



## Review

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### Author for correspondence:


Harriet Over

e-mail: [harriet.over@york.ac.uk](mailto:harriet.over@york.ac.uk)

# The origins of belonging: social motivation in infants and young children

Harriet Over

Department of Psychology, University of York, York YO10 5DD, UK

 HO, 0000-0001-9461-043X

Our reliance on our group members has exerted a profound influence over our motivation: successful group functioning requires that we are motivated to interact, and engage, with those around us. In other words, we need to belong. In this article, I explore the developmental origins of our need to belong. I discuss existing evidence that, from early in development, children seek to affiliate with others and to form long-lasting bonds with their group members. Furthermore, when children are deprived of a sense of belonging, it has negative consequences for their well-being. This focus on social motivation enables us to examine why and in what circumstances children engage in particular behaviours. It thus provides an important complement to research on social cognition. In doing so, it opens up important questions for future research and provides a much-needed bridge between developmental and social psychology.

## 1. Introduction

Humans are deeply dependent on their group members. Only through copying their skills and practices are we able to learn how to survive in diverse, and sometimes even hostile environments [1,2]. Only through cooperating with them are we able to gain access to food, shelter and protection from attack [3]. Children are born into these social groups. From early in development, they interact not only with their caregivers, but with their peers and other adults [4].

It is clear that our reliance on our group members has exerted a powerful influence over our cognitive abilities. We have sophisticated skills for understanding the mental states of those around us [5,6], engaging in joint action with our social partners [7] and learning from their behaviour [8,9]. Experimental psychologists have demonstrated that many of these skills appear early in development [10,11] and that their successful performance is essential to children's functioning.

Our reliance on our group members has also exerted a profound influence over our motivation. Successful group functioning requires that we are motivated to interact, and engage, with those around us. It follows that, in order to understand children's social behaviour, it is essential to look at both social cognition and social motivation [12,13]. Social motivation, however, is considerably less often the focus of experimental research with young children than is social cognition.

A focus on social motivation enables us to ask a different, and complementary set of questions about children's development. For example, to understand theory of mind, we must not only consider when in development children are first able to understand others' intentions, desires and beliefs, and how they are able to do so [5,10,14], but why, and in what circumstances children are motivated to infer the mental states of others [12]. To understand imitation, we must do more than investigate how this complex skill is acquired [15,16] and consider why children choose to imitate [17–19]. To understand group membership, we must look beyond children's ability to categorize the social world [20–23] and consider children's desire to belong to different social groups [24,25].

Children's social behaviour is, of course, influenced by multiple motivations. Here, I concentrate on one particular motivation: the need to belong. The concept

of a need to belong has a long history in social psychology, but was most clearly articulated by Baumeister & Leary [26]. Focusing on the literature with adults, they argued that humans seek to engage in positive interactions with others within the context of long-lasting relationships. It is sometimes described as a 'core social motive' and is thought to underlie a wide variety of social behaviour [27]. The concept of the need to belong has been hugely influential within social psychology, motivating a great deal of theoretical and empirical research with adult participants (e.g. [27–31]), and has provided an interpretative framework through which to understand a great deal of social behaviour. In doing so, it has brought together a plethora of seemingly disparate findings within social psychology. Although Baumeister & Leary [26] speculated that the need to belong was innately specified, they discussed very little research on its developmental and evolutionary origins.

Below, I outline my argument that understanding the need to belong is critical to understanding young children's social behaviour. In doing so, I seek to build much-needed bridges between experimental social and developmental psychology [32]. I discuss evidence that young children seek to form and maintain bonds with their group members and that a lack of bonds is detrimental to their well-being. The evidence I cite is often drawn from studies that were not directly designed to assess motivation. Whereas I interpret existing work in terms of this motivation, it will be left for future research to test these claims more directly within experimental settings. Indeed, following this review, I outline the broader implications of this idea and formulate a set of priorities for future research.

## 2. The need to belong

The idea of a need to belong has deep roots in social psychology. Schacter [33], for example, wrote about the importance of affiliation in human interaction and Maslow [34] ranked love and belongingness in the middle of his hierarchy of needs (see also [35–37]). The clearest formulation of this need, however, was provided by Baumeister & Leary [26].

According to Baumeister & Leary's [26] conceptualization, fulfilling the need to belong involved satisfying two criteria. First, individuals must have relatively frequent, positively valenced (or at least non-aversive) interactions with at least a few other people. Second, these interactions must take place within a framework of long-lasting affective concern for each other's welfare. Satisfying either of these criteria alone is not sufficient to fulfil the need: positive interactions outside of long-lasting relationships will not be completely satisfying and nor will long-term relationships that lack regular contact. Importantly, it is conceptualized as a need rather than simply a desire. This means that failure to satisfy it ought to be marked by serious distress and long-term negative consequences. Failure to satisfy a mere want or desire, on the other hand, may be disappointing but it is unlikely to lead to as severe distress in the short-term or to negative long-term consequences.

The concept of the need to belong can be distinguished from a number of related theoretical perspectives. First, it is not simply a drive for social contact or a desire to interact with cooperative individuals [38,39], although it encompasses both of these preferences. According to the need to belong perspective, positive interactions should be appealing primarily as the first step towards the formation of longer term bonds. Thus, interacting positively with the same individual multiple times

should be more rewarding than interacting only once with several different individuals.

Second, the need to belong is distinct from the motivation to share psychological states with others [13,40]. Tomasello *et al.* [13] emphasized the importance of studying social motivation in development and proposed that humans have a species unique motivation to share others goals, intentions and perceptions of the world. This motivation, they argued, enables complex forms of cooperation. In contrast, the need to belong does not relate specifically to cooperation, but rather to social contact more generally. The need to belong perspective predicts that individuals should seek positive contact with others. This contact could involve complex forms of cooperation, and indeed cooperation may be a particularly important way of fulfilling belongingness needs, but it need not necessarily do so. In other words, positive social contact should be rewarding even when it does not involve cooperation.

