions of resources obtained collaboratively (Rakoczy, Kaufmann, & Lohse, 2016) or else redistribute the spoils of a collaboration when they come out unfairly (Ulber, Hamann, & Tomasello, 2017) whether they themselves are advantaged or disadvantaged. Fairness concerns outside of collaborative activities come into play only later in development (McAuliffe, Blake, Steinbeis, & Warneken, 2017). These findings indicate that young children feel an obligation to share the spoils of a collaborative activity fairly with their partner, presumably as a result of their developing a normative sense that "we" are in this together equally and so we should benefit together equally as well (Engelmann & Tomasello, 2019).

In all these studies, young children's sense of commitment comes from an interdependent collaborative activity, sometimes with an explicit joint commitment. Arguably, the key phenomenon here is children's sense that "we" are a team or a partnership working as a kind of joint agent. In adults, there is another way that individuals can feel a sense of partnership or joint agency, and that is through verbal framing. In studies of adult cooperation, for example, verbal framing in which individuals label and

understand themselves to be "members of partnerships" (Sugden, 1993, p. 85; i.e., a joint agent "we"; see (Gilbert, 1989) tends to produce more cooperation (Brewer & Kramer, 1986; Sugden, 1993; for a review, see Colman & Gold, 2018).

In the current study, therefore, we asked whether such verbal "we"-framing induces 3- and 4-year-old children to feel an increased sense of obligation toward their partner both in the sense of a greater commitment to their partnership and in the sense of greater fairness in the division of resources. Previous research suggests that verbally framing a task as a collaborative endeavor, as opposed to an individualistic endeavor, influences children's cooperative motivations (Butler & Walton, 2013; Koomen, Grueneisen, & Herrmann, 2020). However, this work did not investigate the influence of collaborative versus individualistic framing on children's actual dyadic engagement with a partner; rather, the children in this prior research were alone during the experimental task (and, e.g., told about a child supposedly working in another room). In the current study, we investigated the effects of the verbal framing of a task on children's dyadic engagement.

Importantly, we were interested in whether effects of we-framing on children's sense of obligation toward their partner occurred *independent* of the obligation-enhancing effects of collaboration. Thus, the task used in the current study was designed to be ambiguous with respect to its collaborative force. To illustrate this crucial point, in the study of Hamann et al. (2011), successful completion of the experimental task required children to work together with their partner to obtain their own and their partner's rewards. Successful completion of the task required both partners to simultaneously coordinate their actions to pull in a set of rewards to be divided among them; if the two partners did not do this, then the task could not be completed successfully. This means the structure of the task itself required collaboration by partners in order to be successfully completed. In contrast, in the current task children drew on and colored their own sheet of paper, and their partner did the same on a different sheet of paper.

We predicted that 3- and 4-year-old children would feel a heightened sense of commitment following we-framing as compared with "you"-framing. Moreover, we predicted that the effect of we-framing would be more pronounced in 4-year-olds relative to 3-year-olds (i.e., an Age $\times$ Condition interaction). This prediction was made on the basis of prior research (Kachel & Tomasello, 2019) demonstrating that after 3 years of age young children become increasingly receptive to the obligation-enhancing effects of joint commitments to a collaborative partner. Thus, if the normative force of commitment and collaboration continues to develop after age 3, then we should expect to see a stronger effect of we-framing in 4-year-olds compared with 3-year-olds.

Regarding children's sense of fairness following we-framing, we predicted that both 3- and 4-year-olds would share more equally following we-framing compared with you-framing. Specifically, prior work suggests that young children (around 3 years) do not necessarily distribute a windfall of resources equally among themselves and a partner (McAuliffe et al., 2017; see also Engelmann & Tomasello, 2019). Nonetheless, collaboration induces children of this age to distribute windfall resources more fairly (Corbit, 2019). Thus, if the effect of we-framing is to increase children's sense of obligation toward a partner (or if the effect of you-framing is to decrease it), then we should expect windfall resources to be distributed more fairly following we-framing compared with you-framing. That being said, our choice of a windfall scenario may be seen as an especially stringent test of young children's fairness because it is not until middle childhood that children spontaneously share windfall resources fairly (McAuliffe et al., 2017).

We also investigated the effects of we-framing on children's behavior in an out-of-reach instrumental helping task. We predicted no effect of we-framing on children's helping behavior because helping in such scenarios, especially in young children, is typically done more out of a sense of sympathy than of normative obligation (Tomasello & Vaish, 2013). To be sure, young children sometimes help out of a sense of obligation or responsibility (e.g., Plötner, Over, Carpenter, & Tomasello, 2015). However, an effect of obligation on helping behavior has only been demonstrated for forms of helping that rely on relatively complex forms of intention understanding (Hamann, Warneken, & Tomasello, 2012; Siposova, Grueneisen, Helming, Tomasello, & Carpenter, 2021) or tool affordance understanding (Plötner et al., 2015) and is not especially robust (e.g., Gräfenhain et al., 2013). Moreover, skills for normative reasoning are not a prerequisite to instrumental helping given that nonhuman great apes and human infants help conspecifics in the same out-of-reach helping task (Warneken & Tomasello, 2006,

2007). Thus, we predicted no effect of framing on children's instrumental helping in the current study. Assuming that we-framing works to increase children's sense of obligation, evidence for a lack of effect of framing would support the notion that instrumental helping is not affected by the normative turn (Tomasello, 2018).

Method

Participants

Participants were 48 3-year-olds (23 male; *M* = 36 months, range = 30–41) and 48 4-year-olds (27 male; *M* = 48 months, range = 42–53). Participants were tested in the laboratory or at one of two local children's museums. We sampled participants from three different sites because this was needed to collect the necessary data within a reasonable time frame.

Participants were randomly assigned to one of two experimental conditions. Table 1 presents the breakdown of participants included in the final sample by testing location, age, and condition. In total, 43 participants were excluded (Table 2) due to losing interest (n = 16), experimenter error (n = 9), shyness (n = 6), family member interference (n = 5), being too old or young (n = 5), not speaking English (n = 1), or bringing a toy into the testing room (n = 1). Of these 43 excluded participants, 26 were younger than 3;6 (years;months), 16 were older than 3;6, and 1 provided no age. We acknowledge that this exclusion rate (30%) is much higher than the typical study using a laboratory sample. Exclusion criteria are discussed below.

