Effects of "We"-framing on Young Children's Commitment, Sharing, and Helping

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Highlights

- This study looked at effects of collaborative “we”- vs. individualistic “you”-framing
- Framing was used to describe a dyadic coloring game to 3- and 4-year-old children
- Dependent measures gauged children’s commitment, resource distribution, and helping
- “We”-framing was associated with increased commitment towards partners
- There were no effects of framing on children’s resource distribution or helping

Abstract

By around three years of age, collaboration induces in young children a normative sense of "we" that creates a sense of obligation (e.g., commitment and fairness) towards their collaborative partner. The present 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, etc., whereas in the other condition the pronoun used was always "you". Dependent measures gauged children's commitment, resource distribution, and helping behavior towards 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. Four-year-olds evidenced this commitment by showing a greater reluctance, compared to 3-year-olds, to abandon their partner for a more fun game. Three-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 to you-framing, is an effective means of inducing in children a sense of shared agency and commitment with a partner.

Keywords: language, commitment, normative turn, framing, first-person plural

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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 she is opting out, or apologizing after the fact, possibly citing her 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 to 24 months of age, and with peers a bit later (Brownell & Carriger, 1990; Eckerman et al., 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 her in the activity (Warneken et al., 2006).

At around 3 years of age children undergo a kind of "normative turn" (Tomasello, 2018), which 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 her role, and so they protest normatively when she does not (Kachel et al., 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 her, to help her, to make excuses for her, and so forth, if the partners have previously made a joint commitment (as opposed to when they have not; Gräfenhain et al., 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 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 et al., 2011; Kanngiesser & Warneken, 2012; Ng et al., 2011). For instance, Corbit et al. (2017) found that children tended to reject resource distributions that favored themselves, but only if the resources were obtained collaboratively; if resources obtained during parallel work then children would less frequently reject distributions that favored themselves (and if the distribution favored the partner then children rejected it at equal rates in both conditions). Indeed, children protest unfair distributions of resources obtained collaboratively (Rakoczy et al., 2016) or else redistribute the spoils of a collaboration when they come out unfairly (Ulber et al., 2017), whether they themselves are advantaged or disadvantaged. Fairness concerns outside of collaborative activities come into play only later in development (McAuliffe et al., 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 of 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”) tends to produce more cooperation (Brewer & Kramer, 1986; Sugden, 1993; reviewed in 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 greater fairness in the division of resources. Previous research suggests that verbally framing a task as a collaborative as opposed to an individualistic endeavor influences children’s cooperative motivations (Butler & Walton, 2013; Koomen et al., 2020). However, this work did not investigate the influence of collaborative vs. 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 present 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 towards their partner occurred *independently* 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), above, 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 children to simultaneously coordinate their actions to pull in a set of rewards to be divided amongst the two partners; if 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 used children drew on and colored their own sheet of paper while their partner did the same on a different sheet of paper.

We predicted that 3- and 4-year-olds would feel a heightened sense of commitment following we-framing as compared to 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 x condition interaction). This prediction was made on the basis of prior research (Kachel & Tomasello, 2019) demonstrating that, after age 3, 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 continue to develop after age 3, then we should expect to see a stronger effect of we-framing in 4-year-olds compared to 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 to you-framing. Specifically, prior work suggests that young children (around the age of 3 years) do not necessarily distribute a windfall of resources equally amongst themselves and a partner (McAuliffe et al., 2017; see 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 towards 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 to you-framing. That being said, our choice of a windfall scenario may be seen as an especially stringent test of young children's fairness, as it is not until middle childhood that children spontaneously share windfall resources fairly (McAuliffe et al., 2017).

We additionally 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 since helping in such scenarios, especially in young children, is typically done more out of a sense of sympathy than normative obligation (Tomasello & Vaish, 2013). To be sure, young children sometimes help out of a sense of obligation or responsibility (e.g., Plötner et al., 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 (Hamann et al., 2012; Siposova et al., 2021) or tool affordance understanding (Plötner et al., 2015) and still is not especially robust (e.g., Gräfenhain et al., 2013). Moreover, skills for normative reasoning are not prerequisite to instrumental helping, as nonhuman great apes and human infants help conspecifics in the same out-of-reach helping task (Warneken & Tomasello, 2006, 2007). We thus predicted no effect of framing on children's instrumental helping in the current study. Assuming 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 unimpacted by the normative turn (Tomasello, 2018).