Finally, as Baumeister & Leary [26] themselves emphasized, the need to belong is different in its emphasis from attachment theory [41]. The need to belong is not focused on one particular individual (the caregiver) but rather on significant social relationships in general. Furthermore, the caregiver relationship is not necessarily seen as the starting point from which other important relationships are understood [26]. The need to belong perspective predicts that, in addition to the caregiver relationship, interactions and relationships with unrelated others ought to be important from early in development.

I do not propose that the need to belong can supplant these other perspectives. Rather, I argue that it is an important addition to them. Indeed, the interaction between these different mechanisms and motivations and the need to belong is an extremely promising topic for future research (e.g. [42]).

## 3. Belonging in development

### (a) Seeking interaction and affiliation

The first aspect of the need to belong is that individuals seek positive social interactions with others. There is considerable evidence that, from early in development, children take pleasure in social interactions and engage in behaviours that serve to prolong positive engagement. For example, by eight weeks of age, infants smile in response to their social partners [43–45] and by 12 weeks of age, they rarely smile outside of positive face-to-face exchanges with others [46]. Around the same age, infants start to engage in protoconversations: sequences in which an adult and infant take turns vocalizing and smiling at each other [47]. These exchanges serve to prolong interactions with others. Importantly, these social exchanges are not restricted to the infants' caregivers but also occur with relative strangers in laboratory settings [46]. They are not, therefore, simply reflective of the infant–caregiver bond but suggestive of a more general pleasure in social interaction.

Slightly later in development, children actively engage in affiliative behaviours. One example of this is joint attention in which infants seek to share attention and interest with others [48]. Another example is imitation [17,18,49]. Previous research with adults has shown that imitation is closely associated with affiliation [50] and the same appears to be true for young children. For example, 18-month-olds are significantly more likely to copy the specific actions of a model who appears

warm and friendly rather than those of a model who appears cold and aloof [51] and 24-month-olds are more likely to copy the actions of a model who engages in a contingent interaction with them rather than one who does not engage with them [52].

Further evidence in favour of the claim that young children seek to engage in positive social interactions comes from research on prosocial behaviour [53–55]. From as early as 14 months, and more robustly from 18 months, infants help others to achieve their instrumental goals [56,57]. Infants will pick up fallen objects for an experimenter, point out the hidden affordances of objects for them and direct their attention towards information of which they are ignorant [56,58]. This behaviour is not motivated by a desire for external rewards [59] and occurs with striking regularity across different cultures [60]. Although there may be multiple motivations underlying helping behaviour, at least one motivation appears to be affiliation. Over & Carpenter [61] showed that infants who have been primed with photographs depicting a positive social relationship (two dolls standing facing each other) are three times more likely to spontaneously help an experimenter than infants primed with photographs depicting individuality (for example, two dolls standing back to back).

As children get older, it is clear that they often actively seek social contact with others. Rekers *et al.* [62] found that when 3-year-old children are given a choice between working cooperatively or working alone to achieve the same reward, they prefer to work cooperatively. In related work, Butler & Walton [63] have shown that 4- to 5-year-old children work for longer on a challenging task when they believe that they are collaborating with another child compared to when they believe they are working independently.

In addition to seeking out social contact, young children engage in behaviours that increase the likelihood that potential interaction partners will evaluate them positively (and thus the chance that they will form a bond with them). Important evidence for this claim comes from work on reputation management. Engelmann *et al.* [64], for example, showed that 5-year-old children share more and steal less when they are being watched by a peer compared to when they are alone (see also [65]).

### (b) Forming and maintaining long-term bonds

The need to belong perspective emphasizes that people are motivated to engage in positive interactions within the context of longer lasting relationships or friendships. In other words, individuals ought to be motivated not just by a desire for social contact, but by a desire to form and maintain long-lasting bonds with others.

From early in development, children form long-lasting bonds with their group members. Naturalistic research has demonstrated that even infants have preferences for particular peers, spending more time in the company of some individuals than others [4,66]. During the preschool period, children start to form stable patterns of friendship that endure over time [4,67,68]. These friendships are characterized by frequent positive interactions including talking, cooperating and positive affect during interaction [69,70]. Related experimental research has shown that children recognize that friendship involves preferential treatment and that they engage in behaviours that serve to maintain these favoured relationships. Olson & Spelke [71], for example, have shown that 3-year-old children

direct another individual to share more resources with his or her friends than with a stranger (see also [72]).

Further evidence in favour of the claim that children are motivated to maintain relationships with others comes from work investigating reconciliation following conflict. Naturalistic work on children's friendships has shown that although friends engage in conflict at rates similar to those of non-friends, they are distinguished from non-friends in their conflict resolution efforts. Friends resolve their conflicts more quickly and more amicably than do non-friends [73–75]. Furthermore, friends are more likely to interact with each other again in a positive way following disputes than are non-friends [74].

Not only do children seek to reconcile following conflict, they also accept the reconciliation attempts of others. Experimental research has demonstrated, more generally, that children prefer individuals who wish to repair relationships to those who do not: 4- to 7-year-old children evaluate an individual who apologizes for their wrongdoing more positively than they do an individual who does not apologize or show any remorse [76,77].

Another way to think about whether children seek to maintain bonds with others is to investigate whether they modify their behaviour in order to avoid angering or upsetting their interaction partners. Evidence that they do so comes from research on white lies (that is, lies told in order to spare the feelings of a social partner). Talwar *et al.* [78] investigated how 3- to 11-year-old children responded when they received a disappointing gift from an experimenter. Although children showed their disappointment when alone, when the experimenter returned and asked them whether they liked the gift many answered that they did, and this was true even in the youngest children (see also [79,80]). Complementary evidence comes from research on flattery, which has shown that 6-year-old children describe a picture more positively when the person who drew it is present to hear their comments. Furthermore, they show more flattery behaviour with familiar than with unfamiliar individuals, suggesting that they take their pre-existing relationship with the artist into account when deciding how to respond to their picture [81].

### (c) Belonging to the group

Baumeister & Leary [26] focused their original definition of the need to belong to the motivation to form interpersonal relationships. However, the concept of the need to belong has subsequently been extended to groups. Researchers such as Fiske and Brewer have emphasized that humans seek to form long-lasting connections with particular social groups [27,35,82]. In the following section, I consider this group level perspective and assess how children interact with, and seek to belong to, the broader social group.

