Children expect emotional consolation to occur in close relationships

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Abstract

Do children see emotional consolation during times of hardship as a cue for close relationships? In this study, 6- to 8-year-old children in the U.S. ($N = 62$) were presented with vignettes in which a protagonist experiences a hardship. The protagonist then tells one of two side characters (i.e., their 'friend') that they either felt sad or okay about the situation, and the character either hugs or does not hug the protagonist. Children inferred that side characters who consoled when the protagonist felt sad were (i) better friends with the protagonist, (ii) more likely to be shared the protagonist's secret, and (iii) more likely to be reciprocated emotional support by the protagonist in the future. Together, these findings suggest that children see consolation during hardship as a cue for social affiliation and may use emotional support to differentiate among positive social relationships.

Keywords: development; social cognition; social relationships

Introduction

In modern day United States culture, when individuals get married, they often exchange wedding vows that include promises to stand by each other in sickness and health. This expectation of being there for someone, 'through thick and thin,' is not limited to romantic partners — most close relationships include this expectation. For example, close friends typically not only celebrate each other's accomplishments but also offer one another solace or assistance in times of hardship, which is essential to maintaining the relationship's closeness (Clark & Reis, 1988; Furman & Bierman, 1983, 1984; Reisman & Shorr, 1978). This dynamic differs from interactions with non-close relations during periods of struggle. For example, people may feel uncomfortable being consoled by their boss or an acquaintance. In fact, sociologists often measure the strength of a tie by asking, "To what extent do you rely on [person's name] for emotional support?" (Krackhardt, 2003; though see Small, 2017 for discussion).

Thus, a hallmark of close relationships, at least in some contexts, is emotional support during difficult times — this may be distinct from instrumental forms of helping, which occur in many different types of relationships. At least in the U.S., most children regularly meet peers in their everyday lives, giving them numerous opportunities to form new friendships. While the children in our sample have had ample opportunities to do so, it is an open question whether many aspects of relationships are understood in similar ways by children as by adults, or if they develop more slowly into adolescence. Here, we investigate whether children's intuitive theory of social relationships includes the intuition that close social partners should provide emotional support to one another during times of hardship.

Children's Intuitions About Social Relationships

There is a growing body of literature suggesting that children have intuitions about social relationships. For example, children distinguish between affiliative and competitive relationships (Powell & Spelke, 2018; Smith-Flores, Herrera-Guevara, & Powell, 2023). Additionally, children as young as 3 years old use cues such as proximity, loyalty, secret-sharing, and similarity to infer friendship between individuals (Afshordi & Liberman, 2021; Liberman & Shaw, 2018, 2019). By the age of 6, children expect people in close relationships to better know one another's mental states (goals, desires, and emotions) (Woo, Yu, & Thomas, 2024). Even infants predict affiliation after observing others' prosocial interactions, such as imitation and close physical contact (Powell & Spelke, 2018; Smith-Flores et al., 2023; Thomas et al., 2022). Taken together, this work suggests that humans have an intuitive theory of social relationships that allows them to understand that people's interactions reveal information about their relationships (Powell, 2022; Thomas, in press).

However, current research on whether children always expect more prosocial behavior between affiliates is mixed. For example, adults and older children (around the age of 7 years) in some, but not all, cultures judge others as being more obligated to help family members compared to strangers, but younger children do not have this intuition (Marshall et al., 2022; McManus, Kleiman-Weiner, & Young, 2020). Additionally, while children expect preferential resource sharing to occur more often with family and friends compared to strangers (Liberman & Shaw, 2017; Olson & Spelke, 2008), they do not always have different expectations for prosocial behavior between these positive relationships. For example, children expect sharing resources and helping to occur equally often between siblings and friends (Spokes & Spelke, 2016; Thomas et al., 2022). Thus, from the current literature, it is unclear whether and how children differentiate among affiliative relationships (i.e., 'friend' versus 'best friend').