All participants included in the final sample were native English speakers. Participants came from mostly middle-class and upper-middle-class families in the southeastern United States. Participants' caregivers indicated that they were White (n = 79), multiracial (n = 12), African American (n = 4), or Asian (n = 1). Written consent was obtained from participants' primary caregivers. Participants were compensated with a small toy, book, or shirt of their choosing. If tested at the lab, caregivers were compensated with a $10 transportation credit.

Materials and design

Participants were paired with a male experimenter (E1) who controlled a puppet "Eeyore." This puppet functioned as the participants' partner during the experimental task. The use of a puppet as children's partner, as opposed to E1, was intended to decrease the likelihood that children would interpret comments "made" by Eeyore as emanating from an adult authority figure (Piaget, 1932; see also Hardecker, Schmidt, & Tomasello, 2017; Hardecker & Tomasello, 2017). The second experimenter (E2) was female. The materials used were two chairs placed in front of a table, two sheets of laminated unicolored construction paper (one for each member of the dyad), four double-sided erasable markers with erasers attached to the ends of the markers (two for each member of the dyad), a roughly 10-inch-tall "marble run" game (used when measuring commitment), six circular bright yellow smiley face erasers (used when measuring sharing; ~1.5 inches in diameter), and a small

Table 1
Breakdown of participants included in the final sample.

Location	Age	Condition		Total
		We-framing	You-framing	
Laboratory	Younger	15	9	24
	Older	10	15	25
Museum 1	Younger	7	11	18
	Older	10	7	17
Museum 2	Younger	2	4	6
	Older	4	2	6
Total		48	48	96

Table 2
Breakdown of participants excluded from the final sample by testing location, condition, and age.

Criterion	Exclusions	% excluded (by row)	% excluded (by criterion)
Testing location			
Lab	18	37	42
Museum 1	22	63	51
Museum 2	3	25	7
Total	43	NA	100
Condition			
We-framing	19	20	44
You-framing	24	25	56
Total	43	NA	100
Age			
3-year-olds	26	34	61
4-year-olds	16	24	37
NA	1	100	2
Total	43	NA	100

Note. Percentages are rounded to the nearest integer value. Column "% excluded (by row)" denotes the percentage of exclusions for the participant group denoted by the leftmost column, e.g., the percent of participants tested in Lab who were excluded; this row thus does not sum to 1. NA, not available.

paper box (used when measuring helping; 6.25 × 3 inches). Finally, a small hidden camera was used to record participants' responses during the experimental task for later coding.

The study used a between-participants design with random assignment to one of two conditions: *we-framing* (n = 48) or *you-framing* (n = 48). The difference between the two conditions was in the pronouns used in the description of the task and talk by E1 and E2 during the experimental task. The task was a dyadic coloring activity. Participants and E1 colored side by side on their own sheet of paper with their own sets of markers. Participants were told that they were helping to decorate for a party that would be happening later. The task itself was designed so as to be "neutral" with regard to the independence or interdependence of the two people performing the task (based on pilot testing data).

The experimental task comprised two phases: an introductory phase and a regulatory phase. In the introductory phase, E1 described the task and its goals to the child. In the regulatory phase, E1 and the child decorated their papers by coloring on them with markers. All dependent measures were recorded during the regulatory phase.

We-framing involved the use of first-person plural pronouns by E1 and E2 in their talk toward participants during the experimental session. In this condition, the use of these pronouns was intended to evoke in participants a heightened sense of joint agency or being part of a "we," that is, as acting interdependently with their partner during the task. In contrast, you-framing involved the use of first-person singular pronouns. This condition was intended to evoke in participants a heightened sense of individual agency, that is, acting independently or in parallel with the other individual (i.e., toward the same unshared goal).

There were three sets of dependent measures. These gauged participants' senses of commitment and fairness and their helping behavior toward their partner during the regulatory phase. The operationalization and coding of these variables is noted below. The order of presentation of the dependent measures was counterbalanced across participants. The procedure outlined below lasted approximately 10 to 15 min. Participants partook only in the current study.

Procedure

Warm-up

All participants warmed up with E1 and E2 for several minutes before the beginning of the test phase. This involved joint engagement in unstructured play with the participant. The warm-up lasted until the participant appeared to be comfortable (e.g., making eye contact with the experimenters and handing things to them) and responded affirmatively when asked whether he or she would like to

"help decorate for a party later." E1 then escorted the participant and, if requested, the caregiver to the testing area.

Test

Caregivers who came to the testing area were instructed not to talk to or otherwise bias participants during the task. For example, if participants attempted to show caregivers what they drew during the task, caregivers were instructed to gently redirect participants' attention back to the task. Caregivers were seated several feet from the decorating table.

After caregiver instruction, E1 and the participant approached the decorating table. This marked the beginning of the introductory phase of the task. In the following, we **bold** we-framing terms for clarity. One can derive the corresponding you-framing terms by simply substituting the first-person singular form of pronouns for their plural counterpart, e.g., *you* for *we*, *your* for *our*, etc. In the sole instance where the you-framing terms cannot be derived in this way (i.e., during E2′s final utterance to participants during the commitment measures; see below), we provide both the we-framing and you-framing utterances.

At the start of the introductory phase, the table had two chairs in front of it and four colored markers and two pieces of laminated construction paper on top of it, with the chairs, markers, and pieces of paper split evenly between sides of the table (Fig. 1). As E1 and the participant approached the decorating table, E1 stated in an excited tone that "It is time for **us** to play a fun game!" The participant was instructed by E1 to take a seat at the table. E1 then sat down. While seated, throughout the experiment E1 was angled 50–60 degrees away from the participant to minimize the participant's sense of jointly visually attending with E1 (Fig. 1). E1 next put an Eeyore puppet on the hand opposite the participant. E1 then introduced the participant to Eeyore, the puppet next to whom the participant would be decorating. That is, the "we" was intended to be formed by the participant and Eeyore and *not* by the participant and E1.

Participants were told by Eeyore that they would be decorating for a party later and that they would decorate by drawing and coloring with markers on paper. Eeyore stated, "Some friends are going to have a party later. They want help decorating for the party. So, **we** are going to help decorate. **We** can help decorate by decorating this colorful paper. **We** will color **our** papers with **our** markers.

