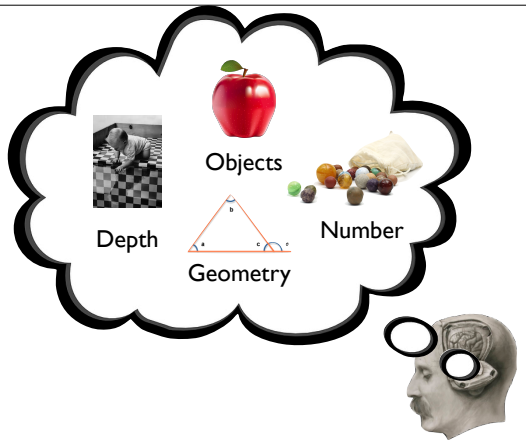
Our Moral Origins

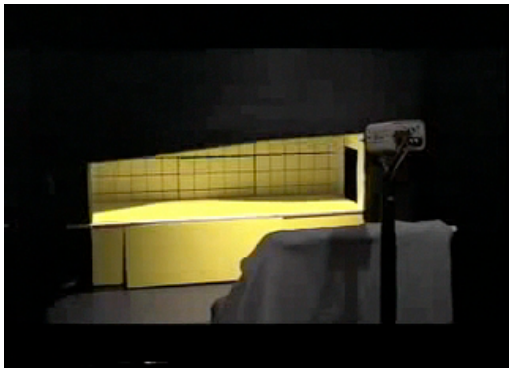


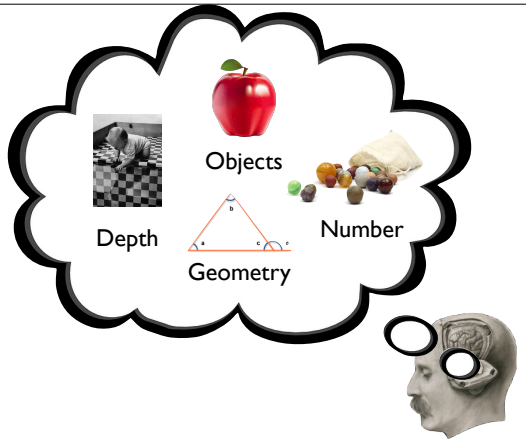
Addition and subtraction by human infants

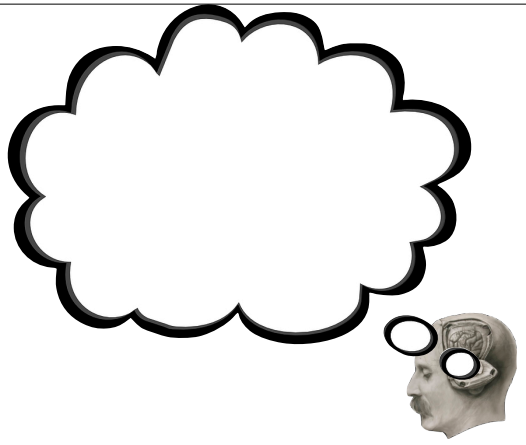
Karen Wynn

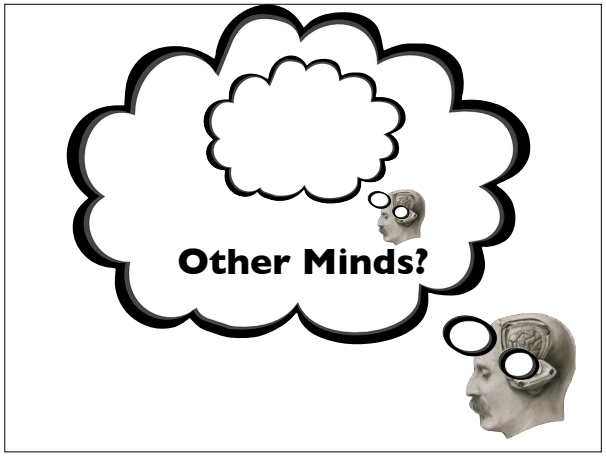
Department of Psychology, University of Arizona, Tucson, Arizona 85721, USA