Naturalistic research on children's 'entry behaviour' has shown that children are keen to join groups of their peers and use a range of strategies in order to do so. Children who are initially rebuffed by a group in these naturalistic settings often make repeated attempts to join them (e.g. [83]).

Experimental research investigating how children interact once they have been placed within a group has shown that they often seek to match their behaviour to that of their group members [84–86]. Haun & Tomasello [86], for example, tested 4-year-old children within a modified version of the

Asch task and demonstrated that children conformed to the incorrect opinions of their group members approximately one-third of the time, and three-quarters of children conformed on at least one trial. Importantly, in a second experiment where children were allowed to give their answer in private, conformity levels were significantly lower. This suggests that children had not changed their opinion in light of the groups' answers but rather that they sought to match their outward behaviour to that of the group. One interpretation of these results is that children were seeking to be accepted by the group and avoid the group's disapproval.

The ease with which individuals become attached to groups may also speak to the power of the need to belong [26]. Indeed, very subtle cues to group membership are sufficient to influence children's social behaviour. From at least the age of 5, children are sensitive to minimal group manipulations. Children are more generous towards their ingroup members than towards outgroup members and remember relatively more positive information about their ingroup members, even when the groups are based on arbitrary criteria such as shirt colour ([87], see also [22]).

As outlined above, belonging involves long-term commitments to relationships. Recent work shows that children are committed to their groups, at least in the short term, remaining loyal to their group even when it is personally costly to do so. Misch *et al.* [88] allocated 5-year-old children to one of two groups (following a minimal group procedure) and then ensured that they overheard a secret from either their own group or the other group. When bribed with stickers to reveal the secret, children were significantly less likely to reveal it when it belonged to their own group. In other words, they paid a cost (in terms of stickers forfeited) in order to remain loyal to their group.

Other research has demonstrated that older children value belonging and group functioning and take it into account when making moral decisions. For example, Killen and colleagues have shown that children take concerns about how well the group will function into account when deciding whether to include someone in a group (e.g. [89]).

#### (d) Consequences of social exclusion

Belonging is conceptualized as a need rather than a mere desire [26]. If it is indeed a need, then a lack of social contact should be distressing. Furthermore, if the lack of contact continues for a prolonged period, then it should have negative consequences for health and well-being [90]. Social psychological research has investigated how adults respond to more or less complete ostracism from a group (such as exclusion from an online ball game, [91]) as well as to more subtle cues to exclusion from particular individuals such as a refusal to make eye contact [92,93].

From infancy, children find even a relatively brief removal of social contact distressing. When a mother, or an experimenter, stops interacting with an infant, the infant shows increased negative affect, reduced smiling and increased gaze aversion [94]. This may represent the origins of sensitivity to social exclusion. When older children (8- and 9-year-olds) are excluded from an online ball game in the laboratory, it impacts negatively on their mood, their self-esteem, their sense of control and even the extent to which they judge their own existence to be meaningful [95–97]. Prolonged social exclusion has been shown to have serious consequences for children's adjustment during the school years (see [98]).

If children are motivated to belong, then we might expect them to respond to the withdrawal of social contact with behaviours that serve to re-establish their sense of belonging [99]. Research with infants and toddlers has shown that when an individual stops interacting with them, for example by disengaging from a cooperative task, they seek to re-engage that individual's attention and participation in the task [100,101]. Research investigating responses to ostracism more directly has been conducted by Over & Carpenter [99]. Over and Carpenter tested how a vicarious experience of ostracism influences children's social behaviour. They presented 5-year-old children with primes in which one shape appeared to be excluded from a group of other shapes. Children shown this video engaged in significantly more imitation of an experimenter's actions on an object than did children shown videos that did not depict social exclusion. This result has recently been replicated and extended by Watson-Jones and colleagues who have shown that children imitate more closely on a number of tasks following videos depicting exclusion than following videos depicting inclusion [102]. Further research using this basic paradigm has shown that children also draw pictures that depict more affiliative relationships following priming with exclusion [103].

## 4. Broader implications

### (a) Understanding atypical development

I have argued, thus far, that the need to belong is an important force in development. This focus on the belonging needs can help us to understand atypical, as well as typical, development. For example, Chevallier *et al.* [12] have recently suggested a social motivation theory of autism (see also [104,105]). Rather than focusing on the cognitive deficits present in autism [106,107], they focus instead on deficits in orienting towards social stimuli, seeking out social contact and maintaining social relationships. The latter two bear a striking resemblance to the need to belong [26]. Empirical research has shown that children with autism are less likely to help and cooperate with others [108], less likely to point declaratively for their social partners [109] and less likely to engage in joint attention with them [110]. In terms of a deficit in maintaining long-term bonds, adults with autism report having a lower interest in friendships than do individuals in the normal population [111]. According to the social motivation account, it is the deficit in social motivation that has downstream consequences for social cognition and behaviour rather than vice versa [12,112]. Understanding the exact nature of the social motivational deficits in autism, perhaps aided by social psychological accounts of the need to belong, has important implications for designing interventions to enhance social functioning.

### (b) Enhancing social inclusion

Understanding the importance of social motivation and the need to belong has implications for designing effective interventions to enhance social inclusion in typically developing children. Walton & Cohen [113] designed a brief intervention to enhance perceptions of belonging among minority, African American, college students in the United States. This intervention led to higher grade point averages among minority students over 3 years and to improvements in self-reported

well-being and health. The effectiveness of this intervention was mediated by subjective construal meaning that the intervention prevented minority students from seeing day-to-day adversity as evidence that they did not belong. Understanding the root cause of the problem in terms of the need to belong made a brief intervention extremely effective [30]. Related developmental research has shown that a sense of belonging to a group can enhance achievement motivation in preschool children [25], suggesting that work on belonging can have important implications for educational research [114].

### (c) Priorities for future research

The focus on social motivation offers a different perspective on development where the main question is not *whether* children are capable of performing a particular skill but *when* they engage in particular processing and behaviour and *why* they do so. For example, it enables us to ask under what circumstances children imitate the actions of their group members [52,99], help others to achieve their goals [61,64,115,116] and process their mental states [117]. A focus on social motivation is thus an important step towards understanding children's strategic social behaviour.