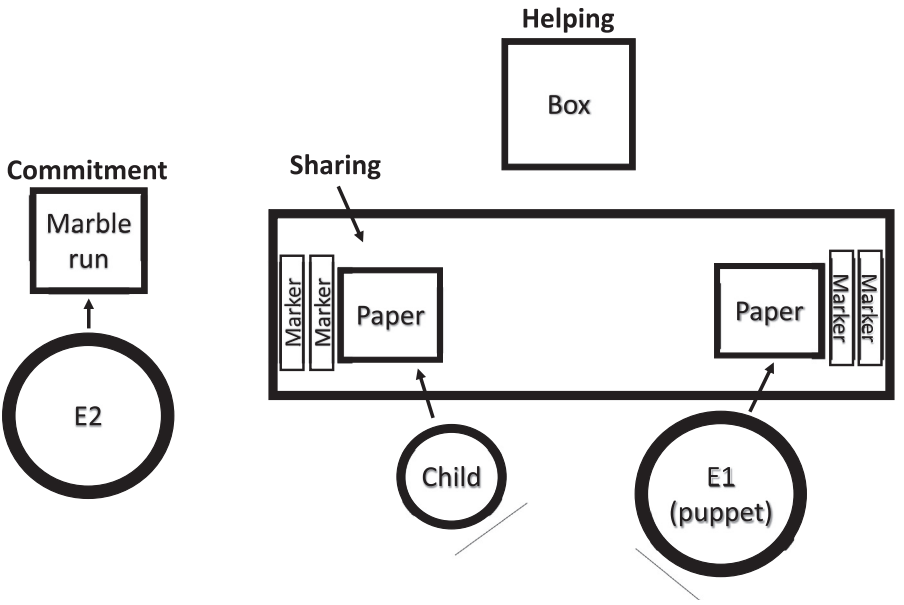

Fig. 1. Experimental setup (not to scale).

Look, **we** color on them like this. [Eeyore demonstrates drawing on the paper by drawing a stick figure. Eeyore shows it to the participant.] See! This way, **we** can make sure everyone has fun at the party! So, are **we** ready to get started? [The participant gives an affirmative response.] **We** can start decorating now." This utterance, in addition to the subsequent regulatory utterances, were intended to be "made" by Eeyore, such that the "we" was composed of the participant and Eeyore (i.e., and not E1). E1 ensured that the participant was attentive to the entirety of the description. Following the participant's affirmative response at the end of the description, Eeyore and the participant began using their markers to color their sheets of paper. This marked the start of the regulatory phase.

To make it appear as though Eeryore were drawing, E1 held the marker in the same hand as the puppet. The puppet was placed in the hand opposite the side of the table at which the participant decorated, and it remained on that hand for the remainder of the experiment. E1 always drew the same scene: several stick figures standing next to a house and several trees underneath several clouds and a sun. The participant was not instructed or otherwise suggested to draw a particular picture. Some participants occasionally asked E1 at the start of the regulatory phase what they should draw. In such cases, E1 replied (depending on condition) by saying vague comments such as "Well, what do **we** think **we** should draw?" Occasionally, participants would attempt to draw on E1's paper. In response, E1 replied with a gentle reminder for participants (e.g., "Make sure **we** draw on **our** own paper"). In addition, participants occasionally commented on E1's picture. In response, E1 would reply with a brief utterance without any pronouns (e.g., "Thanks!"). Following other instances in which participants talked to E1, E1 provided brief remarks without pronouns (e.g., "That decoration looks nice!"). During the regulatory phase, in both conditions there was zero or minimal eye contact between E1 and the participant.

Every 30 s after the start of the regulatory phase, while E1 and the participant were decorating, E1 gave a regulatory utterance. These were brief utterances that included pronouns that varied by condition (e.g., "**Our** decorations look great!"; "**We** are having fun decorating!"). The regulatory utterances served three purposes. First, regulatory utterances served to continually "boost" the effectiveness of the manipulation throughout the duration of the task. Second, they functioned as temporally fixed cues for E2 to enter the testing area for the commitment and sharing measures. Third, they maintained the participant's attention to the task.

Measures

The dependent measures were recorded immediately after the first, second, and fourth regulatory utterances. For the commitment measures, after E1′s regulatory utterance, E2 entered the testing area and retrieved a colorful "marble run" toy that was hidden out of the participant's sight. To play with the marble run, one puts a marble on top of the toy and gently pushes the marble, which then falls down a colorful noisy slide. Pilot data showed that participants particularly enjoyed playing with this toy. After picking up the toy, E2 walked to an area several feet away from the decorating table (on the same side as the participant), sat down, and began playing with the marble run (Fig. 1). As E2 was doing this, E1 continued coloring. At no point did E1 overtly direct his attention toward E2. E2 began by playing with the toy for 5 s without saying anything. Then, E2's utterances increasingly explicitly stated her desire to play with the marble run with someone. At 5 s, E2 said "This is fun!" At 10 s, E2 said "Oh cool!" At 15 s, E2 said "This is so much fun!" At 20 s, E2 said "I wish I had someone to play with!" At 25 s, E2 said "Hey, do you want to play with me?" At 30 s, E2 repeated the previous phrase. If the participant left E1 (i.e., approached E2) before 30 s had elapsed, E2 refrained from making any of the subsequent scheduled utterances.

If the participant approached E2 before 60 s had elapsed, then they played with the marble run together for approximately 30 s. E2 then initiated putting the toy away. In the we-framing condition, this was done by E2 saying "Okay, it is time for me to put this toy away now. Head back to the table and finish the game that **you both** were playing **together**." In contrast, in the you-framing condition, E2 said "Okay, it is time for **me** to put this toy away now. **You** head back to the table and finish the game **you** were playing." If the participant did not approach E2, then after 60 s E2 put the toy away. In this case, to initiate putting the toy away in the we-framing condition, E2 stated "Okay, **you** and **Eeyore** look like you are **both** having fun decorating. I am going to put this toy away now." In contrast,

in the you-framing condition, E2 stated "Okay, **you** look like **you** are having fun decorating. I am going to put this toy away now."