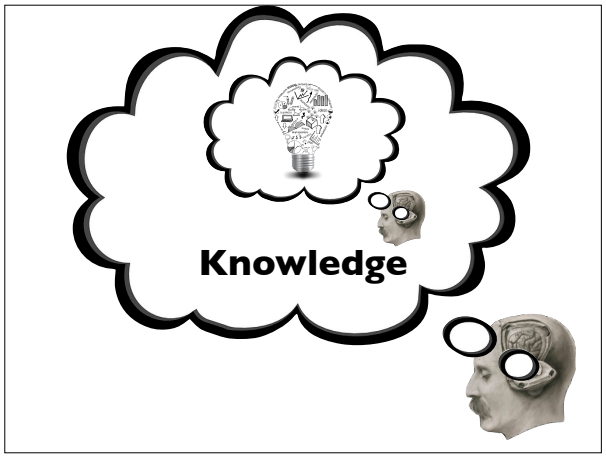
HUMAN infants can discriminate between different small numbers of items[1–4], and can determine numerical equivalence across perceptual modalities[5,6]. This may indicate the possession of true numerical concepts[1,4–7]. Alternatively, purely perceptual discriminations may underlie these abilities[8,9]. This debate addresses the nature of subitization, the ability to quantify small numbers of items without conscious counting[10,11]. Subitization may involve the holistic recognition of canonical perceptual patterns that do not reveal ordinal relationships between the numbers[12], or may instead be an iterative or 'counting' process that specifies these numerical relationships[4,13]. Here I show that 5-month-old infants can calculate the results of simple arithmetical operations on small numbers of items. This indicates that infants possess true numerical concepts, and suggests that humans are innately endowed with arithmetical abilities. It also suggests that subitization is a process that encodes ordinal information, not a pattern-recognition process yielding non-numerical percepts.

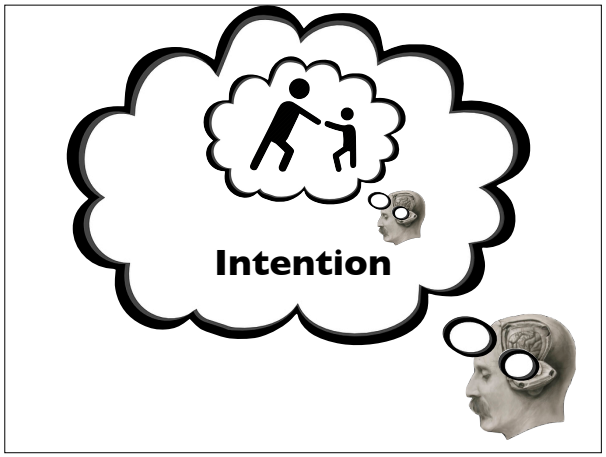


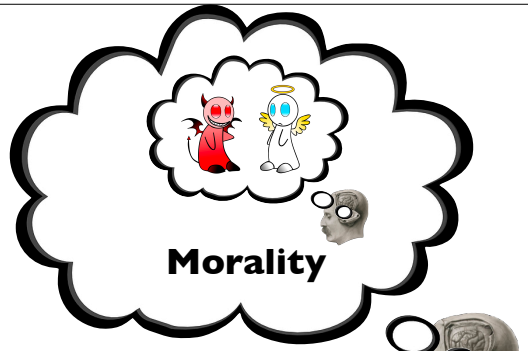

Objects
Depth
Number
Geometry




Other Minds?