However, many of these studies used instrumental helping and resource sharing, which are actions that may occur in many positive social relationships. In contrast, addressing emotional needs may be more specific to strong or intimate relationships. Previous research conducted in the U.S. has established that young humans form expectations about responses to distress based on cues of close positive

In D. Barner, N.R. Bramley, A. Ruggeri and C.M. Walker (Eds.), *Proceedings of the 47th Annual Conference of the Cognitive Science Society*

relationships. In these studies, a cue that is associated specifically with close or intimate relationships is contrasted with other prosocial actions. For example, infants expect that people who engage in physical intimacy (saliva-sharing), as opposed to ball-passing, will respond to one another's distress (Thomas et al., 2022). Likewise, infants expect that people who imitate, as opposed to those who vocally respond but do not imitate, will respond to one another's distress (Kudrnova, Spelke, & Thomas, 2024). Finally, older children expect agents who move in synchrony while touching, in contrast to those who move in synchrony without touching, will respond to one another's distress (Woo et al., 2024). Therefore, responses to emotional distress may be a particularly salient cue in children's inferences about close social relationships.

In the current study, we ask about the reverse intuition: Given that someone responds to emotional distress, do children infer that they are closer? As in these previous studies, we contrast it to another prosocial action: responding when there is no emotional distress. Therefore, we additionally ask whether children's reasoning depends on the level of need of the person being consoled. In the United States, among African Americans, European Americans, and Asian Americans, adults expect emotional support in close relationships (Burleson, 2003). We seek to investigate whether U.S. American 6- to 8-year-old children (i) use emotional consolation during hardship to infer greater social closeness and (ii) reason that people will reciprocate emotional support to those who have previously consoled them. To do so, we presented participants with vignettes about a protagonist who told two side characters about two hardships each (e.g., dropping a snack on the ground, spilling chocolate milk on a shirt). For each side character, one of the hardships was important to the protagonist (i.e., 'they really cared about [the hardship], so they feel sad'), and one of the hardships was something that the protagonist did not care about (i.e., 'they didn't really care about [the hardship], so they feel okay'). Both characters responded to one of the protagonist's hardships by stopping their task and hugging the protagonist, and they responded to the other hardship by continuing their task. We used hugging because hugging is a common consoling method in the United States, even if there may be cross-cultural differences in consolation and helping norms (Miller, 1994; Miller, Goyal, & Wice, 2017). The two characters differed in whether they responded to the hardship that the protagonist cared about or the one the protagonist did not care about. Therefore, the level of responsiveness, cost, and action was the same across the two characters, and what differed was whether they responded during a time of emotional hardship.

Methods

Hypotheses, methods, and data analyses were preregistered on the Open Science Framework. The preregistration, stimuli, data, and code are located at: https://osf.io/n5mks/.

Participants

Sixty-two 6- to 8-year-old children from the United States (mean = 7.43 years, range = 6.09 to 8.93 years, 37 girls and 24 boys) were tested online through Zoom meetings with an experimenter. Participants were recruited through a lab database and social media advertisements, and families were compensated $5 USD for their time. All 62 participants completed demographic questionnaires. Approximately 60% of participants were White/Caucasian, 19% were Asian, 2% were Hispanic/Latine, 1% was Middle Eastern/Northern African, and 18% were multiracial. The highest level of education completed by any one of the participants' caregivers was approximately 16% bachelor's degree, 50% master's degree, 32% doctoral or professional degree, and 2% did not report.

We had predetermined a sample size of 56 participants, based on relevant prior research that tested children from a similarly wide age range (Woo et al., 2024). More families signed up than anticipated, so we tested 62 participants in total. Following our preregistered exclusion criteria, 57 children completed both testing blocks, four children had partial data (i.e., only one testing block), and one child was fully excluded due to internet connection issues. Prior to starting the study, consent from the child's caregiver and verbal assent from the child were obtained.

Procedure

The procedure consisted of a warmup phase and a test phase with two blocks. In the warmup, we presented participants with a 4-point thumbs scale representing 1 = definitely no, 2 = maybe no, 3 = maybe yes, and 4 = definitely yes using thumbs of different sizes. Participants answered two warmup questions designed to help them practice using both sides of the scale.

In each block of the test phase (see Figure 1), the experimenter first introduced participants to three characters: one protagonist (in the middle) and two of the protagonist's 'friends' (side characters). There were two total protagonists (one in each block) and four total side characters (two in each block), each with unique colors and a different gender-neutral name. The pronouns used to refer to the characters were gender-matched to the participant.