For a more complete understanding of the origins of belonging, as one aspect of social motivation, it will be important to answer the five broad questions that I outline below. First, what is the relationship between social motivation and social competence? Social competence is typically thought to result from advanced cognitive abilities. However, as Chevallier *et al.* [12] point out, social motivation might be key to understanding why some children are more socially competent than others. Children high in social motivation might be more inclined to engage in effortful processing in order to understand (and sympathize) with others. Furthermore, they might be more inclined to seek out particular experiences and interactions. Experience with these interactions might enable them to develop more sophisticated cognitive abilities. If this is the case, then the strength of children's social motivation early in development ought to predict their social cognitive abilities later in development [118]. Children's maturing cognitive abilities (for example, how they conceptualize themselves within social groups) may also influence their social motivation. The interaction between social cognition and social motivation is likely to exert a powerful influence over development and so is a critical question for future research.

Second, does the need to belong change across development and, if so, why? The question of developmental change is usually focused on cognitive ability. It will be important for future research to examine whether there are changes in the strength, or even in the nature, of social motivation over time. There are already some hints in the literature that social motivation changes across development. For example, Nielsen [51] investigated imitation in infants and found that 18-month-olds are more motivated to copy the specific actions of a demonstrator than are 12-month-olds. Sensitivity to exclusion also appears to change with development; adolescents appear to be more negatively affected by ostracism than are younger children [95]. Future research ought to investigate continuity and change in motivation in more detail.

Third, how does the need to belong relate to other motivations? Children often have multiple motivations within

social situations. For example, like adults, children are also strongly motivated by a desire for personal gain [119,120]. In the real world, social and selfish motivations regularly conflict with each other [121] and children must decide how to regulate their position in the group while, at the same time, accruing benefits for themselves [64,122,123]. It will be important for future research to investigate how the strength of different motivations, and the interactions between them, influence children's cognition and behaviour.

Fourth, how does the need to belong vary with cultural context? Although the need to belong perspective suggests that the basic motivation to form and maintain bonds with others ought to be culturally universal [26], there may be important differences in the strength of the motivation and in how it is expressed. For example, recent cross-cultural research has emphasized the importance of the level of interdependence within a culture for understanding the consequences of social exclusion [124]. It will be important for future research to investigate the origins of these cultural differences in development [125–127].

Finally, what are the evolutionary origins of belonging? It is often assumed that the need to belong has deep roots in our evolutionary history [26,31]. However, this assumption has not been carefully assessed. Claims regarding evolutionary origins can only be justified by a systematic examination of the developmental and comparative evidence regarding social motivation. Only once this evidence has been laid out, can similarities and differences between belonging in humans and other social animals be understood.

## 5. Conclusion

I have argued that understanding the need to belong is critical to understanding development. I have presented evidence that the need to form and maintain bonds with others exerts a powerful influence over children's behaviour from early in development. In outlining this argument, I have sought to bring together seemingly disparate results within developmental psychology and to forge links between developmental and social psychological research.

In their 1995 paper, Baumeister and Leary argued that, if social psychologists had erred in thinking about the need to belong, it was not to deny its existence but rather to underestimate its effects [26]. Something similar could be said about research with young children almost 20 years later. Although social motivation is often mentioned in experimental research with infants and young children, it is not often (or not often enough) the direct focus of study. I have sought to point the way towards a new programme of research that systematically investigates the importance of the need to belong in early development. In doing so, this research agenda may also shed fresh light on mature social cognition and behaviour: only through understanding its origins, can we hope to understand the nature of the mature social mind.