When the participant returned to the decorating table after playing with the marble run, E1 said to the participant "Oh hi! It looks like **we** still have some more decorating to do! **We** should finish **our** decorations; they are looking great!" If the participant remained decorating with E1 (i.e., did not approach E2 to play with the marble run), E1 said the same thing but did not greet the participant with "Oh hi!" While the participant was with E2, E1 remained focused on coloring the decoration.

To gauge participants' sense of commitment, dependent measures included whether participants chose to leave or remain with E1. If participants abandoned E1 (i.e., approached E2), then two further measures were taken. These were the latency of participants' decision to leave E1 and the leave-taking behavior of participants with respect to E1. If participants took leave from E1 verbally, then E1 responded by saying "Okay."

For the sharing measure, following a regulatory utterance, E2 entered the testing area carrying six small, circular bright yellow erasers with a smiley face on each one. These were described as "decorations" for the participant to place around the drawing. As E2 approached the decorating table, E2 informed the participant that she had decorations for them to share with Eeyore. E2 then placed the six decorations in front of the participant (each was facing upward, and none were stacked on top of one another). When E2 began to place the decorations in front of the participant, Eeyore stopped drawing. E1 faced Eeyore toward the decorations on the table and gave an interested "Oh!" to signal to the participant Eeyore's attentiveness to the situation. If the participant continued decorating, E1 ensured that the participant stopped decorating by saying "Time for **us** to put **our** markers down." While E1 said this, he motioned (using Eeyore) to the center of the table, where E1 had already placed his own markers.

After both individuals had put away their markers, E2 looked to the participant and stated "You can share some of those with Eeyore if you want." Note that we used *you* in both we-framing and you-framing. This was done in order not to sound stilted and to signal clearly to participants that they were to distribute the decorations between themselves and Eeyore. If the participant did nothing, E2 gave utterances that increasingly explicitly stated her request for the child to share the erasers with Eeyore. After 10 s, E2 said "You can share some of those with Eeyore if you want." After 20 s, E2 said "You should share some of those with Eeyore." After 30 s, E2 said "Share some of those with Eeyore." The participant was free to distribute the erasers as he or she pleased. E1 faced Eeyore toward the decorations until the participant had distributed all six decorations. When the participant gave Eeyore a decoration, E1 said "Thank you." If the participant distributed a decoration ambiguously (e.g., placing it between the participant and Eeyore), then E2 asked the participant whose decoration it was. If the sharing measure was taken either first or second (i.e., out of the three sets of measures), then after the participant's choice of distribution, E2 gathered the erasers and told the participant that she would bring them back later. If the sharing measure was recorded last, then E2 and the erasers remained at the decorating table as E1 ended the experiment.

For the helping measures, following a regulatory utterance, E1 put down his marker, briefly looked around the room, and then stated "Oh, wait, I need that box!" E1 did this while facing Eeyore towards a small paper box placed on a table several feet away from the decorating table. The box was equidistant from E1 and the participant (Fig. 1). Immediately, E1 began reaching for the box by fully extending his arm controlling the puppet, making it look as though Eeyore were reaching for the box. For 5 s, E1 was visibly attempting to reach for the box unsuccessfully. While reaching, E1 made audible sounds of effort so as to make clear to the participant Eeyore's intention (i.e., to reach for the box). If the participant did not get up within 5 s of the onset of the full extension of E1's reach, then E1 gave utterances that increasingly explicitly stated his request for the child to retrieve the box for them. After 5 s, E1 stated "My box!" After 10 s, E1 stated "I can't reach my box!" After 20 s, E1 stated "I really need my box!" After 30 s, E1 stated "Hey, can you please get my box for me?" E1 did not make eye contact with the participant during the helping measure. To gauge participants' helping behavior, dependent measures included whether participants helped E1 by handing him the box and, if so, the latency of their handing the box to E1 (60 s ceiling).

The test phase was concluded by E1 saying "Great work!" to participants, thanking them for their help, and asking whether they would like to give Eeyore a "high five." If the sharing measure was

recorded first or second, then E1's remark served as the cue for E2 to bring the decorations back to participants. Either E1 or E2 led participants out of the testing area.

Coding and reliability

The coding scheme for all measures is summarized in Table 3. A second coder naïve to hypotheses performed reliability on a random 25% of observations. Disagreements were resolved with discussion until a consensus was reached.

We operationalized children's sense of commitment by coding their *decision to leave* E1. This measured participants' choice of whether to leave E1 after E2 began to play with the marble run (see Table 3). Raters disagreed on 0 of 24 cases (0%). Reliability was excellent (κ = 1.000). Among participants who left E1, we coded latency to leave and leave-taking behavior. *Latency to leave* measured the time it took participants to leave E1 at the table (i.e., to approach E2) and began when E2 pushed the first marble down the marble run. Reliability was excellent (intraclass correlation [ICC] = .998). *Leave-taking behavior* was coded as spontaneous if participants left E1 without issuing verbal or nonverbal cues about their intention to leave. Nonverbal leave taking was defined as looks to E1 prior to or while leaving the decorating task (e.g., placing their markers next to E1 while looking at E1, slowly move away while looking at E1, looking back and forth between E1 and E2 before leaving). Verbal leave taking included explicitly indicating an intent to leave, stating that one was finished decorating, and asking a question just prior to or while leaving. Raters disagreed on 1 of 24 cases (4%). Reliability was excellent (κ = .937).

Participants' *sharing behavior* was operationalized as the number of decorations shared with their partner. The code value participants received reflected how many erasers they shared with their partner (range = 0–6). Prior to discussion, raters disagreed on 3 of 24 cases (12%). Reliability was excellent (κ = .994).

For helping, we coded participants' *helping behavior* (i.e., whether or not participants retrieved the box for E1). Raters disagreed on 0 of 24 cases. Reliability was excellent (κ = 1.000). We also coded the *helping latency* of retrieving the box for E1. Timing began as soon as E1′s hand was fully extended toward the box. The latency measure was terminated when participants handed the box to E1. Reliability was excellent (ICC = .999).

Participants were excluded from the analysis if they received scores on only zero or one of the three sets of measures. For instance, if participants received scores for the helping measures but then stopped participating, they were excluded from the analysis. In contrast, if participants received scores on at least two of the three sets of measures, then they were included in the analysis of those two (or three) measures. For instance, if participants received a score for the helping and commitment measures but then stopped participating, they were included in the analysis of helping and commitment. Participants included in the analysis below did not complete the sharing (n = 5) and helping (n = 5)

Table 3
Summary of coding scheme.