Next, the experimenter presented four vignettes depicting a protagonist telling one of two friends about a hardship (Fig. 1A). In each vignette, the protagonist explicitly revealed a low need (doesn't care and feels okay) or high need (really cares and feels sad) for consolation to one of the side characters. That side character then either paused their activity to hug the protagonist or ignored and continued their activity after listening. Within each block, each side character was featured in two consecutive vignettes. One side character hugged the protagonist in the high-need vignette and ignored the protagonist in the low-need vignette (high-need consoler). The other side character hugged the protagonist in the low-need vignette and ignored the protagonist in the high-need vignette (low-need consoler).

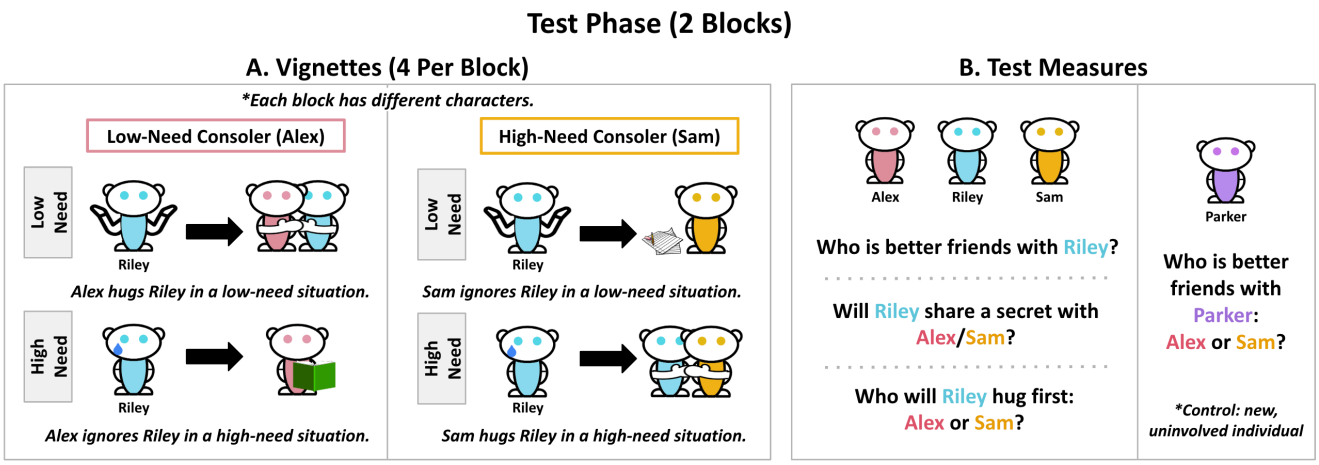

Figure 1: A schematic depicting one block from the test phase of the experiment, which consisted of (A) four vignettes each describing a protagonist telling a friend about a hardship, who either hugs or ignores the protagonist, and (B) a series of test questions about the characters. The second block involved different characters.

After presenting each vignette, the experimenter asked the participants whether the protagonist had a low need or high need for consolation as an attention check. Additionally, after presenting the two vignettes for each side character, the experimenter asked the participant whether the side character hugged the protagonist when the protagonist had a low need or high need for consolation. These questions served as final attention checks (two in each block). If participants answered a final attention check incorrectly on their first try, the experimenter repeated the two vignettes for that side character before asking again. If participants answered a final attention check incorrectly on their second try, their responses for that block were excluded from the dataset.

After each block of vignettes, participants answered a series of questions (Fig. 1B). First, participants answered a forced-choice question about which side character is better friends with the protagonist (Liberman & Shaw, 2019). Next, children rated how likely it is that the protagonist will share a secret with that character on the 4-point thumbs scale from 1 = definitely no to 4 = definitely yes (Liberman & Shaw, 2018). Then, participants predicted the protagonist's responses toward the two side characters in one low-need situation and one high-need situation. In these two response-prediction situations, the side characters simultaneously explicitly revealed a low need (doesn't care and feels okay) or high need (really cares and feels sad) for consolation to the protagonist. In each situation, participants answered a forced-choice question about which side character the protagonist would hug first. Lastly, as a control question, the experimenter introduced a brand new character with no additional information and asked participants to choose which side character is better friends with this new character.