Methods

Participants

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

Participants were randomly assigned at to one of two experimental conditions. Table 1 presents the breakdown of participants included in the final sample by testing location, age, and condition. 43 participants were excluded (Table 2) due to either losing interest (*n* = 16), experimenter error (*n* = 9), shyness (*n* = 6), family member interference (*n* = 5), being too old or young (*n* = 5), did not speak English (*n* = 1), or brought a toy into the testing room (*n* = 1) . Of these 43 excluded participants, 24 were younger than 3;6 (years;months), 17 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 and upper-middle class families in the Southeastern United States. Participants' caregivers indicated that they were White (*N* = 79), Multiple Race (*N* = 12), African-American (*N* = 4), and Asian (*N* = 1). Written consent was obtained from participants' primary caregiver. 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 usage of a puppet as the child'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 Hardecker & Tomasello, 2017; Hardecker et al., 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 marker (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 in. diameter); and a small paper box (used when measuring helping; 6.25 x 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 subjects design with random assignment to one of two conditions: *we-framing* (N = 48) and *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. The participant and E1 colored side-by-side on their own sheet of paper with their own sets of markers. Participants were told they were helping to decorate for a party that would be happening later. The task itself was designed so as to be 'neutral' with regards 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 usage of first-person plural pronouns by E1 and E2 in their talk towards the participant during the experimental session. In this condition, the usage 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., towards the same unshared goal).

There were three sets of dependent measures. These gauged participants' senses of commitment and fairness and their helping behavior towards 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 10-15 minutes. Participants partook only in the current study.

Procedure

Warmup phase. 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 warmup lasted until the participant appeared comfortable (e.g., making eye contact with the experimenters and handing things to them) and responded affirmatively when asked if they would like to "help decorate for a party later." E1 then escorted the participant and (if requested) their caregiver to the testing area.

Test phase. Caregivers who came to the testing area were instructed not to talk to or otherwise bias the participant during the task. If the participant attempted to (e.g.) show the caregiver 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. In the following, we **bold** we-framing terms for clarity. One can derive the corresponding you-framing terms by simply substituting in the singular form of pronouns for their plural form. 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 measure; see below), we provide both the we- 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 (Figure 1). As they approached the decorating table, E1 stated in an excited tone that "It is time for **us** to play a fun game!" Participants were 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 participants' sense of jointly visually attending with E1 (Figure 1). E1 then 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 formed by the participant and Eeyore, and *not* 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. 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? [*Participant's 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 participants were attentive to the entirety of the description. Following participants' affirmative response at the end of the description, Eeyore (controlled by E1) 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. Participants were not instructed or otherwise suggested to draw a particular picture or figure. 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."). Additionally, 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 seconds 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, exciting '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 (Figure 1). As E2 was doing this, E1 continued coloring. At no point did E1 overtly direct their attention towards E2. E2 began by playing with the toy for five seconds without saying anything. Then, E2's utterances increasingly explicitly stated their desire to play with the marble run with someone. At five seconds, E2 said "This is fun!" At 10 seconds, E2 said "Oh cool!" At 15 seconds E2 said "This is so much fun!" At 20 seconds, E2 said "I wish I had someone to play with!" At 25 seconds E2 said "Hey, do you want to play with me?" At 30 seconds, E2 repeated the previous phrase. If participants left E1 (i.e., approached E2) before 30 seconds elapsed, E2 refrained from making any of the subsequent scheduled utterances.

If participants approached E2 before 60 seconds had elapsed, then they played with the marble run together for approximately 30 seconds. 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 participants did not approach E2, then after 60 seconds E2 put the toy away. In this case, in order 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 their decoration.