Knowledge


Intention



Egocentricism

“Three Mountains” Task

“Mean Monkey” Task

“False Belief” Task

Performance vs Competence

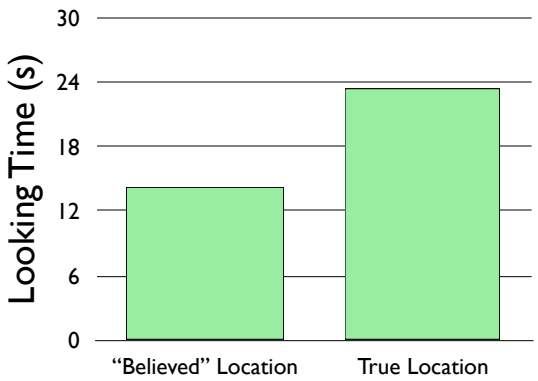
Do 15-Month-Old Infants Understand False Beliefs?

Kristine H. Onishi[1]* and Renée Baillargeon[2]

For more than two decades, researchers have argued that young children do not understand mental states such as beliefs. Part of the evidence for this claim comes from preschoolers' failure at verbal tasks that require the understanding that others may hold false beliefs. Here, we used a novel nonverbal task to examine 15-month-old infants' ability to predict an actor's behavior on the basis of her true or false belief about a toy's hiding place. Results were positive, supporting the view that, from a young age, children appeal to mental states—goals, perceptions, and beliefs—to explain the behavior of others.

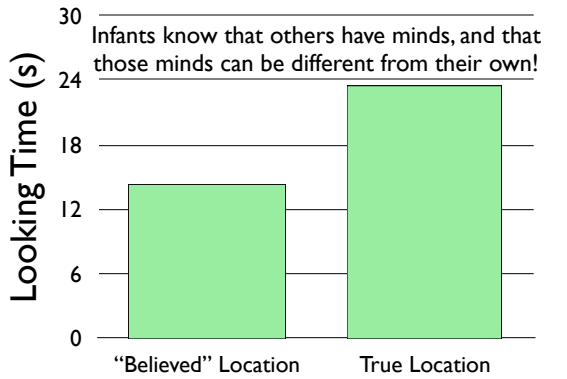
Consider the following situation: A child who has surreptitiously eaten the last cookies in a box sees her brother reach into the box. To make sense of his behavior, she must understand that he falsely believes the box still contains cookies. As adults, we readily understand that others may hold and act on false beliefs; this ability is widely held to be a cornerstone of social competence, and its neu-

asked where the first character will look for her toy, 4 year olds typically say she will look in the first location and provide appropriate justifications for their answers. In contrast, most 3 year olds say she will look in the second (actual) location, thus failing to demonstrate an understanding that the first character will hold a false belief about the toy's location.



(Onishi & Baillargeon, 2005)


that's what I
expected…



What kinds of minds?

Social evaluation by preverbal infants

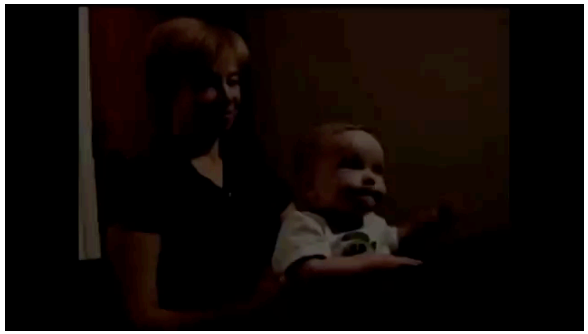
J. Kiley Hamlin[1], Karen Wynn[1] & Paul Bloom[1]

The capacity to evaluate other people is essential for navigating the social world. Humans must be able to assess the actions and intentions of the people around them, and make accurate decisions about who is friend and who is foe, who is an appropriate social partner and who is not. Indeed, all social animals benefit from the capacity to identify individual conspecifics that may help them, and to distinguish these individuals from others that may harm them. Human adults evaluate people rapidly and automatically on the basis of both behaviour and physical features[1–4], but the ontogenetic origins and development of this capacity are not well understood. Here we show that 6- and 10-month-old infants take into account an individual's actions towards others in evaluating that individual as appealing or aversive: infants prefer an individual who helps another to one who hinders another, prefer a helping individual to a neutral individual, and prefer a neutral individual to a hindering individual. These findings constitute evidence that preverbal infants assess individuals on the basis of their behaviour towards others. This capacity may serve as the foundation for moral thought and action, and its early developmental emergence supports the view that social evaluation is a biological adaptation.

held distinct impressions of the two characters on the basis of their actions towards the climber (see Fig 2).