Counterbalancing

Across both blocks, we counterbalanced the side of the side characters (left or right), the protagonist's need in the four vignettes (either starting with low-need: doesn't care and feels okay or starting with high need: really cares and feels sad), and the outcome of the first vignette (hugging the protagonist or ignoring the protagonist). There were eight versions of the stimuli, and participants were randomly assigned to a version.

Results

All analyses, unless otherwise noted, were preregistered. For all measures below, we first ran exploratory models with an additional fixed effect of gender. There were no gender effects in any of the measures, so we did not include them in the final models. We also preregistered exploratory age effects for all measures below. They were exploratory because we did not have specific hypotheses about why the effects may change with age. To examine age effects, we first ran the same models with an additional fixed effect of age (continuous). Next, we ran additional models with an interaction of question type and age (continuous).

Friendship Judgments

First, we examined participants' forced-choice responses for which side character was better friends with the protagonist (test) and the new character (control). We first conducted a preregistered binomial logistic mixed-effects model. The dependent variable was whether participants chose the high-need consoler as the better friend, question type (test versus control) was a fixed effect, and participant ID was a random effect. Because the frequentist model returned a singularity warning, we also ran an exploratory Bayesian binomial logistic mixed-effects model with default priors (Gelman & Hill, 2006; McElreath, 2015). For both models, the question type predicted children's responses (Fig. 2B top): Children were significantly more likely to choose the high-need consoler as the better friend in the test questions compared to the control questions (β = -1.54, SE = 0.28, z = -5.48, p <