To gauge participants' sense of commitment, dependent measures included whether participants chose to leave or remain with E1. If participants left E1 (i.e., approached E2), then two further measures were taken. These were the latency of participants' decision to leave E1, as well as the leave-taking behavior of the participant with respect to E1. If the participant took leave from E1 verbally, 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 their drawing. As E2 approached the decorating table, E2 informed the participant that they had decorations for them to share with Eeyore. E2 then placed the six decorations in front of the participant (each was facing upwards 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 towards 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, they motioned (using Eeyore) to the center of the table, where E1 had already placed their 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- 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 participants did nothing, E2 gave utterances that increasingly explicitly stated their request for the child to share the erasers with Eeyore. After 10 seconds, E2 said “You can share some of those with Eeyore if you want.” After 20 seconds E2 said “You should share some of those with Eeyore.” After 30 seconds, E2 said “Share some of those with Eeyore.” Participants were free to distribute the erasers as they pleased. E1 faced Eeyore towards the decorations until participants had distributed all six decorations. When participants gave Eeyore a decoration, E1 said “Thank you.” If participants distributed a decoration ambiguously (e.g., placing it between themselves and Eeyore), E2 asked them 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, 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 their marker, briefly looked around the room, and then stated “Oh, wait, I need that box!” E1 did this while looking at a small paper box placed on a table several feet away from the decorating table. The box was equidistant from E1 and the participant (Figure 1). Immediately, E1 began reaching for the box by fully extending their arm controlling the puppet, making it look as though Eeyore were reaching for the box. For five seconds 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 participants did not get up within 5 seconds of the onset of the full extension of E1's reach, then E1 gave utterances that increasingly explicitly stated their request for the child to retrieve the box for them. After five seconds, E1 stated "My box!" After 10 seconds, E1 stated "I can't reach my box!" After 20 seconds, E1 stated "I really need my box!" After 30 seconds 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 them the box; and, if so, the latency of their handing the box to E1 (60s ceiling).

The test phase was concluded by E1 saying "Great work!" to participants, thanking them for their help, and asking if 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 the participant. Either E1 or E2 lead the participant 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, $\kappa = 1.000$. 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, ICC = .998. *Leave taking behavior* was coded as spontaneous if a participant 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; or look back and forth between E1 and E2 before leaving). Verbal leave taking included explicitly indicating an intent to leave, stating that one is finished decorating, or asking a question just prior to or while leaving. Raters disagreed on 1 of 24 cases (4%). Reliability was excellent, $\kappa = .937$.

Participants' *sharing behavior* was operationalized as the number of decorations shared with their partner. The code value a participant 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, $\kappa = .994$.

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

A participant was excluded from the analysis if they received scores on only zero or one of the three sets of measures. For instance, if a participant received scores for the helping measures, but then stopped participating, they were excluded from the analysis. In contrast, if a participant 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 a participant 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 measures (*n* = 5). The final sampled included 96 participants, so the effective sample size was *N* = 96 (commitment measures) 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 our stricter exclusion rule is that this may have contributed to the high exclusion rate of this study.

Data analysis plan. All analyses were conducted using R package "brms" (Bürkner, 2017; R Core Team, 2018). Supplementary Materials provides technical details about model structure, prior parameterization and robustness, and fitting and checking procedures; a brief explication of the relationship of Bayes factors (BFs) to posterior probability; 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), $p(M_i|\boldsymbol{D}) \in p(M|\boldsymbol{D}) = \{\Pr(M_0|\boldsymbol{D}),$

$\Pr(M_1|\boldsymbol{D})$, $\Pr(M_2|\boldsymbol{D})\}$, denoted $p(M_i|\boldsymbol{D}) \in \{\Pr(M_0|\boldsymbol{D}), \Pr(M_1|\boldsymbol{D}), \Pr(M_2|\boldsymbol{D})\}$. 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. Values above 3 indicate strong evidence for the numerator compared to the denominator model and a value of 1 indicates equal evidence (Jarosz & Wiley, 2014). We report the BF of the best 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 after observing the data, while the latter characterizes the amount of posterior mass p that is positive (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 mass 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 is included in the estimation of posterior mass greater than 0.

