

Toddlers Help a Peer

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Toddlers are remarkably prosocial toward adults, yet little is known about their helping behavior toward peers. In the present study with 18- and 30-month-old toddlers ($n = 192$, 48 dyads per age group), one child needed help reaching an object to continue a task that was engaging for both children. The object was within reach of the second child who helped significantly more often compared to a no-need control condition. The helper also fulfilled the peer's need when the task was engaging only for the child needing help. These findings suggest that toddlers' skills and motivations of helping do not depend on having a competent and helpful recipient, such as an adult, but rather they are much more flexible and general.

During the 2nd year of life young children help adults in a variety of ways. They readily share a valued resource with adults (Brownell, Svetlova, & Nichols, 2009; Svetlova, Nichols, & Brownell, 2010) and from as early as 12 months provide adults with helpful information through means of pointing (Liszkowski, Carpenter, Striano, & Tomasello, 2006). Children between the ages of 1 and 2 comfort adults in distress (Bischof-Köhler, 1991; Zahn-Waxler, Radke-Yarrow, Wagner, & Chapman, 1992), as well as help adults complete their instrumental goals (Warneken & Tomasello, 2007). This motivation is intrinsic (Warneken & Tomasello, 2008) and is driven by a motive to see the person in need receive help, thereby suggesting that young children have a genuine concern for others' well-being (Hepach, Vaish, & Tomasello, 2012, 2013).

However, a challenge for this notion of a general prosocial motive stems from the fact that young children's helping behavior has almost exclusively

been studied with an adult recipient. The issue is that the history of adult-child interactions is generally cooperative, given that adults share with, comfort, and instrumentally help children on a regular basis (Deynoot-Schaub & Riksen-Walraven, 2006). Adults scaffold social interactions with toddlers in ways that peers do not. This scaffolding can range from providing cues (Svetlova et al., 2010) according to the adult's need, to creating joint commitments (Warneken, Chen, & Tomasello, 2006), and to encouraging and rewarding prosocial behavior (Dahl, 2015; Waugh, Brownell, & Pollock, 2015). Therefore, adults are competent, helpful partners when it comes to fulfilling children's needs. On the other hand, and in contrast to their experience with adults, toddlers have very little experience with being helped by their peers or cooperating with their peers (Brownell, Ramani, & Zerwas, 2006). When toddlers seek access to a resource, such as an attractive toy, conflicts may arise because both children demand access to the toy at the same time (Hay, 2006; Hay & Ross, 1982), with such disputes typically requiring the intervention of an adult for resolution (Ross, Tesla, Kenyon, & Lollis, 1990; Williams, Mastergeorge, & Ontai, 2010). This raises the possibility that toddlers are not generally motivated to help others, but rather

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their prosocial behavior is restricted to individuals who are competent and helpful to them, that is, an adult partner (see also Brownell, Nichols, & Svetlova, 2005).

The relevant age range to study toddler peer helping is during and after the 2nd year of life given that a number of studies demonstrate developmental changes in children's social behavior around that age. Before 2 years of age toddlers are very poor at coordinating with peers (Brownell & Brown, 1992; Brownell & Carriger, 1990; Brownell et al., 2006; Eckerman, Davis, & Didow, 1989; Hay, 1979). For example, in one study, one child had to push a lever so that a toy was retrievable for a second child. Children could only do this reliably after their second birthdays (Brownell & Carriger, 1990). In another study children had to pull simultaneously on separate handles to play with an apparatus, and again the same age of accomplishment was found (Brownell et al., 2006). In addition, 30-month-old compared to 18-month-old toddlers needed less communicative support to provide an out-of-reach object for a recipient (Svetlova et al., 2010). With regard to cooperating with siblings, 2-year-old children's cooperative behavior is more frequent than 18-month-olds', but this is contingent on the sibling's previous cooperative behavior (Dunn & Munn, 1986). This relative incompetence with a peer partner is particularly striking given that 18-month-old toddlers readily coordinate with adult partners in similar task situations (e.g., Warneken et al., 2006).

Although observational work has shown that children convey benefits to peers most notably in the context of sharing (Bar-Tal, Raviv, & Goldberg, 1982; Eckerman, Whatley, & Kutz, 1975; Hay, Castle, Davies, Demetriou, & Stimson, 1999), children's motives in these free-play situations are not entirely clear. They could be initiating a rewarding play interaction, trying to ward off an aggressive peer, or initiating any number of other types of interactions. To determine whether children's previously documented helping behavior in play observations is indeed helping (i.e., a response to a peer's unfulfilled need), an experimental task is needed. Such an approach will also help to determine whether toddlers' instrumental helping shows a developmental trajectory either more similar to peer collaboration, emerging only after 2 years of age, or more similar to helping adults, which emerges at least 10 months earlier.