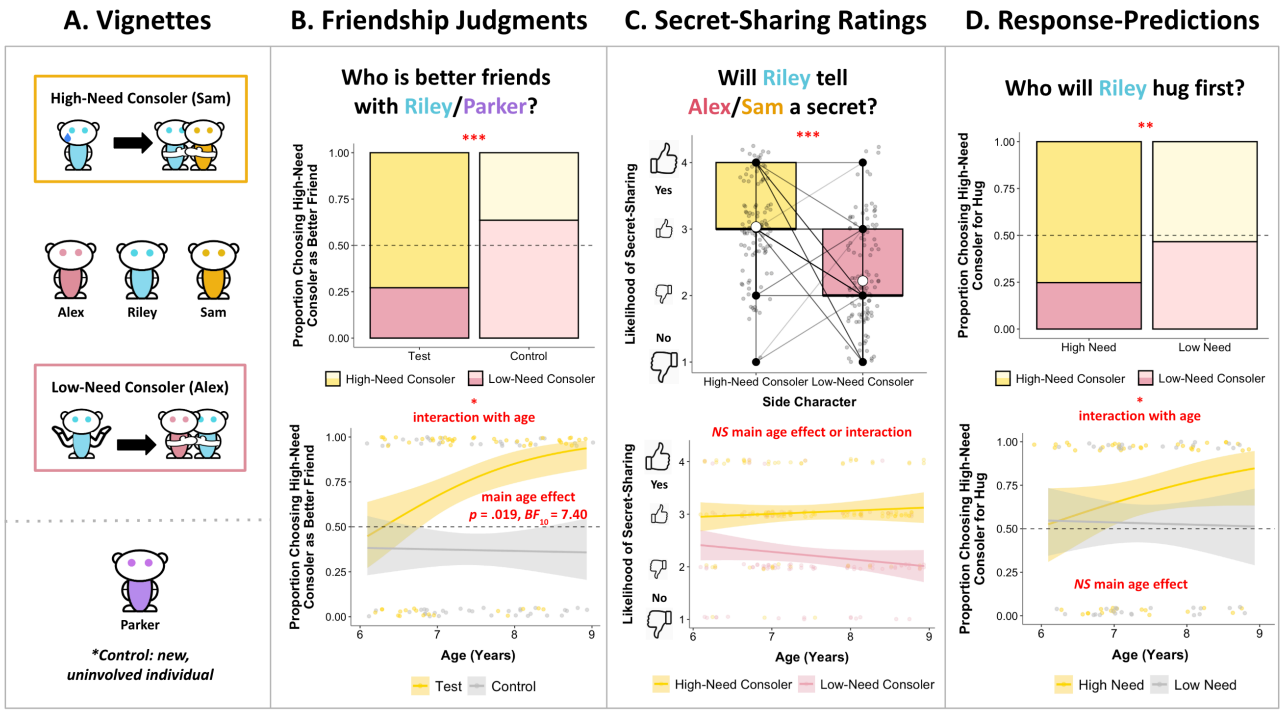

Figure 2: (A) Example vignettes from one block of the experiment, and children's responses across both blocks for (B) friendship judgments, (C) secret-sharing ratings, and (D) response-prediction judgments. A single asterisk (*) indicates $p <$ .05, <1% in the region of practical equivalence (ROPE), and that the Bayes Factor (BF_{10}) exceeded 10; two asterisks (**) indicates $p <$ .001, 0% in ROPE, and that BF_{10} exceeded 100; and three asterisks (***) indicates $p <$.001, 0% in ROPE, and that BF_{10} exceeded 1000. For the secret-sharing plot: White circles represent means, horizontal black lines within boxes represent medians, boxes represent interquartile ranges, and both grey dots and pairs of connected dots between boxes represent data from individual participants. For the plots with age (continuous): Colored circles represent individual data points, thick colored lines represent lines of best fit to the data, and the bands around each line represent the 95% confidence interval of the line. The second block involved different characters.

.001; posterior median (*PM*) = -1.59, 95% CI [-2.16, -1.03], 0% in region of practical equivalence (ROPE), Bayes Factor (BF_{10}) > 1000).

Next, to examine whether participants' responses differed from chance, we ran preregistered binomial logistic mixed-effects models with the same dependent variable and random effect but with the intercept (~ 1) as the fixed effect, as well as a Bayesian model with default priors. The frequentist and Bayesian models yielded slightly different results, with marginal evidence in the frequentist model and strong evidence in the Bayesian model. For the test questions, we found mixed evidence that children chose the high-need consoler as the better friend (on 86/122 trials, children chose the high-need consoler; β = 2.49, *SE* = 1.57, z = 1.58, p = .114; *PM* = 1.86, 95% CI [0.93, 3.32], 0% in ROPE). In the control questions, children chose the high-need consoler as the better friend significantly lower than chance (43/122 trials; β = -0.63, *SE* = 0.24, z = -2.61, p = .009; *PM* = -0.68, 95% CI [-1.35, -0.19], 0% in ROPE).

Finally, to examine age effects, we first ran the same models with an additional fixed effect of age (continuous). There was mixed evidence for a main effect of age: Older participants were more likely to choose the high-need consoler as the better friend compared to younger participants (β = 0.41, *SE* = 0.18, z = 2.34, p = .019; *PM* = 0.42, 95% CI [0.06, 0.79], 7.13% in ROPE, BF_{10} = 7.40). Next, we ran additional models with an interaction of question type and age (continuous). There was an interaction of question type and age: With age, participants were more likely to choose the high-need consoler as the better friend in the test questions (β = -1.08, *SE* = 0.39, z = -2.79, p = .005; *PM* = -1.13, 95% CI [-1.97, -0.38], 0% in ROPE, BF_{10} = 79.28) (Fig. 2B bottom).

Secret-Sharing Ratings

Next, we examined participants' ratings of how likely the protagonist was to share a secret with each side character. We conducted a preregistered cumulative probit mixed-effects model, which is appropriate for ordinal data. The dependent variable was the likelihood rating, target (low-need consoler vs. high-need consoler) was a fixed effect, and participant ID was a random effect. We also ran an exploratory Bayesian cumulative probit mixed-effects model with default priors. Children rated the protagonist as more likely to share a secret

with the high-need consoler (mean = 3.03, median = 3) compared to the low-need consoler (mean = 2.22, median = 2) (β = -1.12, SE = 0.16, z = -7.11, p < .001; PM = -1.13, 95% CI [-1.44, -0.84], 0% in ROPE, BF_{10} > 1000) (Fig. 2C top).

To examine age effects, we first ran the same models with an additional fixed effect of age (continuous). There was no main effect of age: Older participants' secret-sharing ratings for the high-need consoler did not differ from younger participants (β = -0.06, SE = 0.09, z = -0.57, p = .57; PM = -0.06, 95% CI [-0.26, 0.15], 62.26% in ROPE, BF_{10} = 0.29). Next, we ran additional models with an interaction of target and age (continuous). There was no interaction of target and age (β = -0.26, SE = 0.17, z = -1.51, p = .131; PM = -0.26, 95% CI [-0.59, 0.06], 15.55% in ROPE, BF_{10} = 1.35) (Fig. 2C bottom).