Our looking time measure replicated our previous studies assessing 9- and 12-month-olds' expectations about the climber's attitudes to the helper and hinderer[5,6], and extended this question to younger infants. Infants saw a new display containing climber, helper and hinderer (Fig. 1b). The climber alternately approached the helper (unsurprising) and the hinderer (a surprising action). Replicating our previous results, 10-month-olds looked longer at the latter event ($mean_{hinderer} = 4.96$ s, $mean_{helper} = 3.82$ s; paired t-test, $t(15) = 2.603$, two-tailed $P = 0.02$), indicating surprise when the climber approached one who had previously hindered it. Six-month-olds, however, looked equally to both events ($mean_{hinderer} = 5.7$ s, $mean_{helper} = 6.7$ s; $t(11) = 0.80$, $P = 0.44$), suggesting that they did not attribute to the climber distinct attitudes towards the two characters, despite themselves preferring helper to hinderer in our choice measure. This suggests that the capacity for social evaluation may develop before the ability to infer others' evaluations.

Our claim—that young infants evaluate others based on their social behaviour—entails that infants were responding to social, not superficial perceptual, aspects of our events. If infants of these age prefer, for example, upward to downward motion, or pushing



Babies know "good" from "bad"
(and **prefer** good!)

The native language of social cognition

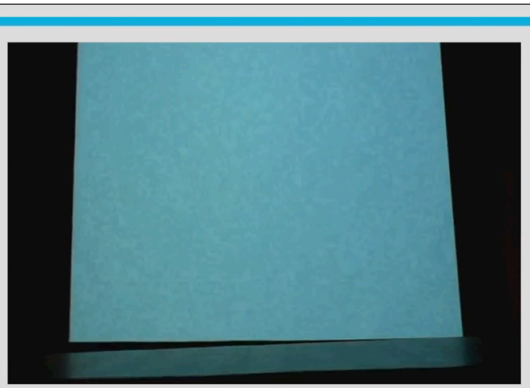
Katherine D. Kinzler*†, Emmanuel Dupoux‡§, and Elizabeth S. Spelke*†

*Department of Psychology, Harvard University, Cambridge, MA 02138; ‡Laboratoire de Sciences Cognitives et Psycholinguistiques, Ecole des Hautes Etudes en Sciences Sociales, Département d'Etudes Cognitives, Ecole Normale Supérieure, Centre National de la Recherche Scientifique, 75005 Paris, France; and §Maternité Port Royal-Cochin, Assistance Publique Hopitaux de Paris, Université René Decartes Paris V, 75005 Paris, France

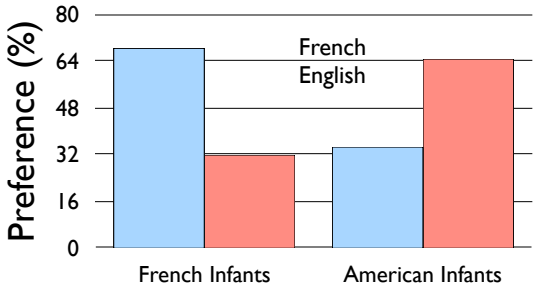
Contributed by Elizabeth S. Spelke, June 9, 2007 (sent for review April 4, 2007)

What leads humans to divide the social world into groups, preferring their own group and disfavoring others? Experiments with infants and young children suggest these tendencies are based on predispositions that emerge early in life and depend, in part, on natural language. Young infants prefer to look at a person who previously spoke their native language. Older infants preferentially accept toys from native-language speakers, and preschool children preferentially select native-language speakers as friends. Variations in accent are sufficient to evoke these social preferences, which are observed in infants before they produce or comprehend speech and are exhibited by children even when they comprehend the foreign-accented speech. Early-developing preferences for native-language speakers may serve as a foundation for later-developing preferences and conflicts among social groups.