In the present study, therefore, we studied 18- and 30-month-old children who were confronted with a situation in which they had access to a toy

that a peer needed to operate a game. In one situation, the game was engaging for both children, such that helping the partner led to an entertaining result for both. In another condition that more closely paralleled previous studies with adult partners, the child needing help was engaged in the task alone. The crucial question was whether the peer who had access to the needed toy would help their partner to obtain the out-of-reach object. Importantly, we included a control condition in which children did not need the out-of-reach objects because they already had access to other similar objects.

Method

Participants

Participants were dyads of 18-month-old children ($n = 96$, 48 girls, age range = 1 year 5 months 15 days to 1 year 6 months 27 days; $M = 18$ months and 6 days, $SD = 9$ days) and 30-month-old children ($n = 96$, 48 girls, age range = 2 years 5 months 16 days to 2 years 6 months and 27 days; $M = 30$ months and 3 days, $SD = 9$ days). Each child was paired with an unfamiliar same-sex peer (48 dyads for each age group). Children were recruited from a database and parents gave informed consent before their child participated in the study. Participants were recruited from a mid-sized German city (population approximately 500,000; median household monthly income approximately 1,400€). Families visited the research institute and all children (predominately White Caucasian) received a small toy after participation.

For the 30-month-old participants, six additional children were tested but excluded due to parental interference ($n = 2$), because the child did not want to participate ($n = 3$), or due to an experimenter error ($n = 1$). For an additional 10 children of the same age group, at least one test trial had to be excluded from further analyses due to parental interference ($n = 7$), because one child did not want to participate ($n = 1$), or due to an experimenter error ($n = 2$). For the 18-month-old participants, 21 additional children were tested but excluded due to parental interference ($n = 5$), the child not being able to walk on her own without assistance ($n = 7$), not wanting to participate ($n = 4$), an experimenter error ($n = 2$), or due to equipment failure ($n = 3$). For an additional nine children of the same age group, data for at least one test trial had to be excluded due to parental interference ($n = 3$), the child not wanting to participate ($n = 4$), or due to

equipment failure ($n = 2$). In all the above cases data of one trial or both trials were excluded for the dyad. Data were collected between May 2013 and June 2015.

Materials and Design

The study room was divided with a wooden fence resulting in two roughly equally sized areas (see Figure 1). The main apparatus consisted of a tilted transparent tube that produced a sound if children threw wooden balls down the tube. To make the game additionally attractive, a rope light was wrapped around the tube (see Figure 2A). Additional materials included a wooden table with a slanted top and a transparent box that contained the wooden balls for the child during the test phase. On the higher end of the table a little wooden stick prevented the balls from rolling down (see Figure 2 B and 2C).

Dyads participated in a between-subject design and were randomly assigned to one of three experimental conditions ($n = 16$ in each): mutualistic-helping, altruistic-helping, and a no-need control condition. In addition, each child was randomly assigned to either the player or the observer role (see below). In the mutualistic-helping and the no-need conditions, the game was equally engaging for both children. In the altruistic-helping condition, the game was only engaging

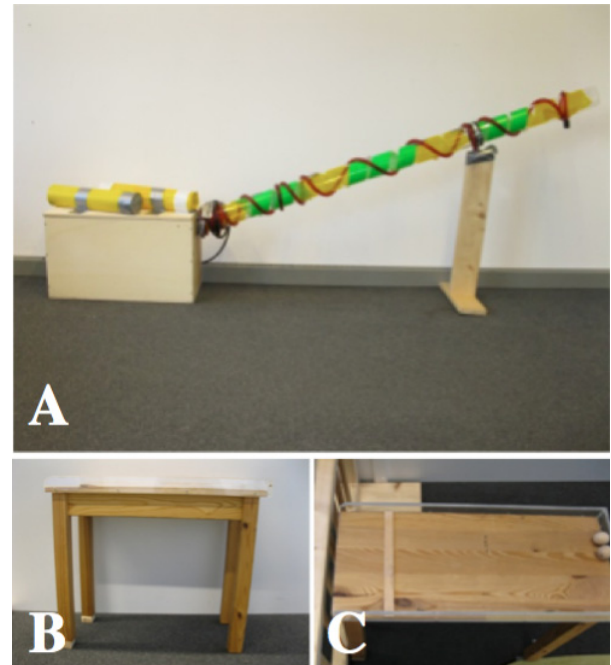


Figure 2. (A) The game apparatus used in the study (length = 145 cm, diameter 7 cm). (B and C) The table (length = 60 cm, width = 29 cm, height = 52 cm) onto which the experimenter put the balls in the experimental conditions. [Color figure can be viewed at wileyonlinelibrary.com].