Response-Prediction Judgments

Finally, we examined participants' forced-choice responses for which side character the protagonist would hug first when both side characters either had a low need or high need for comfort. We first tested for order effects within each block for the response-prediction questions (low-need or high-need first): There was no evidence of order effects for Block 1 (p = .347) nor Block 2 (p = .893), so we used data from all four response-prediction questions in our analyses.

First, we ran a binomial logistic mixed-effects model. The dependent variable was whether participants chose the high-need consoler when asked who the protagonist would hug first, and the fixed effect was situation type (i.e., low-need versus high-need), and participant ID was a random effect. Again, the frequentist model returned a singularity warning, so we also ran a Bayesian model with default priors (Gelman & Hill, 2006; McElreath, 2015). For both models, the situation type predicted children's responses (Fig. 2D top): Children were significantly more likely to choose the high-need consoler in the high-need situations compared to the low-need situations (β = -0.97, SE = 0.28, z = -3.45, p < .001; PM = -1.01, 95% CI [-1.57, -0.47], 0% in ROPE, BF_{10} > 100).

Next, to examine whether participants' responses differed from chance for each situation type, we then ran preregistered logistic mixed-effects models with a binomial family, with the same dependent variable and random effect but with the intercept (~ 1) as the fixed effect. In the low-need situations, children were at chance for which side character the protagonist would hug first (on 63/122 trials, children chose the high-need consoler; β = 0.18, SE = 0.27, z = 0.68, p = .498; PM = 0.21, 95% CI [-0.42, 0.95], 37.95% in ROPE). In the high-need situations, children chose the high-need consoler more often (88/122 trials; β = 1.44, SE = 0.41, z = 3.54, p < .001; PM = 1.46, 95% CI [0.84, 2.57], 0% in ROPE).

Finally, to examine age effects, we first ran the same models with an additional fixed effect of age (continuous). There was no main effect of age: Older participants were not more likely to choose the high-need consoler than younger participants (β = 0.26, SE = 0.17, z = 1.53, p = .125; PM = 0.28, 95% CI 95% CI [-0.09, 0.64], 30.00% in ROPE, BF_{10} = 1.50). Next, we ran additional models with an interaction of situation type and age (continuous). There was an interaction of situation type and age: With age, participants were more likely to choose the high-need consoler in the high-need situations (β = -0.84, SE = 0.37, z = -2.28, p = .023; PM = -0.88, 95% CI [-1.66, -0.15], 0.42% in ROPE, BF_{10} = 16.03) (Fig. 2D bottom).

Comparing Across Measures

As an exploratory analysis, we also examined whether children's responses in each measure (better friend judgments, secret-sharing ratings, response-prediction judgments; excluding control and low-need trials) were correlated with one another using Spearman correlation tests for paired samples, which are appropriate for ordinal variables. There was a moderate positive correlation between better friend judgments and high-need response-predictions: Participants who chose the high-need consoler as the better friend were more likely to choose the high-need consoler in the high-need response-predictions (ρ = 0.53, p < .001). There was also a moderate positive correlation between better friend judgments and secret-sharing ratings for the high-need consoler: Participants who chose the high-need consoler as the better friend were more likely to say that the protagonist would share a secret with the high-need consoler (ρ = 0.42, p < .001). Additionally, there was a weak positive correlation between secret-sharing ratings for the high-need consoler and high-need response-predictions: Participants who said the protagonist was more likely to share a secret with the high-need consoler were more likely to choose the high-need consoler in the high-need response-predictions (ρ = 0.26, p < .05). Please see our OSF page for the full supplemental analyses.

Discussion

In this experiment, 6- to 8-year-old children used patterns of emotional consolation to infer social closeness. Specifically, children thought that a character who consoled a protagonist in a high-need and emotionally distressing situation was better friends with the protagonist than a character who consoled in a low-need non-emotional situation. Children also believed the protagonist would be more likely to share a secret with the high-need consoler, compared to the low-need consoler. Additionally, children seemed to be making an inference about relationships, as opposed to the inference that people who respond to high-need situations are generally better friends: Children did not say that the high-need consoler was better friends with a new character who was not involved in the initial interactions. Moreover, children expected the consoling to be mutual: Children predicted that the protagonist would hug the high-need consoler before the low-need consoler, but only if both side characters had a high need for comfort. When both side characters had a low need for comfort, children chose both characters equally often.