Results

The effect of framing on children's commitment. We investigated the effect of framing on children's tendency and latency to abandon and 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. Model comparison of models predicting children's tendency to abandon E1 placed the most posterior mass over the null model, $\Pr(M_i|\boldsymbol{D}) \in \{.50, .21, .29\}$. In the null model, only the 95% HPD estimate of the age parameter excluded 0, with only 2% of posterior mass greater than 0 (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 fixed effect predictor of age had an HPD estimate on age that excluded 0, $\beta_{4-year-olds} = -1.21, [-2.35, -0.09]$. This suggests that, after we-framing, older children were less likely than younger children to abandon E1 (Figure 2). In contrast, after you-framing, a model with fixed effect predictor of age had an HPD estimate on age that included 0. The second pair of analyses looked at the effect of condition within age. Both models' HPD estimates of the age group parameter included 0. 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 5 parameters to the model, which would have greatly reduced statistical power). Model comparison placed most mass over the null model, $\Pr(M_i|\boldsymbol{D}) \in \{.36, .29, .35\}$. In the null model, only the HPD estimate for the intercept excluded 0 (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 divergences. Thus, we collapsed type of leave taking into a binary outcome, 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 null model, $\Pr(M_i|\boldsymbol{D}) \in \{.15, .42, .43\}$. In the full model, all 95% HPD estimates included 0. Although the 95% HPD estimate for the condition parameter included 0, 97% of posterior samples of the condition parameter returned a value greater than 0 (Table 4). We conducted two pairs of follow up analyses of condition. The first pair investigated the effect of condition in age group. Among 3-year-olds, a model with condition as a fixed effect had an HPD estimate over condition that included 0, $\beta_{we-framing} = 1.31, [-0.19, 2.81]$, and 96% of posterior mass over positive valued parameter estimates. Among 4-year-olds, the same model had an HPD estimate over condition that included 0. 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 0. The positive valued slope of the condition parameter (3-year-olds), combined with 96% of posterior samples greater than 0, 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 them.

The 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 best fit. Sampling from models predicting all seven distributions (0 to 6) produced numerous divergences. Thus, resource distributions were collapsed into 0-2 (selfish) and 3-6 (equal or generous). This binary outcome was the dependent variable. Model comparison placed the most posterior mass over the null model, $\Pr(M_i|\boldsymbol{D}) \in \{.41, .35, .24\}$. In the null model, HPD intervals included 0 (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); and 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.

The 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 best fit in both cases. Model comparison identified the null model as best fitting participants' tendency to help E1, $\Pr(M_i|\boldsymbol{D}) \in \{.41, .33, .26\}$. In the null model, only the gender parameter excluded 0, with 98% of posterior samples returning values greater than 0 (Table 4). This suggests lack of an effect of framing or age on children's tendency to help E1. 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, females: $\frac{36}{44}$ (82%); males: $\frac{46}{47}$ (98%). Taken with the positive point estimate and exclusion of 0 from the HPD interval for gender, this suggests a high degree of certainty that males were more likely to help E1 than were females (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, $\Pr(M_i|\boldsymbol{D}) \in \{.54, .27, .19\}$. In the null model, all HPD estimates included 0, although 95% of posterior samples of the Museum 2 parameter was greater than 0 (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 they helped E1, children tested at Museum 2 did so more quickly than children tested in the laboratory setting.

Discussion

This study investigated the effect of “we”-framing on young children’s sense of obligation towards their partner. We predicted that 4-year-olds would exhibit greater commitment and fairness, but not helping, following we-framing compared to you-framing and compared to 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, Supplementary Table 1). 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. While evidence for an interaction was lacking, this latter result speaks to our prediction that, after we-framing, older children would exhibit greater commitment towards 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. While 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 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 to 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 to you-framing), while 4-year-olds are less likely to abandon their partner (compared to 3-year-olds). This could reflect a simple motivation rather than a commitment: Four-year-olds, compared to 3-year-olds, were somehow more motivated to remain with their partner following we-framing. While this would be interesting, a simple motivation is not a commitment. Moreover, 3-year-old children 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, 2020, 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 the participant is asked to divide the resources between themselves and their partner (e.g., between the participant 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 have 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 et al., 2011).

We predicted that there would be no effect of framing on children's helping. However, as 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 (Supplementary Material).