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1. Boyd R, Richerson PJ, Henrich J. 2011 The cultural niche: why social learning is essential for human adaptation. *Proc. Natl Acad. Sci. USA* **108**, 10 918–10 925. (doi:10.1073/pnas.1100290108)
2. Harris PL. 2012 *Trusting what you're told: how children learn from others*. Cambridge, MA: The Belknap Press/Harvard University Press.
3. Tomasello M, Melis AP, Tennie C, Wyman E, Herrmann E. 2012 Two key steps in the evolution of human cooperation: the interdependence hypothesis. *Curr. Anthropol.* **53**, 673–692. (doi:10.1086/668207)
4. Hay DF, Payne A, Chadwick A. 2004 Peer relations in childhood. *J. Child Psychol. Psychiat.* **45**, 84–108. (doi:10.1046/j.0021-9630.2003.00308.x)
5. Wimmer H, Perner J. 1983 Beliefs about beliefs: representation and constraining function of wrong beliefs in young children's understanding of deception. *Cognition* **13**, 103–128. (doi:10.1016/0010-0277(83)90004-5)
6. Baillargeon R, He Z, Setoh P, Scott RM, Sloane S, Yang DY-J. 2013 False-belief understanding and why it matters: the social-acting hypothesis. In *Navigating the social world: what infants, children, and other species can teach us* (eds MR Banaji, SA Gelman), pp. 88–95. New York, NY: Oxford University Press.
7. Sebanz N, Bekkering H, Knoblich G. 2006 Joint action: bodies and minds moving together. *Trends Cogn. Sci.* **10**, 70–76. (doi:10.1016/j.tics.2005.12.009)
8. Wohlschläger A, Gattis M, Bekkering H. 2003 Action generation and action perception in imitation: an instance of the ideomotor principle. *Phil. Trans. R. Soc. Lond. B* **358**, 501–515. (doi:10.1098/rstb.2002.1257)
9. Wang Y, Hamilton A. 2012 Social top-down response modulation (STORM): a model of the control of mimicry in social interaction. *Front. Hum. Neurosci.* **6**, 1–10. (doi:10.3389/fnhum.2012.00153)
10. Onishi KH, Baillargeon R. 2005 Do 15-month-old infants understand false beliefs? *Science* **308**, 255–258. (doi:10.1126/science.1107621)
11. Meltzoff AN. 1995 Understanding the intentions of others: re-enactment of intended acts by 18-month-old children. *Dev. Psychol.* **31**, 838–850. (doi:10.1037/0012-1649.31.5.838)
12. Chevallier C, Kohls G, Troiani V, Brodwin ES, Schultz RT. 2012 The social motivation theory of autism. *Trends Cogn. Sci.* **16**, 231–239. (doi:10.1016/j.tics.2012.02.007)
13. Tomasello M, Carpenter M, Call J, Behne T, Moll H. 2005 Understanding and sharing intentions: the origins of cultural cognition. *Behav. Brain Sci.* **28**, 675–691. (doi:10.1017/S0140525X05000129)
14. Apperly IA, Butterfill SA. 2009 Do humans have two systems to track beliefs and belief-like states? *Psychol. Rev.* **116**, 953–970. (doi:10.1037/a0016923)
15. Heyes CM. 2013 What can imitation do for cooperation? In *Cooperation and its evolution* (eds K Stereiny, R Joyce, B Calcott, B Fraser), pp. 313–333. Cambridge, MA: MIT Press.
16. Meltzoff AN, Moore MK. 1997 Explaining facial imitation: a theoretical model. *Early Dev. Parenting* **6**, 179–192. (doi:10.1002/(SICI)1099-0917(199709/12)6:3/4<179::AID-EDP157>3.0.CO;2-R)
17. Nielsen M. 2009 The imitative behavior of children and chimpanzees: a window on the transmission of cultural traditions. *Rev. Primatol.* **1**, 254. (doi:10.4000/primatologie.254)
18. Over H, Carpenter M. 2012 Putting the social into social learning: explaining both selectivity and fidelity in children's copying behavior. *J. Comp. Psychol.* **126**, 182–192. (doi:10.1037/a0024555)
19. Užgiris IC. 1981 Two functions of imitation during infancy. *Int. J. Behav. Dev.* **4**, 1–12. (doi:10.1177/016502548100400101)
20. Aboud FE. 2001 The formation of ingroup favoritism and outgroup prejudice in young children: are they distinct attitudes? *Dev. Psychol.* **39**, 48–60. (doi:10.1037/0012-1649.39.1.48)
21. Bennett M, Sani F. 2008 Social identities in childhood: when does the group become a part of the self-concept? *Soc. Pers. Psychol. Compass* **2**, 1281–1296. (doi:10.1111/j.1751-9004.2008.00105.x)
22. Nesdale D, Flesser D. 2001 Social identity and the development of children's group attitudes. *Child Dev.* **72**, 506–517. (doi:10.1111/1467-8624.00293)
23. Turner JC, Hogg MA, Oakes PJ, Reicher SD, Wetherell MS. 1987 *Rediscovering the social group: a self-categorization theory*. New York, NY: Blackwell.
24. Klein O, Spears R, Reicher S. 2007 Social identity performance: extending the strategic side of the SIDE model. *Pers. Soc. Psychol. Rev.* **11**, 28–45. (doi:10.1177/1088868306294588)
25. Master A, Walton GM. 2013 Minimal groups increase young children's motivation and learning on group-relevant tasks. *Child Dev.* **84**, 737–751. (doi:10.1111/j.1467-8624.2012.01867.x)
26. Baumeister RF, Leary MR. 1995 The need to belong: desire for interpersonal attachments as a fundamental human motivation. *Psychol. Bull.* **117**, 497–529. (doi:10.1037/0033-2909.117.3.497)
27. Fiske ST. 2010 *Social beings: core motives in social psychology*, 2nd edn. New York, NY: Wiley.
28. Knowles ML, Lucas GM, Molden DC, Gardner WL, Dean KK. 2010 There's no substitute for belonging: self-affirmation following social and non-social threats. *Pers. Soc. Psychol. Bull.* **36**, 173–186. (doi:10.1177/0146167209346860)
29. Carr PB, Walton GM. 2014 Cues of working together fuel intrinsic motivation. *J. Exp. Soc. Psychol.* **53**, 169–184. (doi:10.1016/j.jesp.2014.03.015)
30. Walton GM. 2014 The new science of wise psychological interventions. *Curr. Dir. Psychol. Sci.* **23**, 73–82. (doi:10.1177/0963721413512856)
31. Williams KD. 2007 Ostracism. *Annu. Rev. Psychol.* **58**, 425–452. (doi:10.1146/annurev.psych.58.110405.085641)
32. Dunham Y, Olson KR. 2008 The importance of origins: why cognitive development is central to a mature understanding of social psychology. *Open Psychol. J.* **1**, 59–65. (doi:10.2174/1874350100801010059)
33. Schacter S. 1959 *The psychology of affiliation. Experimental studies of the sources of gregariousness*. Stanford, CA: Stanford University Press.
34. Maslow AH. 1968 *Toward a psychology of being*. New York, NY: Van Nostrand.
35. Brewer MB. 1991 The social self: on being the same and different at the same time. *Pers. Soc. Psychol. B* **17**, 475–482. (doi:10.1177/0146167291175001)
36. Hagerty MK, Williams RA, Coyne JC, Early MR. 1996 Sense of belonging and indicators of social and psychological functioning. *Arch. Psychiatr. Nurs.* **10**, 235–244. (doi:10.1016/S0883-9417(96)80029-X)
37. Mathes EW, Edwards LL. 1978 An empirical test of Maslow's theory of motivation. *J. Humanist Psychol.* **18**, 75–77. (doi:10.1177/002216787801800111)
38. Axelrod R. 1984 *The evolution of cooperation*. New York, NY: Basic Books.
39. Hamlin JK, Wynn K, Bloom P. 2007 Social evaluation by preverbal infants. *Nature* **450**, 557–559. (doi:10.1038/nature06288)
40. Tomasello M, Carpenter M. 2007 Shared intentionality. *Dev. Sci.* **10**, 121–125. (doi:10.1111/j.1467-7687.2007.00573.x)
41. Bowlby J. 1973 *Attachment and loss: vol. 2. Separation anxiety and anger*. New York, NY: Basic Books.
42. White LO, Wu J, Borelli JL, Mayes LC, Crowley MJ. 2013 Play it again: neural responses to reunion with excluders predicted by attachment patterns. *Dev. Sci.* **16**, 850–863. (doi:10.1111/desc.12035)
43. Anisfeld E. 1982 The onset of social smiling in preterm and full-term infants from two ethnic backgrounds. *Infant Behav. Dev.* **5**, 387–395. (doi:10.1016/S0163-6383(82)80048-9)
44. Emde RN, Harmon RJ. 1972 Endogenous and exogenous smiling systems in early infancy. *J. Am. Acad. Child Adolesc. Psychiatry* **11**, 177–200. (doi:10.1016/S0002-7138(10)60071-4)
45. Gewirtz JL. 1965 The course of infant smiling in four child-rearing environments in Israel. In *Determinants of infant behavior 111* (ed. BM Foss), pp. 205–248. London, UK: Methuen.
46. Rochat P, Querido JG, Striano T. 1999 Emerging sensitivity to the timing and structure of protoconversation in early infancy. *Dev. Psychol.* **35**, 950–957. (doi:10.1037/0012-1649.35.4.950)
47. Trevarthen C, Aitken KJ. 2001 Infant intersubjectivity: research, theory, and clinical applications. *J. Child Psychol. Psychiatry* **42**, 3–48. (doi:10.1111/1469-7610.00701)
48. Carpenter M. 2010 Social cognition and social motivations in infancy. In *The Wiley-Blackwell handbook of childhood cognitive development*, 2nd