Importantly, these findings cannot be explained by a positive evaluation of either hugging or altruism. In each story, both side characters performed the same two actions: One action involved putting aside their personal goals to

console a protagonist, and the other action involved prioritizing their own goals and ignoring the protagonist. The only difference was that one character ignored the protagonist when they cared about the situation and felt sad, while the other character responded to the protagonist when they cared about the situation and felt sad. Thus, children intuited that people who console one another in times of emotional difficulty are better friends. Additionally, we found no gender effects across our measures. This suggests that these intuitions may not be socialized, but instead may be learned through first-hand experience or are a part of early conceptions of intimacy. This experiment therefore adds to a growing body of literature suggesting that children have an intuitive theory of social relationships that goes beyond merely differentiating between positive and negative relationships or recognizing prosocial actions. Part of children's intuitive theory of relationships seems to be that emotional support is part of close friendships.

There were some age-related differences for children's friendship and response-prediction judgments: We did not find evidence that the youngest children in our sample inferred that the high-need consoler was better friends with the protagonist, nor evidence that they predicted that the protagonist would hug the high-need consoler before the low-need consoler in times of high need. In some ways then, these findings are consistent with past work suggesting that younger children may not consider social relationships when reasoning about obligation or evaluating helpful actions (Marshall, Wynn, & Bloom, 2020; Marshall et al., 2022). However, the youngest children did think that the protagonist would be more likely to tell the high-need consoler a secret than the low-need consoler, suggesting that they did distinguish between the two characters. It is possible that younger participants struggled due to task demands. In our task, children had to remember the difference between two characters who did the same actions in only subtly different situations. Therefore, they may succeed in a simpler task that requires less working memory. Another possibility is that rating the likelihood of secret-sharing may be a more straightforward intuition for younger participants, whereas making friendship judgments and predictions about future behavior may involve more complex reasoning.

Some questions remain regarding how children understand consolation within close relationships. First, if children have an intuitive theory of social relationships, then they should also make the reverse inference: Given that two characters are close social partners, do children infer that the characters should provide emotional support to one another during times of hardship? Second, when do these intuitions appear, and how do they change over development? Younger children did not consistently infer social closeness from emotional support across the measures. Future research should investigate whether younger children and infants reason that consolation during times of hardship is more likely to occur in close relationships, which may be an easier inference to make.

Third, when presented with a new character and no additional information, children were not at chance but rather rated the low-need consoler as better friends with this new character. Children may have answered this way via a process of elimination, where the high-need consoler can only have one best friend. Current work in our lab is investigating whether children consider close social relationships as more exclusive than other positive social relationships. Moreover, this experiment only focused on emotional support, but there are other ways in which people help their social partners during times of hardship. Follow-up studies could investigate if children think that instrumental help compared to emotional support is a better indicator of social closeness.

Finally, participants in this study came largely from a non-representative sample of children. Concepts of friendship, especially among children, may differ in cultural contexts with different social network structures or may vary with variations in formal schooling and socioeconomic status. For example, in some cultures, such as China, India, and Iran, children may be socialized to believe that disclosing negative emotions may be seen as disrupting group harmony (Burleson, 2003; Friedlmeier, Corapci, & Cole, 2011). In these contexts, it is possible that children would perceive expressing emotional distress as socially inappropriate or believe there are better solutions to hugging (e.g., verbal reassurance, instrumental help), which could lead to different intuitions about the role of emotional consolation in social relationships. Testing children from more varied socioeconomic and cultural backgrounds, including in low-income/high-risk environments and non-U.S. American cultures, could help us understand if these effects generalize and identify situations in which they do not.

In sum, 6- to 8-year-old children reason that characters who provide emotional support during times of hardship are better friends and more likely to share secrets with one another. They can also use cues about need for comfort and consolation to predict who characters will reciprocate emotional support to in the future. This experiment builds on a growing body of literature about how children reason about social relationships and social intimacy within friendships.

Acknowledgments

We thank the families who participated in this study, Denisse López Flores for research assistance, members of the Thomas Lab for helpful feedback and discussions, and CogSci reviewers for their valuable insights.

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