Commitment	Decision to leave	0: Remain with E1 at the decorating table 1: Leave E1/approach E2 at the fun toy
	Latency to leave	Range: 0–60 s Initiated when E2 started to play with fun toy Terminated when child got up from chair to leave E1/approach E2
	Leave-taking behavior	0: Spontaneous leaving from E1 1: Verbal and nonverbal leave taking from E1
Sharing	Sharing behavior	0–6: Erasers shared with E1
Helping	Helping behavior	0: Did not retrieve out-of-reach box for E1 1: Retrieved out-of-reach box for E1
	Help latency	Range: 0–60 s Initiated when E1 had fully outstretched arm Terminated when child handed the box to E1

measures. The final sample included 96 participants, so the effective sample sizes were N = 96 (commitment measure) and N = 91 (sharing and helping measures).

Our reasoning for including only children who completed at least two measures, as opposed to including only children who completed at least one measure, was to ensure that we had a sufficiently large observation count per dependent measure. Note that a potential downside of this exclusion rule is that this may have contributed to the high exclusion rate of this study.

Data analysis plan

All analyses were conducted using the R package *brms* (Bürkner, 2017; R Core Team, 2018). The online supplementary material provides technical details about model structure, prior parameterization and robustness, and fitting and checking procedures as well as a brief explication of the relationship of Bayes factors (BFs) to posterior probability. Additionally, the supplementary material introduces and reports the results of a pair of survival analyses of children's commitment and helping behavior. Complete data and code for reproducing all analyses are freely available at https://github.com/jaredvasil/wesch.

Model structure. Model space M included null M_0, reduced M_1, and full M_2 Bayesian generalized linear mixed models fitted to children's behavioral data (Gelman et al., 2013). Children's tendencies to abandon, take leave from, share equally or generously with, and help E1 were modeled as discrete (binary) responses. Children's latencies to abandon and help E1 were modeled as continuous (lognormal) responses. The null model M_0 included age and gender as fixed effects, the reduced model M_1 added condition, and the full model M_2 added the age–condition interaction. Unless otherwise noted, all models included random intercepts on testing location and order. All predictors were categorical (reference levels—age: 3-year-olds; condition: you-framing). Weakly informative priors on parameters were used.

Model comparison. Model comparison was performed via computation of the posterior distribution over model space (uniform prior over models), $P(M_i|\boldsymbol{D}) \in P(M|\boldsymbol{D}) = \{P(M_0|\boldsymbol{D}), P(M_1|\boldsymbol{D}), P(M_2|\boldsymbol{D})\}$, denoted $P(M_i|\boldsymbol{D}) \in \{P(M_0|\boldsymbol{D}), P(M_1|\boldsymbol{D}), P(M_2|\boldsymbol{D})\}$. Under a uniform prior, the ratio of a pair of posterior probabilities equals their BF (Kass & Raftery, 1995). BFs quantify the strength of evidence for one model relative to another. On some accounts (Dienes, 2016), values above 3 indicate strong evidence for the numerator model compared with the denominator model, and a value of 1 indicates equal evidence (but see, e.g., Ly, Verhagen, & Wagenmakers, 2016). We report the BF of the best-fitting and second-best-fitting models. We expected that the full model M_2 would be favored except when used to characterize children's helping behavior, in which case we expected the null model M_0 to be favored.

Posterior parameter estimates. Posterior parameter estimates of the most posterior probable model are reported. Reporting of parameter estimates focused on uncertainty estimation (Kruschke & Liddell, 2018). Specifically, we report 95% highest posterior density (HPD) estimates and posterior probability greater than 0. The former estimate characterizes the set of 95% most likely parameter values given the data and model structure (including priors), whereas the latter one characterizes the amount of posterior density P that is positive valued (or, by 1 – P, negative). If the 95% HPD interval excludes zero, it means that one can be at least 95% certain that the true parameter value is nonzero, given the data and model structure. With the same stipulation, if at least 95% (at most 5%) of posterior density is greater than zero, one can be at least 95% certain that the true parameter value is positive (negative). Note that these two uncertainty estimates provide complementary but unique characterizations of the posterior distribution. For instance, the extreme tails of the posterior distribution are excluded from the 95% HPD but are included in the estimation of posterior density greater than zero.

Results

Effect of framing on children's commitment

We investigated the effect of framing on children's tendency and latency to abandon and their tendency to take leave from E1. It was predicted that the full model (including the interaction of age and condition) would best fit in all cases. Comparison of models predicting children's tendency to abandon E1 placed the most posterior mass over the null model, $P(M_i|\boldsymbol{D}) \in \{.50, .21, .29\}$. In the null model, only the 95% HPD estimate of the age parameter excluded zero, with only 2% of posterior density greater than zero (Table 4). We conducted two pairs of follow-up analyses of the age parameter. The first pair investigated the effect of age within condition. Among children who received we-framing, a model with a fixed effect predictor of age had an HPD estimate on age that excluded zero, $\beta_{4-\text{year}-\text{olds}} = -1.21, [-2.35, -0.09]$. This suggests that, after we-framing, older children were less likely than younger children to abandon E1 (Fig. 2). In contrast, after you-framing, a model with a fixed effect predictor of age had an HPD estimate on age that included zero. The second pair of analyses looked at the effect of condition within age. Both models' HPD estimates of the age group parameter included

Table 4
Posterior estimates of the fixed effects parameters of the best fitting model in each model comparison.