- edn (ed. U Goswami), pp. 106–128. Oxford, UK: Wiley-Blackwell.
49. Over H, Carpenter M. 2013 The social side of imitation. *Child Dev. Perspect.* **7**, 6–11. (doi:10.1111/cdep.12006)
  50. Lakin JL, Chartrand TL. 2003 Using nonconscious behavioral mimicry to create affiliation and rapport. *Psychol. Sci.* **14**, 334–339. (doi:10.1111/1467-9280.14481)
  51. Nielsen M. 2006 Copying actions and copying outcomes: social learning through the second year. *Dev. Psychol.* **42**, 555–565. (doi:10.1037/0012-1649.42.3.555)
  52. Nielsen M, Simcock G, Jenkins L. 2008 The effect of social engagement on 24-month-olds' imitation from live and televised models. *Dev. Sci.* **11**, 722–731. (doi:10.1111/j.1467-7687.2008.00722.x)
  53. Hay DF. 2009 The roots and branches of human altruism. *Br. J. Psychol.* **100**, 473–479. (doi:10.1348/000712609X442096)
  54. Martin A, Olson KR. 2015 Beyond good and evil: what motivations underlie children's prosocial behavior. *Perspect. Psychol. Sci.* **10**, 159–175. (doi:10.1177/1745691615568998)
  55. Warneken F, Tomasello M. 2009 The roots of human altruism. *Br. J. Psychol.* **100**, 445–471. (doi:10.1348/000712608X379061)
  56. Warneken F, Tomasello M. 2006 Altruistic helping in human infants and young chimpanzees. *Science* **311**, 1301–1303. (doi:10.1126/science.1121448)
  57. Warneken F, Tomasello M. 2007 Helping and cooperation at 14 months of age. *Infancy* **11**, 271–294. (doi:10.1080/15250000701310389)
  58. Liszkowski U, Carpenter M, Tomasello M. 2008 Twelve-month-olds communicate helpfully and appropriately for knowledgeable and ignorant partners. *Cognition* **108**, 732–739. (doi:10.1016/j.cognition.2008.06.013)
  59. Warneken F, Tomasello M. 2008 Extrinsic rewards undermine altruistic tendencies in 20-month-olds. *Dev. Psychol.* **44**, 1785–1788. (doi:10.1037/a0013860)
  60. Callaghan T, Moll H, Rakoczy H, Warneken F, Liszkowski U, Behne T, Tomasello M. 2011 Early social cognition in three cultural contexts. *Monogr. Soc. Res. Child Dev.* **76**, vii–viii. (doi:10.1111/j.1540-5834.2011.00603.x)
  61. Over H, Carpenter M. 2009 Eighteen-month-old infants show increased helping following priming with affiliation. *Psychol. Sci.* **20**, 1189–1193. (doi:10.1111/j.1467-9280.2009.02419.x)
  62. Rekers Y, Haun DB, Tomasello M. 2011 Children, but not chimpanzees, prefer to collaborate. *Curr. Biol.* **21**, 1756–1758. (doi:10.1016/j.cub.2011.08.066)
  63. Butler LP, Walton GM. 2013 The opportunity to collaborate increases preschoolers' motivation for challenging tasks. *J. Exp. Child Psychol.* **116**, 953–961. (doi:10.1016/j.jecp.2013.06.007)
  64. Engelmann JM, Herrmann E, Tomasello M. 2012 Five-year olds, but not chimpanzees, attempt to manage their reputations. *PLoS ONE* **7**, 1–7. (doi:10.1371/journal.pone.0048433)
  65. Engelmann J, Over H, Herrmann E, Tomasello M. 2013 Young children care more about their reputation with ingroup members and possible reciprocators. *Dev. Sci.* **16**, 552–558. (doi:10.1111/desc.12086)
  66. Howes C, Matheson CC, Wu F. 1992 Friendships and social pretend play. In *The collaborative construction of pretend* (eds C Howes, O Unger, CC Matheson), pp. 107–115. Albany, NY: State University of New York Press.
  67. Gifford-Smith M, Brownell C. 2003 Childhood peer relationships: social acceptance, friendships & peer networks. *J. School Psychol.* **41**, 235–284. (doi:10.1016/S0022-4405(03)00048-7)
  68. Howes C. 1996 The earliest friendships. In *The company they keep: friendship in childhood and adolescence* (eds WM Bukowski, AF Newcomb, WW Hartup), pp. 66–86. Cambridge, UK: Cambridge University Press.
  69. Newcomb AF, Bagwell CL. 1995 Children's friendship relations: a meta-analytic review. *Psychol. Bull.* **117**, 306–347. (doi:10.1037/0033-2909.117.2.306)
  70. Newcomb AF, Bagwell CL. 1996 The developmental significance of children's friendship relations. In *The company they keep: friendship in childhood and adolescence* (eds WM Bukowski, AF Newcomb, WW Hartup), pp. 289–321. Cambridge, UK: Cambridge University Press.
  71. Olson KR, Spelke ES. 2008 Foundations of cooperation in young children. *Cognition* **108**, 222–231. (doi:10.1016/j.cognition.2007.12.003)