for the player because a curtain covered the apparatus. The adult experimenter lifted the curtain at the beginning of the study such that the observer

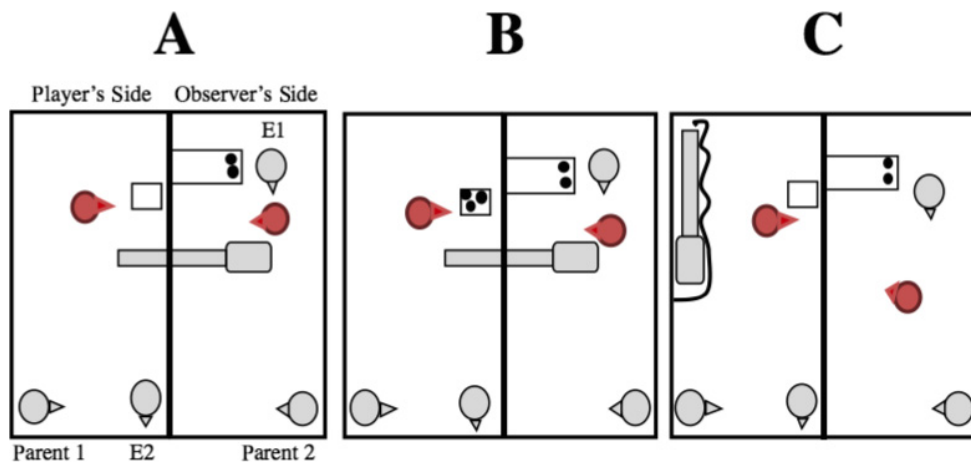


Figure 1. Experimental room setup during test trials of the mutualistic-helping condition (A), the no-need control condition (B), and the altruistic-helping condition (C). The fence in the center of the room had an approximate length of 390 cm and a height of 53 cm. The apparatus was placed in the center of the room for the no-need control (B) and mutualistic-helping (A) conditions but behind a curtain in the altruistic-helping condition (C). The wooden balls could be thrown into the tube on the player's side and the apparatus lit up and produced a sound on the observer's side. In the altruistic-helping condition, the sound of the apparatus was muffled and only the player could see the effect of placing a wooden ball into the tube. The two wooden balls were placed on the table such that they were only accessible to the observer. In the mutualistic-helping (A) and altruistic-helping (C) conditions, the box on the player's side was empty, whereas several additional wooden balls were placed in the box in the no-need control condition (B). [Color figure can be viewed at wileyonlinelibrary.com].

could briefly see the apparatus that was additionally muted to make the game less attractive for the observer. Each dyad participated in a warm-up phase, a demonstration phase, and a test phase. The test phase consisted of two identical test trials. After the second test trial, children switched sides along with their parents such that the observer child also got a chance to play the game. Parents, who sat in a chair reading a magazine, were asked to not engage with their child or to comment on the situation.

Procedure

An adult female and male experimenter carried out the study. One experimenter (E1) was responsible for interacting with the observer child, while the other experimenter (E2) interacted with the player child. During a warm-up phase in which both families were introduced to one another, the fence was not set up and the main apparatus was not visible. Once both children were comfortable, E1 set up both the fence and the main apparatus. In the altruistic-helping condition, the subsequent demonstration phase proceeded as follows: the experimenters introduced the game (involving the main apparatus) to the children. E1 placed two wooden balls on a chair (see Figure 1). The player child could access the balls and throw them into the tube. Next, two additional wooden balls were made available on the wooden table for the player. For the final run of the demonstration phase, E1 moved back to the chair and placed on it two additional balls available for the player child. In the mutualistic-helping and the no-need conditions, the demonstration phase was engaging for both children who saw the effect of the ball rolling down the shoot. In the altruistic-helping condition, the chair was on the player's side and only the player was engaged in the game. The experimenter did address the observer if they began to lose interest to ensure that they still paid attention to the game.