Dependent variable	BF_{ij}	Estimate	Error	95% HPD	$P(\beta_i > 0\|\boldsymbol{D})$
Tendency to abandon	BF_{02} = 1.77				
Intercept		0.03	0.73	[−1.45, 1.48]	.52
Age group (4-year-olds)		−0.91	0.43	[−1.74, −0.09]*	.02*
Gender (male)		0.26	0.44	[−0.59, 1.13]	.73
Latency to abandon	BF_{02} = 1.02				
Intercept		3.50	0.31	[2.92, 4.13]*	1.00*
Age group (4-year-olds)		0.16	0.32	[−0.47, 0.79]	.69
Gender (male)		−0.08	0.32	[−0.70, 0.55]	.40
Location (Museum 1)		0.20	0.33	[−0.44, 0.84]	.73
Location (Museum 2)		0.16	0.39	[−0.59, 0.91]	.66
Tendency to take leave	BF_{21} = 1.03				
Intercept		−0.82	1.06	[−2.83, 1.40]	.21
Condition (we-framing)		1.21	0.67	[−0.10, 2.54]	.97*
Age group (4-year-olds)		−0.18	0.69	[−1.55, 1.18]	.40
Gender (male)		−0.84	0.67	[−2.19, 0.43]	.10
Interaction (Age Group × Condition)		−0.54	0.82	[−2.15, 1.07]	.26
Tendency to share (fairly or generously)	BF_{01} = 1.17				
Intercept		−0.59	0.69	[−1.89, 0.97]	.17
Age group (4-year-olds)		0.41	0.43	[−0.43, 1.27]	.83
Gender (male)		−0.40	0.44	[−1.29, 0.46]	.18
Tendency to help	BF_{01} = 1.25				
Intercept		0.76	0.97	[−1.52, 2.35]	.81
Age group (4-year-olds)		0.88	0.61	[−0.29, 2.11]	.93
Gender (male)		1.22	0.63	[0.02, 2.48]*	.98*
Latency to help	BF_{01} = 2.02				
Intercept		2.97	0.23	[2.55, 3.46]*	1.00*
Age group (4-year-olds)		−0.12	0.20	[−0.51, 0.27]	.27
Gender (male)		−0.05	0.20	[−0.44, 0.34]	.40
Location (Museum 1)		0.01	0.21	[−0.39, 0.42]	.53
Location (Museum 2)		0.46	0.27	[−0.08, 0.99]	.95*

Note. The column BF_{ij} reports for each dependent measure the ratio of posterior probabilities of the best-fitting model *i* to that of the second-best-fitting model *j* (uniform priors on model space render this equivalent to the Bayes factor in favor of model *i* relative to *j*). The column "Estimate" reports the median value of the posterior distribution. The column "Error" reports the size of 1 standard deviation of the posterior distribution. An asterisk (*) denotes that the HPD interval excludes zero (column "95% HPD") or that the posterior probability that the parameter value is greater than zero exceeds .95 (indicating a high degree of certainty about a positive effect, given the model and data) or is less than .05 (indicating a high degree of certainty about a negative effect, given the model and data; column "$P(\beta_i > 0|\boldsymbol{D})$").

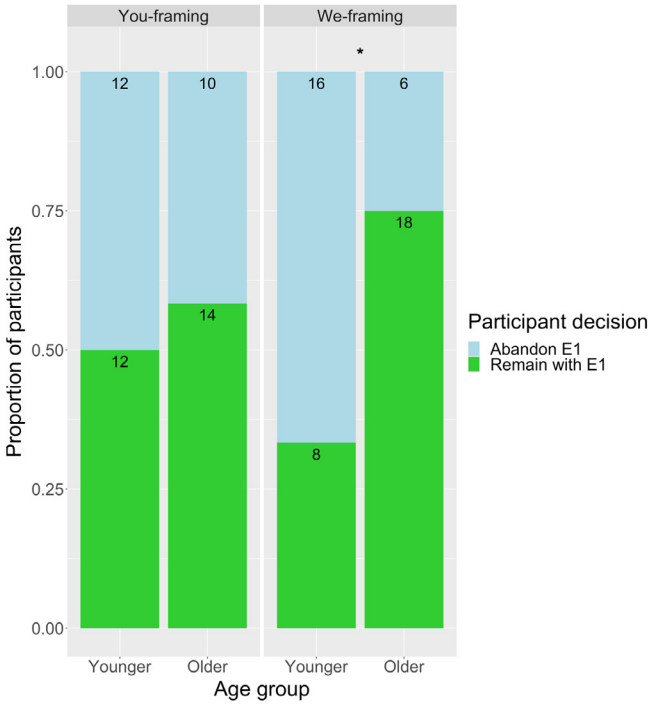

Fig. 2. Proportions of participants who chose to abandon or remain with E1. Asterisk indicates 95% Bayesian HPD interval excluded zero when comparing younger children with older children who received we-framing.

zero. Taken together, these results suggest that age mattered most when it came to whether children abandoned E1. Specifically, following we-framing, older children were less likely than younger children to abandon E1, but children left E1 at similar rates following you-framing (see supplementary material for similar findings from a survival analysis).

Next, we investigated the effect of framing on children's latency to abandon E1, excluding children who did not leave E1. Sampling from models with random intercepts on location and order produced numerous divergent transitions. Consequently, the random intercepts on location and order were excluded from all three models, and location was included as a fixed effect. (Including a fixed effect of order would have added five fixed effects parameters to the model, which would have unduly reduced statistical power; Theobald, 2018.) Model comparison placed most mass over the null model, $P(M_i|\boldsymbol{D}) \in \{.36, .29, .35\}$. In the null model, only the HPD estimate for the intercept excluded zero (Table 4). This suggests no effect of framing on latency to abandon E1.

Next, we analyzed children's tendency to take leave from E1 among the children who left. Sampling from models predicting all three types of leave taking produced numerous divergent transitions. Thus, we collapsed type of leave taking into a binary outcome, with 0 = no leave taking and 1 = leave taking (nonverbal or verbal). Using this collapsed dependent measure, model comparison placed the most posterior mass over the full model, $P(M_i|\boldsymbol{D}) \in \{.15, .42, .43\}$. In the full model, all 95% HPD estimates included zero, although 97% of the posterior density over the condition parameter was positive valued (Table 4). We conducted two pairs of follow-up analyses. The first pair investigated the effect of condition within age group. Among 3-year-olds, a model with condition as the only fixed effect had an HPD estimate over condition that included zero, $\beta_{\text{we-framing}} = 1.31, [-0.19, 2.81]$, and placed 96% of posterior density over positive valued estimates. In contrast, among 4-year-olds, the same model placed only 36% of posterior density over positive valued parameter estimates. The second pair investigated the effect of age within condition. Both models included a fixed effect of age group and returned HPD estimates that included zero and placed 22% of posterior density over positive valued

parameter estimates. Taken together, these results suggest a degree of certainty that we-framing increased 3-year-olds', but not 4-year-olds', tendency to take leave from E1 when abandoning him.