The age pattern we found is curious. Four-year-old children stuck with their partner more than did 3-year-old children in the we-framing condition, but the 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 (Figure 3). There are several possible explanations for this developmental pattern. One is that in the you-framing condition, children could have interpreted utterances like "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, e.g., "you do X", where "you" is interpreted as "one does X" (Orvell et al., 2018). But neither of these explanations are really plausible, as the two ages behaved similarly in the you-framing condition – it was the we-framing condition where they differed most.

Another possibility is that some children had special difficulties 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 the 4-year-olds were more easily able to inhibit their desire to play with the new toy than were the 3-year-olds. In this interpretation, 3-year-olds' decision to abandon their partner but at the same time take leave from them 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 are 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-old children understand the word *we* somewhat differently than do 3-year-old children, in the sense that the affordances made salient by the use of that word may differ depending on the age, experience, and cognitive capacities of the child (e.g., things like abandoning one's partner and taking leave; see Vasil et al., 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 word *we*.

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 investigate 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. One possibility is that we-framing may, in some cases, cause children to overestimate the amount of common ground shared with others (Moll et al., 2011; Wilkes-Gibbs & Clark, 1992). For instance, we-framing might lead to the overattribution of common ground when solving coordination problems (Goldvicht-Bacon & Diesendruck, 2016) or when conveying information to a partner (Winters et al., 2018).

In addition to having participants distribute resources in a windfall scenario (above), another limitation of the present 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 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 present 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 towards 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).

Figure 1. Experimental setup (not to scale).

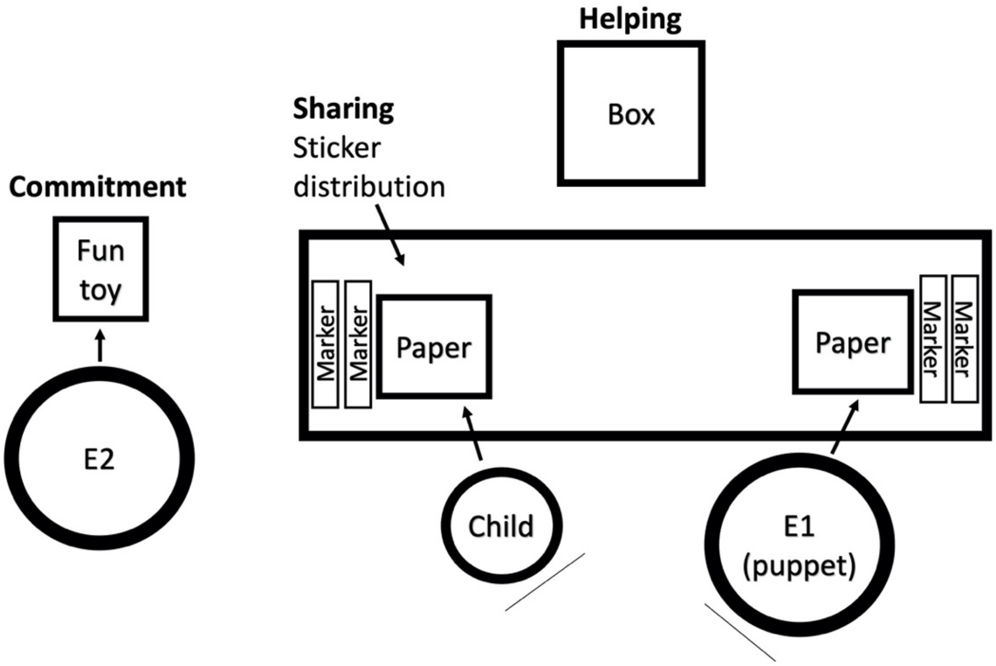

Helping
Box
Sharing
Sticker distribution
Commitment
Fun toy
Marker
Marker
Paper
Paper
Marker
Marker
E2
Child
E1 (puppet)

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. Percentages are rounded to the nearest integer value. Note the total for age is 42 (not 43), as one participant's caregiver did not provide their child's birthdate.