For the subsequent test phase, E1 started the first test trial by drawing children's attention to a new set of wooden balls. E1 moved to the wooden table and grabbed the transparent box. In the mutualistic-helping and altruistic-helping conditions the box contained two wooden balls. E1 took the balls out of the box and placed the empty box onto the player's side of the fence. Then, E1 attempted to place the balls on the table but because the experimenter began to turn away from the table, the balls "accidentally" rolled to the observer's side and out of the player's reach. In the no-need control

condition, the box was filled with several wooden balls, from which E1 took two out. E1 placed the full box on the player's side of the fence and placed the two balls on the observer's side of the table repeating exactly what E1 said in the other two conditions. In all conditions, E1 waited for the observer to face them before placing the balls on the table. The two experimenters moved away from the situation and turned their backs to the children (see Figure 1). The test trial ended after the observer provided at least one wooden ball; the player was given time to operate the apparatus. If the observer did not provide any of the out-of-reach balls, the trial ended after 60 s. In that case, the experimenter removed the balls from the table and repeated the demonstration phase. Correspondingly, the second test trial was identical to the first.

Coding and Reliability

During the test trial, the observer could help the player by either throwing a ball over the fence, putting the ball directly into the player's hand, or putting the balls in their initial position. We accounted for whether or not the player requested help from the observer (see Table 1 for coding details). We further divided the player's request into two categories: (a) reaching for the wooden balls without any other form of communicative request (reach-only) and (b) referring to the apparatus, box, or wooden balls by means of pointing or verbal expressions (communicative), for example, saying "There" in conjunction with a reach for the wooden balls. All sessions were videotaped. For the 18-month-olds, the main experimenter coded all the

Table 1
Coding Scheme for Children's Behavior During the Test Trial

Behavior category	Examples	
Helping	The observer	Throws the ball over the fence
		Puts the ball into the player's hand
		Places the ball on top of the table where the player can reach it
Requesting	The player	Reaches for the wooden balls
		Points to the balls or to the apparatus
		Verbalizes need, for example, "Ball!" or "Here!"

data and a second coder (blind to the study's hypotheses) coded a random sample of 25% of all dyads. The dependent variables of interest were helping ($\kappa = .85$), the type of help ($\kappa = 1$), requesting ($\kappa = .79$), and the type of request ($\kappa = .86$). For the 30-month-old children, the main experimenter coded a random sample of 25% of all dyads and an additional second coder (blind to the study's hypotheses) coded all the data. Similar to the 18-month-old children, the dependent variables of interest were helping ($\kappa = 1$), the type of help ($\kappa = .96$), requesting ($\kappa = .87$), and the type of request ($\kappa = .77$).

Data Analysis

In the following section, we outline the separate analyses and specify the details of each statistical model. We carried out six separate analyses to investigate both the observer's helping behavior as well as the player's requesting during each test trial. We analyzed data with generalized linear mixed models (GLMMs, binomial error distribution) in *R* (Bates, Maechler, & Bolker, 2011; R Core Team, 2015). The statistical significance of each independent factor was tested with a likelihood ratio test comparing a full model to a reduced model without the respective factor(s). In cases where there were no trial effects, the dependent measure for the post hoc comparison was whether or not the child helped on at least one test trial. Post hoc comparisons were carried out using Fisher's exact tests. To determine an effect size estimate comparable to the R^2 of linear regressions, we calculated effect sizes for each analysis by dividing the variance of the fixed factors by the sum of the variance of the fixed factors, the variance of the random factors, and the residual variance (adapted from Nakagawa & Schielzeth, 2013).

Helping

The main analysis focused on whether or not the observer provided the player with at least one of the wooden balls during a given test trial. The dependent measure was a binary coded variable (yes or no). The independent factors were condition, age, gender, and trial. In addition, the model included random intercepts for dyad and the identity (male or female) of the experimenter on players' side (Schielzeth & Forstmeier, 2009). Preliminary analyses revealed no interaction of age and condition on the observer's helping behavior.

Requesting

We investigated the frequency of the player's requests on each test trial for the mutualistic and altruistic conditions given that the player never requested in the no-need control condition. The GLMM included condition, age, gender, and trial as main effects, as well as random intercepts for both dyad and experimenter identity. The dependent measure was a binary coded variable for requesting (yes or no). Preliminary analyses revealed no interaction of age and condition on the player's requesting behavior.

Requesting (Type)

For trials on which the player made a request, we analyzed the type of the request on each test trial. The dependent measure was a binary coded variable (communicative request or not) and the independent factors as well as the random intercepts were the same as for the analysis of the frequency of requests.

Requesting and Helping

We investigated whether the player's request influenced the observer's helping through carrying out a GLMM analysis including only the mutualistic and altruistic conditions given that the player never requested in the no-need control condition. Note that this analysis took into account individual participant differences (for both requesting and helping) across the two test trials. The model included condition, gender, age, request (yes or no), and trial as main effects, as well as random intercepts for both dyad and experimenter identity. The dependent measure was whether the observer helped on a given trial. Preliminary analyses revealed no three-way or two-way interactions of age, condition, and request on the observer's helping behavior.