  72. Moore C. 2009 Fairness in resource allocation in young children depends on recipient. *Psychol. Sci.* **20**, 944–948. (doi:10.1111/j.1467-9280.2009.02378.x)
  73. Hartup WW, Laursen B. 1999 Relationships as developmental contexts: retrospective themes and contemporary issues. In *The Minnesota symposia on child psychology: vol. 29. Relationships as developmental contexts* (eds WA Collins, B Laursen), pp. 13–35. Hillsdale, NJ: Erlbaum.
  74. Hartup WW. 1996 The company they keep: friendships and their developmental significance. *Child Dev.* **67**, 1–13. (doi:10.2307/1131681)
  75. Verbeek P, de Waal FBM. 2001 Peacemaking among preschool children. *J. Peace Psychol.* **7**, 5–28. (doi:10.1207/S15327949PAC0701\_02)
  76. Smith CE, Harris PL. 2012 He didn't want me to feel sad: children's reactions to disappointment and apology. *Soc. Dev.* **21**, 215–228. (doi:10.1111/j.1467-9507.2011.0060)
  77. Vaish A, Carpenter M, Tomasello M. 2011 Young children's responses to guilt displays. *Dev. Psychol.* **47**, 1248–1262. (doi:10.1037/a0024462)
  78. Talwar V, Murphy SM, Lee K. 2007 White lie-telling in children for politeness purposes. *Int. J. Behav. Dev.* **31**, 1–11. (doi:10.1177/0165025406073530)
  79. Cole PM. 1986 Children's spontaneous control of facial expression. *Child Dev.* **57**, 1309–1321. (doi:10.2307/1130411)
  80. Cole PM, Zahn-Waxler C, Smith KD. 1994 Expressive control during a disappointment: variations related to preschoolers' behavior problems. *Dev. Psychol.* **30**, 835–846. (doi:10.1037/0012-1649.30.6.835)
  81. Fu G, Lee K. 2007 Social grooming in kindergarten: the emergence of flattery behavior. *Dev. Sci.* **10**, 255–265. (doi:10.1111/j.1467-7687.2007.00583.x)
  82. Swann Jr WB, Gómez A, Seyle C, Morales F. 2009 Identity fusion: the interplay of personal and social identities in extreme group behavior. *J. Pers. Soc. Psychol.* **96**, 995–1011. (doi:10.1037/a0013668)
  83. Putallaz M, Wasserman A. 1989 Children's naturalistic entry behavior and sociometric status: a developmental perspective. *Dev. Psychol.* **25**, 297–305. (doi:10.1037/0012-1649.25.2.297)
  84. Corriveau KH, Harris PL. 2010 Preschoolers (sometimes) defer to the majority in making simple perceptual judgments. *Dev. Psychol.* **46**, 437–445. (doi:10.1037/a0017553)
  85. Walker MB, Andrade MG. 1996 Conformity in the Asch task as a function of age. *J. Soc. Psychol.* **136**, 367–372. (doi:10.1080/00224545.1996.9714014)
  86. Haun DBM, Tomasello M. 2011 Conformity to peer pressure in preschool children. *Child Dev.* **82**, 1759–1767. (doi:10.1111/j.1467-8624.2011.01666.x)
  87. Dunham Y, Baron A, Carey S. 2011 Consequences of 'minimal' group affiliations in children. *Child Dev.* **82**, 793–811. (doi:10.1111/j.1467-8624.2011.01577.x)
  88. Misch A, Over H, Carpenter M. 2015 Young children show loyalty to the group by keeping the group's secrets. *J. Exp. Child Psychol.*
  89. Killen M, Rutland A. 2011 *Children and social exclusion: morality, prejudice and group identity*. Oxford, UK: Wiley-Blackwell.
  90. House JS, Landis K, Umberson D. 1988 Social relationships and health. *Science* **241**, 540–545. (doi:10.1126/science.3399889)
  91. Williams KD, Cheung CKT, Choi W. 2000 Cyberostracism: effects of being ignored over the Internet. *J. Pers. Soc. Psychol.* **79**, 748–762. (doi:10.1037/0022-3514.79.5.748)
  92. Wesselmann ED, Cardoso F, Slater S, Williams KD. 2012 'To be looked at as though air': civil attention matters. *Psychol. Sci.* **23**, 166–168. (doi:10.1177/0956797611427921)
  93. Wirth J, Sacco DF, Hugenberg K, Williams KD. 2010 Eye gaze as relational evaluation: averted eye gaze leads to feelings of ostracism and relational devaluation. *Pers. Soc. Psychol. B* **36**, 869–882. (doi:10.1177/0146167210370032)
  94. Tronick EZ. 2007 *The neurobehavioral and social-emotional development of infants and children*. New York, NY: Norton.
  95. Abrams D, Weick M, Thomas D, Colbe H, Franklin KM. 2011 Online ostracism affects children differently from adolescents and adults. *Br. J. Dev. Psychol.* **29**, 110–123. (doi:10.1348/026151010X494089)
  96. Crowley MJ, Wu J, Molfese PJ, Mayes LC. 2010 Social exclusion in middle childhood: rejection events, slow-wave neural activity, and ostracism