Testing location	**Exclusions**	**% excluded (by location)**	**% excluded (overall)**
Lab	18	37	42
Museum 1	22	63	51
Museum 2	3	25	7
Total	43	NA	100
Condition		**% excluded (by condition)**	
We-framing	19	20	44
You-framing	24	25	56
Total	43	NA	100
Age		**% excluded (by age)**	
3-year-olds	26	34	62
4-year-olds	16	24	38
Total	42	NA	100

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 seconds - Initiated when E2 started to play with fun toy - Terminated when child got up from their 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 seconds - Initiated when E1 had fully outstretched arm - Terminated when child handed the box to E1

Table 4. This Table reports posterior estimates of the fixed effects parameters of the best fitting model in each model comparison. The Bayes factor BF_{ij} reported for each comparison is the ratio of the relative magnitudes of the posterior probability of the best fitting model i to that of the second-best fitting model j (uniform priors on model space). The column “estimate” reports the median value of posterior samples and column “error” the size of one standard deviation of the posterior distribution. Asterisks (“*”) denote that the HPD excludes 0 (column “95% HPD) or that the posterior probability that the parameter estimate is greater than 0 exceeds .95 (indicating a high degree of posterior certainty, given the model and data, about a positive effect) or is less than 0.05 (indicating a high degree of posterior certainty, given the model and data, about a negative effect; column “$P(\beta_i|\boldsymbol{D}) > 0)$”).

Tendency to abandon, $BF_{02} = 1.77$	**Estimate**	**Error**	**95% HPD**	$\boldsymbol{P(\beta_i > 0 \mid D)}$
Intercept	-0.03	0.73	[-1.45, 1.48]	0.52
Age group (4-year-olds)	-0.91	0.43	[-1.74, -0.09]*	0.02*
Gender (male)	0.26	0.44	[-0.59, 1.13]	0.73

Latency to abandon, $BF_{02} = 1.02$	**Estimate**	**Error**	**95% CI**	$\boldsymbol{P(\beta_i > 0 \mid D)}$
Intercept	3.50	0.31	[2.92, 4.13]*	1.00*
Age group (4-year-olds)	0.16	0.32	[-0.47, 0.79]	0.69
Gender (male)	-0.08	0.32	[-0.70, 0.55]	0.40
Location (Museum 1)	0.20	0.33	[-0.44, 0.84]	0.73
Location (Museum 2)	0.16	0.39	[-0.59, 0.91]	0.66

Tendency to take leave, $BF_{21} = 1.03$	**Estimate**	**Error**	**95% CI**	$\boldsymbol{P(\beta_i > 0 \mid D)}$
Intercept	-0.82	1.06	[-2.83, 1.40]	0.21
Condition (we-framing)	1.21	0.67	[-0.10, 2.54]	0.97*
Age group (4-year-olds)	-0.18	0.69	[-1.55, 1.18]	0.40
Gender (male)	-0.84	0.67	[-2.19, 0.43]	0.10
Interaction (age group * condition)	-0.54	0.82	[-2.15, 1.07]	0.26

Tendency to share, $BF_{01} = 1.17$	**Estimate**	**Error**	**95% CI**	$\boldsymbol{P(\beta_i > 0 \mid D)}$
Intercept	-0.59	0.69	[-1.89, 0.97]	0.17
Age group (4-year-olds)	0.41	0.43	[-0.43, 1.27]	0.83
Gender (male)	-0.40	0.44	[-1.29, 0.46]	0.18

Tendency to help, BF_{01} = 1.25	**Estimate**	**Error**	**95% CI**	$\boldsymbol{P(\beta_i > 0 \mid D)}$
Intercept	0.76	0.97	[-1.52, 2.35]	0.81
Age group (4-year-olds)	0.88	0.61	[-0.29, 2.11]	0.93
Gender (male)	1.22	0.63	[0.02, 2.48]*	0.98*

Latency to help, BF_{01} = 2.02	**Estimate**	**Error**	**95% CI**	$\boldsymbol{P(\beta_i > 0 \mid D)}$
Intercept	2.97	0.23	[2.55, 3.46]*	1.00*
Age group (4-year-olds)	-0.12	0.20	[-0.51, 0.27]	0.27
Gender (male)	-0.05	0.20	[-0.44, 0.34]	0.40
Location (Museum 1)	0.01	0.21	[-0.39, 0.42]	0.53
Location (Museum 2)	0.46	0.27	[-0.08, 0.99]	0.95*

Figure 2. Proportion of participants who chose to abandon or remain with E1. Asterisk indicates 95% Bayesian HPD interval excluded 0 when comparing younger to older children who received we-framing.