Type of Request and Helping

We investigated the effect of the type of the peer's request on the observer's helping behavior using a GLMM, including only the mutualistic and altruistic conditions given that the player never requested in the no-need control condition. The model included condition, gender, age, type of request (communicative or reaching only), and trial as main effects, as well as random intercepts for both dyad and experimenter identity. The

dependent measure was whether the observer helped on a given trial. Preliminary analyses revealed no three-way or two-way interactions of age, condition, and type of request on the observer's helping behavior.

Influence of Siblings and Kindergarten Attendance on Helping

In a final analysis we included as main effects the factors kindergarten or caretaker attendance (yes or no) and presence of siblings (yes or no) into the initial model (see *Helping*) regarding the observer's helping behavior. This analysis is relevant in order to investigate the degree to which children's helping is influenced by their experience with siblings and with peers in kindergarten (see also Dunn & Munn, 1986; Sarafino, 1985). Preliminary analyses did not reveal an interaction of kindergarten attendance and presence of siblings, no interaction of kindergarten attendance and condition, and no interaction of presence of siblings and condition.

Results

Helping

Children's helping behavior varied between the experimental conditions, GLMM: $\chi^2(2) = 24.38$, $p < .001$, $R^2(\text{overall model}) = .27$ (see Figure 3). There was neither an effect of trial, $\chi^2(1) = 0.04$, $p = .85$, nor of gender, $\chi^2(1) = 0.005$, $p = .95$. In

addition, the rate of children's helping did not differ between the two age groups, $\chi^2(1) = 2.35$, $p = .13$. More children helped their peer on at least one test trial in the mutualistic-helping condition (Trial 1: 17 of 32, 53%; Trial 2: 17 of 31, 55%) compared to the no-need control condition (Trial 1: 6 of 32, 19%; Trial 2: 3 of 31, 10%), Trial 1 and Trial 2: $p < .01$. Likewise, more children helped at least once in the altruistic-helping condition (Trial 1: 17 of 32, 53%; Trial 2: 17 of 31, 55%) compared to the control condition, Trial 1 and Trial 2: $p < .01$. There was no difference between the mutualistic- and altruistic-helping conditions in the number of children who helped their peer at least once, Trial 1 and Trial 2: $p = 1$. With regard to the type of helping, on the first test trial, 27 (67.5%) of 40 children placed the ball(s) into the player's hand, 2 (5%) of 40 placed the wooded ball(s) on top of the table or into the player's box, and 11 (27.5%) of 40 children reached over the fence and placed the ball(s) onto the player's side. On the second test trial, 21 (57%) of 37 children placed the ball(s) into the player's hand, 3 (8%) of 37 placed the wooded ball(s) on top of the table or into the player's box, and 13 (35%) of 37 children placed the ball(s) onto the player's side.

Requesting

The frequency of children's requesting behavior did not vary between the mutualistic and altruistic conditions, $\chi^2(1) = 0.02$, $p = .89$, $R^2(\text{overall model}) = .003$. There was neither an effect of trial,

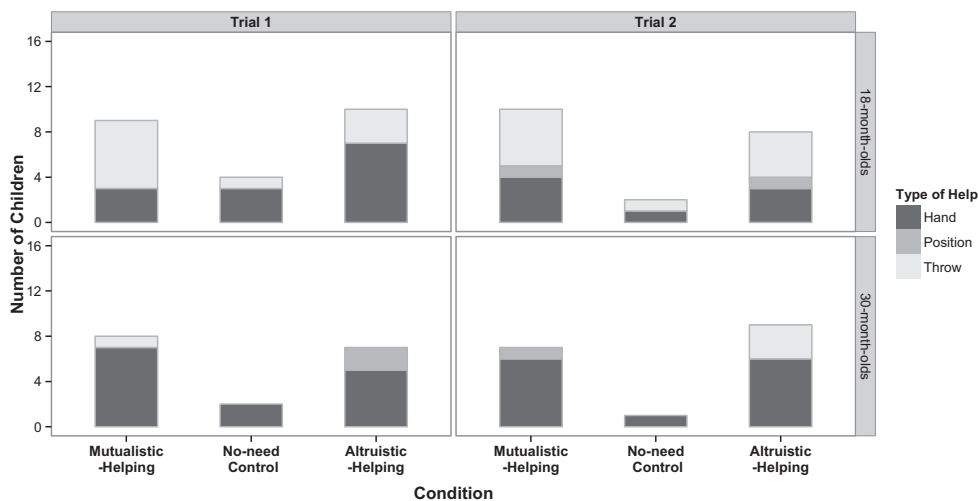


Figure 3. The number of children who helped their peer plotted separately for each age group and test trial. For further illustration and in addition to plotting the number of children who helped, we provide information regarding the type of help provided by the observer. The type of help was not a factor in the statistical analysis given that we did not have prior hypotheses regarding the way in which toddlers would help their peer.