Effect of framing on children's sharing

We investigated the effect of framing on children's tendency to share with E1. It was predicted that the full model would provide the best fit. Sampling from models predicting all seven distributions (0–6) produced numerous divergent transitions. Thus, resource distributions were collapsed into 0 to 2 (selfish) and 3 to 6 (equal or generous). This binary outcome was the dependent variable. Model comparison placed the most posterior mass over the null model, $P(M_i|\boldsymbol{D}) \in \{.41, .35, .24\}$. In the null model, HPD intervals included zero (Table 4). The number of decorations shared by age and condition were in the predicted direction, you-framing, 3;0: M = 1.26, SD = 1.79 (n = 23); you-framing, 4;0: M = 1.58, SD = 1.59 (n = 24); we-framing, 3;0: M = 1.86, SD = 2.12 (n = 22); we-framing, 4;0: M = 2.05, SD = 1.68 (n = 22). These results suggest that framing did not affect children's tendency to distribute resources equally or generously to E1.

Effect of framing on children's helping

We investigated the effect of framing on participants' tendency and latency to help E1. It was predicted that the null model would fit best. Model comparison identified the null model as best fitting participants' tendency to help E1, $P(M_i|\boldsymbol{D}) \in \{.41, .33, .26\}$. In the null model, only the gender parameter excluded zero, with 98% of posterior density placed over positive valued parameter estimates (Table 4). This suggests a lack of effect of framing or age on children's tendency to help E1 and a tendency for boys to help more frequently than girls. However, children's tendency to help was at ceiling across age and condition [3-year-olds: $\frac{36}{43}$ (84%); 4-year-olds: $\frac{46}{48}$ (96%); you-framing: $\frac{42}{45}$ (93%); we-framing: $\frac{40}{46}$ (87%)]. This limits our ability to interpret the effect of framing on tendency to help E1. There was a larger numerical difference in helping rates between genders [girls: $\frac{36}{44}$ (82%); boys: $\frac{46}{47}$ (98%)]. In all, these results suggest a high degree of certainty that boys were more likely than girls to help E1, given our model structure and data (see supplementary material for convergent findings using survival analysis).

We investigated the effect of framing on helping latency (among children who helped E1). Sampling from models with random intercepts on location and order fitted to children's latency to help E1 produced numerous divergent transitions. Consequently, the random intercepts on location and order were excluded from all three models, and location was included as a fixed effect. Model comparison placed most mass over the null model, $P(M_i|\boldsymbol{D}) \in \{.54, .27, .19\}$. In the null model, all HPD estimates included zero, although 95% of posterior density over the Museum 2 parameter was placed over positive values (Table 4). This suggests, as predicted, no effect of framing on latency to help E1. Moreover, these results provide some support for the possibility that if children helped E1, those tested at Museum 2 did so more quickly than children tested in the lab setting.

Discussion

This study investigated the effect of we-framing on young children's sense of obligation toward their partner. We predicted that 4-year-olds would exhibit greater commitment and fairness, but not helping, following we-framing compared with you-framing and (for commitment) compared with 3-year-olds. Mixed results with respect to these predictions were found, with the strongest evidence surfacing in the effects of we-framing on children's sense of commitment.

Regarding children's sense of commitment, we found weak evidence in favor of the null model relative to the full model fitted to children's abandoning data. However, within the null model, 4-year-olds were found to be less likely than 3-year-olds to abandon their partner (replicated with survival analysis; see Supplementary Table 2). Follow-up analyses suggested that this effect is likely unique to we-framing, with older children abandoning their partner less often than 3-year-olds only after we-framing. Although evidence for an interaction was lacking, these latter results speak to our predic-

tion that, after we-framing, older children would exhibit greater commitment toward their partner than younger children. Among children who abandoned their partner, there was no clear effect of framing on their latency to do so.

The strongest evidence that we-framing increases children's sense of commitment came from analyses of their tendency to take leave from their partner. We found very weak evidence for the model that included the age–condition sum and interaction over the model that included only the age–condition sum. Although this pattern provides some evidence in favor of a positive effect of we-framing on commitment relative to you-framing (as predicted), follow-up analyses suggest that this may have been due to an effect of we-framing on 3-year-olds and not on 4-year-olds (unpredicted). Specifically, the results of follow-up analyses indicated that 3-year-olds (but not 4-year-olds) took leave more often following we-framing compared with you-framing.

These findings on children's commitment following we-framing provide a degree of support for the notion that, following we-framing, 3-year-olds are more polite when they abandon their partner (compared with you-framing), whereas 4-year-olds are less likely to abandon their partner (compared with 3-year-olds). This could reflect a simple motivation rather than a commitment, with 4-year-olds being somehow more motivated than 3-year-olds to remain with their partner following we-framing. Although this would be interesting, simple motivation is not a commitment. Moreover, 3-year-olds quite often "took leave" following we-framing, and one only takes leave when one is breaking a commitment; simply changing one's motivation or preference should not prompt leave-taking behavior (see Tomasello, 2019, for further evidence that children's sense of commitment is not the same thing as a simple preference).

Against our prediction, children did not share more equally following we-framing. One explanation owes to an inability for a hypothesized fairness-enhancing effect of we-framing to overcome the effect of windfall (as opposed to collaboratively obtained) resources in young children. In windfall settings, a set of resources is given to a participant by a researcher (e.g., as was done by E2), and participants are asked to divide the resources between themselves and their partner (e.g., between participants and Eeyore). In these studies, children do not show a sense of fairness until much older ages (McAuliffe et al., 2017), presumably because the fact that they have the resources in hand means that they need to sacrifice, and their selfish motive becomes engaged. As a final point, we note that our use of a windfall situation is a limitation insofar as our study was designed to target children's sense of fairness (Engelmann & Tomasello, 2019). Prior research suggests that children's fairness sensibilities are best tapped in the context of joint collaboration with interchangeable and mutually necessary roles (Corbit, 2019), characteristics that our procedure arguably lacked. Future work investigating the influence of framing on children's fairness might consider designs that require resources to be obtained collaboratively and participants to negotiate resource distributions (e.g., Warneken, Lohse, Melis, & Tomasello, 2011).