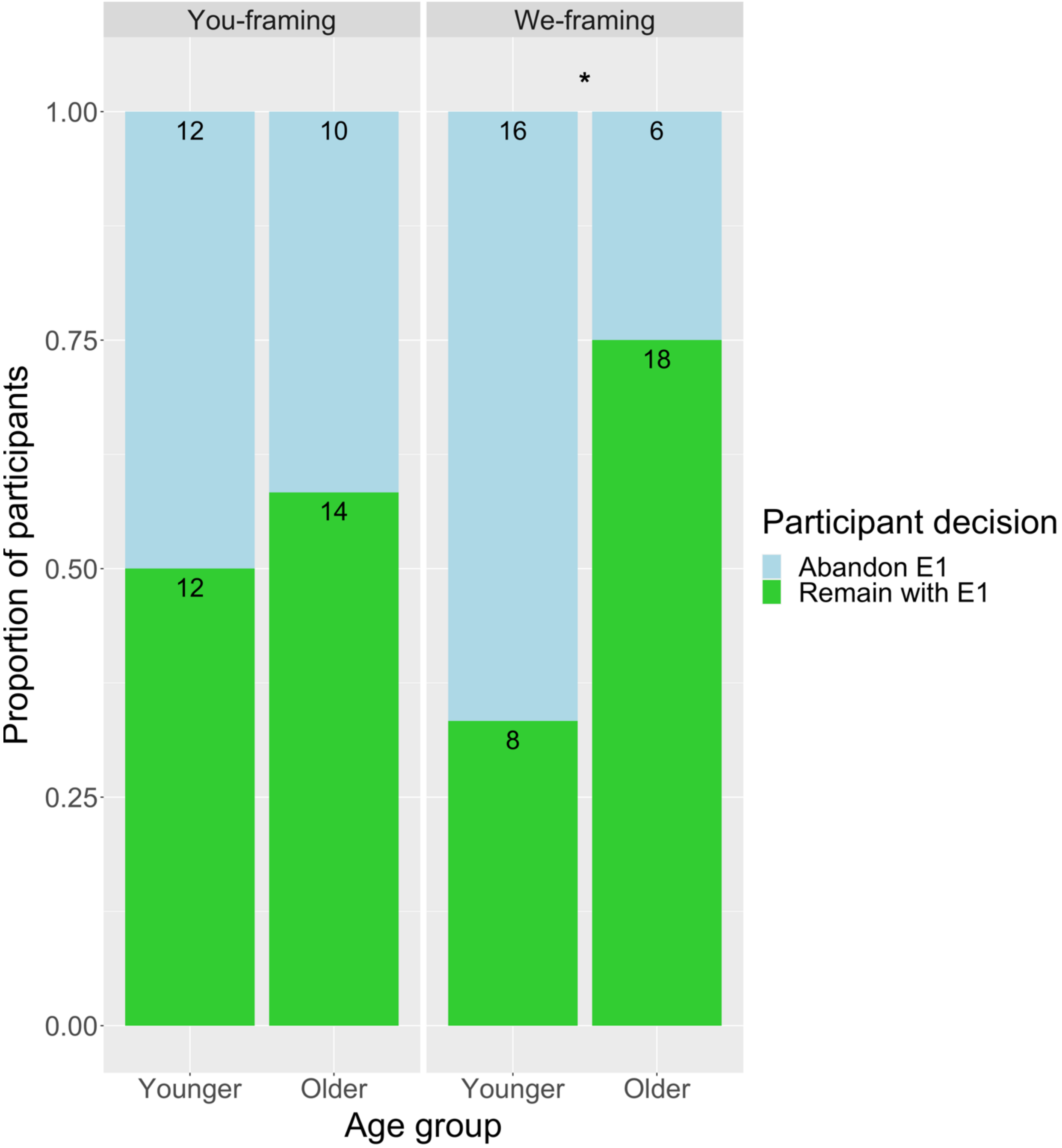
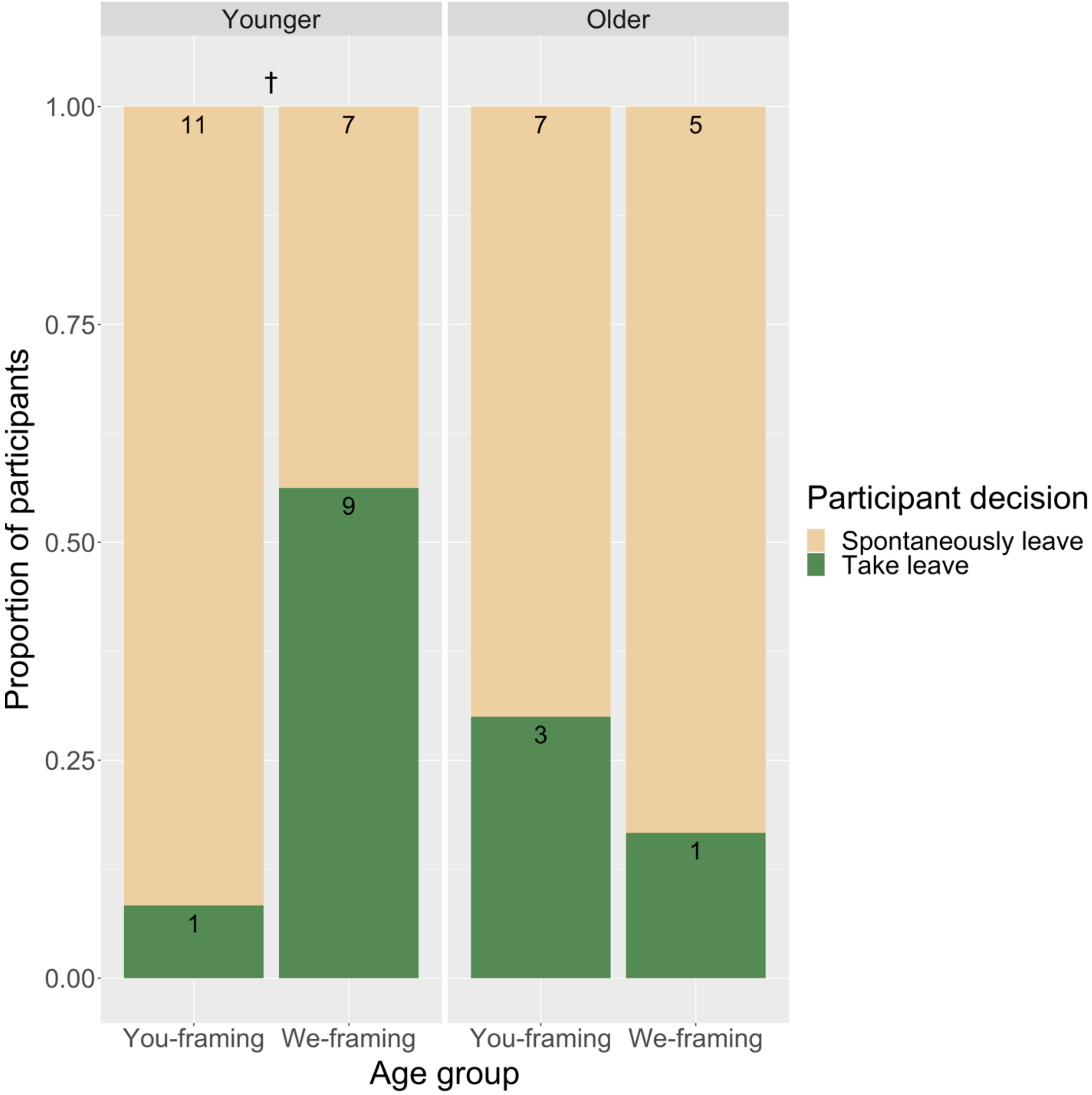


Figure 3. Proportion of participants who chose to spontaneously leave or take leave from E1 (verbally or nonverbally). Note the plot is faceted by age group. Dagger indicates that more than 95% of posterior mass was allotted to condition parameter values greater than 0 when comparing the effect of we-framing to you-framing in 3-year-olds.



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