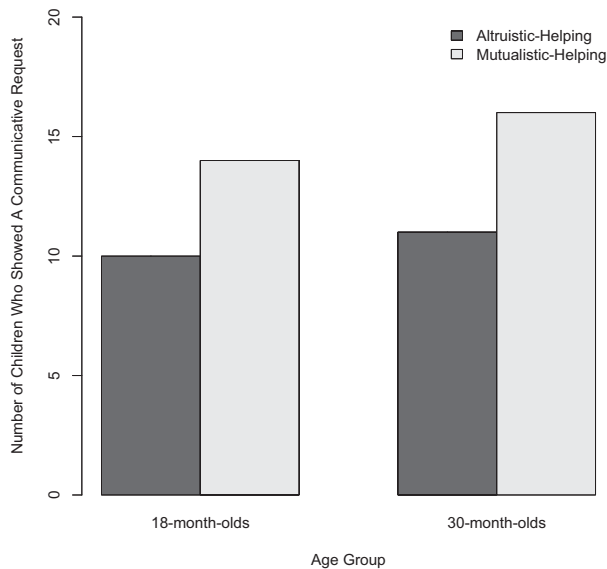


Figure 4. The effect of condition on the player's (i.e., recipient's) type of request. For additional illustration, the data are plotted separately for both age groups.

$\chi^2(1) = 0.01$, $p = .92$, nor of gender, $\chi^2(1) = 0.1$, $p = .75$, or age group, $\chi^2(1) = 0.03$, $p = .87$.

Requesting (Type)

For those trials in which the player made a request, the type of request (communicative vs. reaching-only) varied between the mutualistic-helping and altruistic-helping conditions, $\chi^2(1) = 3.88$, $p = .049$, $R^2(\text{overall model}) = .09$. Specifically, children showed more communicative requests in the mutualistic-helping (30 of 42; 71%) compared to the altruistic-helping (21 of 41; 51%) condition (see Figure 4).

Requesting and Helping

Analyses investigating the effect of requesting on helping behavior did not yield statistically significant results. There was no effect of condition, $\chi^2(1) = 0.2$, $p = .9$, age, $\chi^2(1) = 0.28$, $p = .92$, requesting, $\chi^2(1) = 0.03$, $p = .87$, gender, $\chi^2(1) = 0.21$, $p = .65$, or trial, $\chi^2(1) = 0.4$, $p = .53$, on the observer's helping behavior, $R^2(\text{overall model}) = .04$. More specifically, on the first test trial, 11 (50%) of 22 children helped if the player did not make a request, and 23 (55%) of 42 children helped after the player did make a request. Similarly, on the second test trial, 11 (52%) of 21 children helped if the player did not make a request and 24 (59%) of 41 children helped after the player did make a request.

Type of Request and Helping

Children's helping during the test trial was influenced by the type of request (communicative or not) shown by the peer, $\chi^2(1) = 5.05$, $p = .02$, $R^2(\text{overall model}) = .09$. There were no effects of condition, $\chi^2(1) = 0.0001$, $p = .99$, age, $\chi^2(1) = 0.37$, $p = .54$, gender, $\chi^2(1) = 0.01$, $p = .94$, or trial, $\chi^2(1) = 0.01$, $p = 0.91$, on the observer's helping behavior. For the subsequent analyses, and given that there was no effect of trial, we averaged the dependent variable across both trials. When the peer showed a noncommunicative request but only reached for the wooded balls, children helped more often ($M_{\text{number of trials}} = .74$, $SD = .44$) compared to when the request was communicative ($M_{\text{number of trials}} = .46$, $SD = .45$).

Influence of Siblings and Kindergarten Attendance on Helping

Children who grew up with at least one sibling at home helped their peer more often (Trial 1: 23 of 43, 53%; Trial 2: 19 of 41, 46%) than children who did not grow up with a sibling at home (Trial 1: 17 of 53, 32%; Trial 2: 18 of 52, 35%), $\chi^2(1) = 7.31$, $p = .007$. On the other hand, children who attended kindergarten helped their peer less often (Trial 1: 29 of 77, 38%; Trial 2: 27 of 76, 36%) than children who did not attend kindergarten (Trial 1: 11 of 19, 58%; Trial 2: 10 of 17, 59%), $\chi^2(1) = 7.98$, $p = .005$. Similar to the initial analysis on the observer's helping behavior, there was a statistically significant effect of condition, $\chi^2(2) = 24.53$, $p < .001$, and no effect of age ($p = .19$), gender ($p = .44$), or trial ($p = .9$).