- distress. *Soc. Neurosci.* **5**, 483–495. (doi:10.1080/17470919.2010.500169)
97. Nesdale D, Lambert A. 2007 Effects of experimentally manipulated peer rejection on children's negative affect, self-esteem, and maladaptive social behavior. *Int. J. Behav. Dev.* **31**, 115–122. (doi:10.1177/0165025407073579)
98. Cullerton-Sen C, Crick NR. 2005 Understanding the effects of physical and relational victimization: the utility of multiple perspectives in predicting social emotional adjustment. *School Psychol. Rev.* **34**, 147–160.
99. Over H, Carpenter M. 2009 Priming third-party ostracism increases affiliative imitation in children. *Dev. Sci.* **12**, F1–F8. (doi:10.1111/j.1467-7687.2008.00820.x)
100. Warneken F, Chen F, Tomasello M. 2006 Cooperative activities in young children and chimpanzees. *Child Dev.* **77**, 640–663. (doi:10.1111/j.1467-8624.2006.00895.x)
101. Ross HS, Lollis SP. 1987 Communication within infant social games. *Dev. Psychol.* **23**, 241–248. (doi:10.1037/0012-1649.23.2.241)
102. Watson-Jones RE, Legare CH, Whitehouse H, Clegg JM. 2014 Task-specific effects of ostracism on imitation in early childhood. *Evol. Hum. Behav.* **35**, 204–210. (doi:10.1016/j.evolhumbehav.2014.01.004)
103. Song R, Over H, Carpenter M. 2015 Children draw more affiliative pictures following priming with ostracism. *Dev. Psychol.* **51**, 831–840. (doi:10.1037/a0039176)
104. Dawson G, Toth K, Robert A, Osterling J, Munson J, Estes A, Liaw J. 2004 Early social attention impairments in autism: social orienting, joint attention, and attention to distress. *Dev. Psychol.* **40**, 271–283. (doi:10.1037/0012-1649.40.2.271)
105. Dubej I, Ropar D, Hamilton AFC. 2015 Measuring the value of social engagement in adults with and without autism. *Mol. Autism* **6**, 1–9. (doi:10.1186/s13229-015-0031-2)
106. Baron-Cohen S. 1995 *Mindblindness*. Boston, MA: MIT Press.
107. Frith U. 1989 Autism and 'theory of mind'. In *Diagnosis and treatment of autism* (ed. C Gillberg), pp. 33–52. New York, NY: Plenum Press.
108. Liebal K, Colombi C, Rogers SJ, Warneken F, Tomasello M. 2008 Helping and cooperation in children with autism. *J. Autism Dev. Disord.* **38**, 224–238. (doi:10.1007/s10803-007-0381-5)
109. Swinkels SH, Dietz C, van Daalen E, Kerkhof IH, van Engeland H, Buitelaar JK. 2006 Screening for autistic spectrum disorder in children aged 14 to 15 months. I: the development of the early screening of autistic traits questionnaire (ESAT). *J. Autism Dev. Disord.* **36**, 723–732. (doi:10.1007/s10803-006-0115-0)
110. Leekam SR, Ramsden CAH. 2006 Dyadic orienting and joint attention in preschool children with autism. *J. Autism Dev. Disord.* **36**, 185–197. (doi:10.1007/s10803-005-0054-1)
111. Baron-Cohen S, Wheelwright S. 2003 The friendship questionnaire: an investigation of adults with Asperger syndrome or high-functioning autism and normal sex differences. *J. Autism Dev. Disord.* **33**, 509–517. (doi:10.1023/A:1025879411971)
112. Chevallier C, Parish-Morris J, Tonge N, Le L, Miller J, Schultz RT. 2014 Susceptibility to the audience effect explains performance gap between children with and without autism in a theory of mind task. *J. Exp. Psychol. Gen.* **143**, 972–979. (doi:10.1037/a0035483)
113. Walton GM, Cohen GL. 2011 A brief social-belonging intervention improves academic and health outcomes of minority students. *Science* **331**, 1447–1451. (doi:10.1126/science.1198364)
114. Cook JE, Purdie-Vaughns V, Garcia J, Cohen GL. 2012 Chronic threat and contingent belonging: protective benefits of values affirmation on identity development. *J. Pers. Soc. Psychol.* **102**, 479–496. (doi:10.1037/a0026312)
115. Plötner M, Over H, Carpenter M, Tomasello M. 2015 Young children show the bystander effect in helping situations. *Psychol. Sci.* **26**, 499–506. (doi:10.1177/0956797615569579)
116. Vaish A, Carpenter M, Tomasello M. 2009 Sympathy through affective perspective-taking and its relation to prosocial behavior in toddlers. *Dev. Psychol.* **45**, 534–543. (doi:10.1037/a0014322)
117. Martin J, Bennett M, Murray WS. 2008 A developmental study of the infrahumanization hypothesis. *Br. J. Dev. Psychol.* **26**, 153–161. (doi:10.1348/026151007X216261)
118. Hilbrink E, Sakkalou E, Ellis-Davies K, Fowler N, Gattis ML. 2013 Selective and faithful imitation at 12 and 15 months. *Dev. Sci.* **16**, 828–840. (doi:10.1111/desc.12070)
119. Benenson JF, Pascoe J, Radmore N. 2007 Children's altruistic behavior in the dictator game. *Evol. Hum. Behav.* **28**, 168–175. (doi:10.1016/j.evolhumbehav.2006.10.003)
120. Eisenberg N, Fabes RA. 1998 Prosocial development. In *Handbook of child psychology: social, emotional and personality development*, 5th edn, vol. 4 (eds N Eisenberg, W Damon), pp. 701–778. New York, NY: Wiley.
121. Manktelow KI. 2012 *Thinking and reasoning: psychological perspectives on reason, judgment, and decision making*. Hove, UK: Psychology Press.
122. Steinbeis N, Bernhardt BC, Singer T. 2012 Impulse control and underlying functions of the left DLPFC mediate age-related and age-independent individual differences in strategic social behavior. *Neuron* **73**, 1040–1051. (doi:10.1016/j.neuron.2011.12.027)
123. Over H, Over DE. In press. Deontic reasoning and social norms: broader implications. In *The thinking mind: The uses of thinking in everyday life* (eds N Galbraith, E Lucas, DE Over). Hove, UK: Psychology Press.
124. Pfundmair M, Aydin N, Du H, Yeung S, Frey D, Graupmann V. 2015 Exclude me if you can – cultural effects on the outcomes of social exclusion. *J. Cross Cult. Psychol.* **46**, 579–596. (doi:10.1177/0022022115571203)
125. Greenfield P, Keller H, Fuligni A, Maynard A. 2003 Cultural pathways through universal development. *Annu. Rev. Psychol.* **54**, 461–490. (doi:10.1146/annurev.psych.54.101601.145221)
126. Over H, Uskul AK. Submitted. *Culture influences children's responses to ostracism situations*.
127. Iyengar SS, Lepper MR. 1999 Rethinking the value of choice: a cultural perspective on intrinsic motivation. *J. Pers. Soc. Psychol.* **76**, 349–366. (doi:10.1037/0022-3514.76.3.349)