We predicted that there would be no effect of framing on children's helping. However, because children's rates of helping were at ceiling in both conditions, we cannot conclude that the framing manipulations delivered here did not affect children's tendency to help their partner. We have no particular explanation for the effect of gender on children's helping, with boys helping more often than girls, except to point out that the experimenter was male. The same pattern of results was obtained via a survival analysis of children's helping behavior (see supplementary material).

The age pattern we found is curious. The 4-year-old children stuck with their partner more than the 3-year-old children in the we-framing condition, but 4-year-olds who did leave did not very frequently take leave. In contrast, 3-year-olds abandoned their partner more often than 4-year-olds in the we-framing condition but also took leave more often than in the you-framing condition (Fig. 3). There are several possible explanations for this developmental pattern. One is that in the you-framing condition, children could have interpreted utterances such as "You are going to draw on this paper" as commands, and children of different ages understand and react to commands differently. Another explanation is that children interpreted you-framing as expressing a generic or collective meaning, for example, "You do X," where "you" is interpreted as "One does X" (Orvell, Kross, & Gelman, 2018). But neither of these explanations is really plausible because the two ages behaved similarly in the you-framing condition; it was the we-framing condition where they differed most.

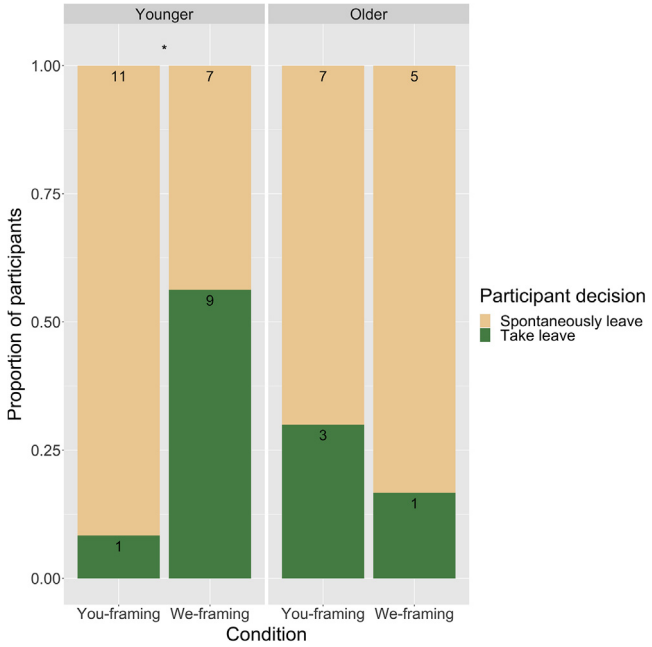

Fig. 3. Proportions of participants who chose to spontaneously leave or take leave from Experiment 1 (E1) (verbally or nonverbally). Note that the plot is faceted by age group. Asterisk indicates that more than 95% of posterior density was allotted to condition parameter values greater than zero when comparing the effect of we-framing with that of you-framing in 3-year-olds.

Another possibility is that some children had special difficulties with inhibiting a temptation to play with the marble run after they saw E2 begin to play with it, and it is well known that inhibitory control develops rapidly from 3 to 5 years of age (Zelazo & Müller, 2007). Thus, children of both ages felt a sense of commitment, but 4-year-olds were more easily able to inhibit their desire to play with the new toy than 3-year-olds. On this interpretation, 3-year-olds' decision to abandon their partner, but at the same time to take leave from the partner, represents a kind of balancing of their sense of commitment to their partner with their desire to play with the attractive marble run. Age differences in inhibitory control almost certainly played a role in this study.

A final explanation is a linguistic–conceptual one. Children were in exactly the same physical situation in the two conditions, but the different framings led them to construe the social-relational aspects of the same two situations differently. Construal is a cognitive operation that is basically perspectival—one perceives or understands the situation in different ways—and language is a strong purveyor of perspectives (Langacker, 1987). A whole host of studies suggest that 4-year-old children are much better at flexibly taking different perspectives than 3-year-old children (for a review, see Rakoczy, 2017). And so, in a sense, we are suggesting that part of the picture is that 4-year-olds understand first-person plurals somewhat differently than 3-year-olds in that the affordances made salient by the use of these words may differ depending on the age, experience, and cognitive capacities of children (e.g., as pertain to things like abandoning one's partner and taking leave; see Vasil, Badcock, Constant, Friston, & Ramstead, 2020). In any case, the linguistic–conceptual and inhibitory control explanations are not mutually exclusive, and indeed we believe that the best explanation for the developmental pattern reported here is a combination of developmental changes in inhibitory control and conceptual construal prompted by the use of first-person plurals.

There are several interesting routes for future research. One is to investigate the possibility that we-framing is more effective when used to frame situations in which resources have been obtained collaboratively as opposed to after a windfall (Corbit et al., 2017). Moreover, it may be useful to inves-

tigate the effects of we-framing on other aspects of what it is to be a "we" with others, such as inferences about personal and cultural common ground. For instance, one possibility is that we-framing may, in some cases, cause children to overestimate the amount of common ground shared with others (Moll, Carpenter, & Tomasello, 2011; Wilkes-Gibbs & Clark, 1992), such as when solving coordination problems (Goldvicht-Bacon & Diesendruck, 2016) or conveying information to a partner (Winters, Kirby, & Smith, 2018).

In addition to having participants distribute resources in a windfall scenario (above), another limitation of the current investigation follows from our decision to test participants at multiple locations. The exclusion rate was high (Table 2). One explanation is that, at least in the museum settings, it is possible that children were more interested in the other activities available to them at the museum than in participating in the experiment. That is, the experimental activity (coloring) and its pretext (decorating for an unknown party ostensibly occurring later) may simply have not been sufficiently exciting to maintain young children's interest. Something like this boredom explanation might go some way to account for the high exclusion rate in the lab as well. We are uncertain about the source of the effect of Museum 2 on children's latency to help E1.

In conclusion, the current study investigated the effects of we-framing and you-framing on young children's commitment, sharing, and helping. Mixed evidence was found in support of the hypothesis that we-framing increases children's commitment toward their partner, and no evidence was found in support of the notion that we-framing increases children's sense of fairness (at least, in windfall situations) or tendency to help their partner (due to ceiling rates of helping).

Appendix A. Supplementary material

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jecp.2021.105278.

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