Discussion

This study investigated whether 18- and 30-month-old children help a same-aged peer to complete an instrumental goal. When participants witnessed another child as unable to continue a task, they readily helped them by providing the necessary objects, which were only accessible to the helper. Children acted prosocially in a variety of ways, either by depositing the object where the player could reach it or by putting the object directly into the player's hand. Crucially, children helped less when no help was needed because the potential beneficiary had access to additional objects being able to continue the task on their own and was therefore not dependent on the peer's help. One

conceivable explanation for this helping behavior could be that the task was engaging and attractive for both children, such that the helper also benefited from providing the out-of-reach objects to see the task continued. However, when the situation was changed, such that the game was only visible and engaging for the player, the peer still continued to help. Together, these findings suggest that children are not only motivated to act prosocially toward their peers but that they also do so in a coordinated way when help is actually needed.

These results extend previous research findings by demonstrating that young children are not only motivated to help adults (e.g., Dunfield, Kuhlmeier, O'Connell, & Kelley, 2011; Warneken & Tomasello, 2009) but that their prosociality also extends to same-age peers. When an adult needs help, children readily help by sharing resources and information (e.g., Brownell et al., 2009; Liszkowski et al., 2006), comforting (Zahn-Waxler et al., 1992), and instrumentally helping (Rheingold, 1982; Warneken & Tomasello, 2006; Warneken & Tomasello, 2007). In such situations the adult typically expressed their need through structured cues until the child responds (e.g., Svetlova et al., 2010; see also Warneken, 2013 for examples of proactive helping in 2-year-olds). In addition, in the majority of those cases (a) children interacted with a competent and motivated adult, and (b) help was needed in situations that are structured to be familiar to children, such as everyday household tasks (e.g., Rheingold, 1982; though see Warneken & Tomasello, 2006 for the use of novel tasks). The current study suggests that children's helping is neither limited to adult partners nor does helping only occur in a structured or familiar context. In fact, in the present study, many participants proactively helped their peer and correctly identified the actual need.

This is particularly interesting given that at the age of 18 months, children do not appear to successfully collaborate with one another (Brownell & Carriger, 1990; Brownell et al., 2006; Eckerman et al., 1989; Hay, 1979). One crucial difference in comparison to previous work is that children in the present study did not have to spatially and temporally coordinate their complementary roles. For example, in the study by Brownell and Carriger (1990), one child had to wait for the peer to be in the correct position and to carry out a complementary action at the same time. This required children to monitor both their own actions as well as the behavior of their partner. On the other hand, children in the present study had to merely monitor the player's need for assistance with reduced

cognitive demands of coordination. The need could be fulfilled so long as children made one of the wooden balls available. In fact the type of help included both more coordinated (placing the ball in the peer's hand) and less coordinated behaviors (placing the ball on the peer's side of the fence).

It is important to note that although the rates of helping were similar between the mutualistic and altruistic conditions, the type of the player's requesting behavior was not. In the altruistic condition, the player more often reached for the objects, whereas in the mutualistic condition, the request was more communicative including pointing and verbalizations. Despite similar degrees of helping, children may have perceived the situation in the mutualistic condition differently viewing the mutualistic condition as a more collaborative activity in which requesting involved communicating the joint need. The fact that children in the present study showed more communicative requests in the mutualistic-helping condition may indicate that they took into account what the observer knew about the situation, thus using pointing and verbal expressions to refer to a common ground. On the other hand, in the altruistic-helping condition the apparatus was hidden from the observer's view such that there was no joint goal for the player to communicate about.

Furthermore and despite the form of the player's request varying between conditions, we did not find a contingency between requesting and the observer's helping behavior. Children helped their peer independent of whether a request was made or not. This is comparable to toddlers' difficulties to collaborate as reported in previous work (Brownell & Carriger, 1990; Brownell et al., 2006; Eckerman et al., 1989; Hay, 1979). Although children in the present study were sensitive to the peer's need, the interaction between the two children was not one in which both parties coordinated their complementary actions. In such a case one would have expected the player's requesting to be more influential on the observer's helping. Although adults use communicative cues to scaffold their activities with children and assume complementary roles, communication in peer interactions may be more ambiguous. It is conceivable that the main function of the player's request was to draw attention to his or her need. Overall, in comparison to previous work, our results suggest that 1- and 2-year-old children's difficulty to collaborate is not due to a lack in motivation to engage with others or from being insensitive to others' needs. Rather, the discrepancy between toddlers helping others instrumentally and failing

to collaborate may be rooted in the more demanding nature of collaborative tasks that require flexible coordination. The crucial addition from the present study is the altruistic-helping condition, which shows that children help a peer even when they themselves do not immediately benefit from helping.

Our findings are also consistent with previous theories on the development of prosocial behavior in toddlers. The fact that children help each other instrumentally does not contradict findings that children are competitive and sometimes aggressive toward their peers. It is often in object-centered activities where a valued toy has to be shared such that conflicts between toddlers and their peers may arise. However, this is not because toddlers are indifferent toward peers but rather the conflicts stem from an inability to communicate and negotiate in taking turns (Eckerman & Peterman, 2001; Hay & Ross, 1982). One explanation for why children in the present study helped their peer could be that helping was not tied to an immediate cost. The observing child could not herself or himself play with the wooden balls. The motivation to provide instrumental help may be different from sharing a more valued resource, including access to a toy (e.g., Bar-Tal et al., 1982; Eckerman et al., 1975; Hay, 2006; Hay & Ross, 1982). It would therefore be an interesting avenue for future research to observe and compare children's instrumental helping to their sharing behavior in free-play conditions. A similar direction for future studies is to systematically vary the cost associated with helping using a similar experimental design as the one used in the present study. Indeed, costly and noncostly helping among peers may follow different developmental trajectories (see also Dunfield et al., 2011).

We did not find support for previous findings reporting a decline in toddlers' helping behavior during the 2nd year of life although the empirical evidence is mixed (Eckerman et al., 1975; Hay, Caplan, Castle, & Stimson, 1991). In the present studies, across all experimental conditions both 30-month-old and 18-month-old children helped their partner at equal rates. Previous work had found that although children's motivation to engage with peers increases over the 2nd year of life (Eckerman et al., 1975), toddlers' motivation to help after a request but not their spontaneous helping, declines during a similar age period (Hay et al., 1991). However, in the present study, we found children's helping behavior to systematically vary neither between situations where the peer made a request (elicited helping) and did not make a request

(spontaneous helping) nor to be influenced by age (or an interaction of age and request). At the same time, the present study was not designed to specifically test a contingency between requesting and helping given that the request was not experimentally manipulated. It is an interesting and relevant question for future research to investigate whether the underlying motivation to help both between conditions (mutualistic and altruistic) and across ages is different. Although the main aim of the present study was to investigate whether toddlers help to specifically fulfill their peer's need, a relevant task for future research is to more systematically investigate the individual differences, for example, the influence of executive functions, on children's coordinated prosocial behavior toward peers (Miller & Marcovitch, 2015).

A further relevant and related issue concerning individual differences is the influence of peer experience on toddlers' prosocial behavior. In the present study, we found an effect of condition when controlling for peer experience and whether a child grew up with a sibling. We did not find a cumulative effect of both growing up with a sibling and attending kindergarten. In fact the influence of experience with peers was more nuanced. Children who grew up with a sibling showed more prosocial behavior across conditions. This parallels previous work that found a positive association of having a sibling and helping (Dunn & Munn, 1986). Growing up with siblings may facilitate children's own prosocial behavior because siblings, especially older ones, provide help on a regular basis (see also Lamb, 1978). On the other hand, children who attended kindergarten showed overall less helping behavior than those who did not. Children at the age of 1 and 2 years will have only recently been introduced to kindergarten, and interactions among stranger peers are not exclusively prosocial (Sarafino, 1985). However, more work is needed to systematically investigate the influence of significant social context variables (see also Howes, 1987; Howes & Rubenstein, 1981). For example, is children's behavior in free-play conditions related to their helping in experimentally controlled studies? In addition, including both need and no-need conditions may be fruitful for procedures aimed at fostering and promoting prosocial behavior among peer toddlers.

In summary, when 18- and 30-month-old toddlers are confronted with a situation in which a peer cannot continue a task, they help either with or without a request from the peer in ways that appropriately fulfill the need, even when the task

itself is not engaging for the helper. This form of prosocial peer behavior emerges before children are able to successfully coordinate collaborative activities (e.g., Brownell & Carriger, 1990). The prosocial motive to help same-age conspecifics may be foundational to the later emerging and more complex forms of human prosociality and cooperation.

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