In the first experiment, 5- to 6-month-old infants from American English-speaking families ($n = 22$) viewed alternating sound films of two adult women who both spoke to them in American English, yet one film was played forward (natural speech), whereas the other was played in reverse (unnatural speech with a similar spectral and temporal structure). The order and lateral positions of the faces and the pairings of faces to language conditions were counterbalanced across infants to control for extraneous preferences for one face or side. After familiarization with each speaker, the two women were presented side by side, smiling but no longer speaking (Fig. 1*a*). Infants looked maximally and therefore equally at the two speakers during the speaking familiarization trials, ensuring equal exposure to the two faces before the test trial. During the silent-test trial, in contrast, infants looked reliably longer at the person who previously



10-month old Toy Choices



Later this semester...

Today...

Moral Diversity ?

major

sexual orientation

ethnic background

view on abortion

Differentiating Diversities:
Moral Diversity Is Not Like Other Kinds[1]

JONATHAN HAIDT,[2] EVAN ROSENBERG, AND HOLLY HOM
University of Virginia

Diversity is widely celebrated in American society. But from a social psychological point of view, diversity ought to cause a number of problems, such as divisiveness and conflict. A resolution of this paradox is proposed: There are several kinds of diversity, with different profiles of costs and benefits. In particular, moral diversity is identified as being problematic and even self-contradictory. Three studies of attitudes and desires for interaction among college students confirmed that moral diversity reduces desires for interaction more than does demographic diversity, and that both kinds of diversity are valued more in a classroom than in other social settings. These findings have important implications for discussions of diversity, multiculturalism, affirmative action, identity politics, and immigration policy.

What is morality even about?

Greg Johnson

(of Texas vs. Johnson)

Moral Foundations

Harm

Fairness

Group Loyalty

Authority

Purity

Moral Foundations

Harm

Fairness

Group Loyalty

Authority

Purity

Moral Foundations

Group Loyalty

Authority

"independent-minded and relates to its owner as a friend and equal"

"extremely loyal to its home and family, and doesn't warm up quickly to strangers"

OK or NOT OK?

ATTITUDES AND SOCIAL COGNITION

Affect, Culture, and Morality, or Is It Wrong to Eat Your Dog?

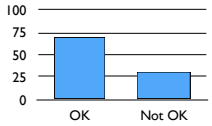
Jonathan Haidt, Silvia Helena Koller, and Maria G. Dias

Are disgusting or disrespectful actions judged to be moral violations, even when they are harmless? Stories about victimless yet offensive actions (such as cleaning one's toilet with a flag) were presented to Brazilian and U.S. adults and children of high and low socioeconomic status ($N = 360$). Results show that college students at elite universities judged these stories to be matters of social convention or of personal preference. Most other Ss, especially in Brazil, took a moralizing stance toward these actions. For these latter Ss, moral judgments were better predicted by affective reactions than by appraisals of harmfulness. Results support the claims of cultural psychology (R. A. Shweder, 1991a) and suggest that cultural norms and culturally shaped emotions have a substantial impact on the domain of morality and the process of moral judgment. Suggestions are made for building cross-culturally valid models of moral judgment.

OK
or
NOT OK?

Can there be "victimless crimes"?

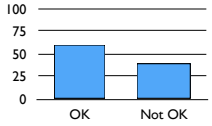
A woman is cleaning out her closet, and she finds her old American flag. She doesn't want the flag anymore, so she cuts it up into pieces and uses the rags to clean her bathroom.



Haidt et al. (1993)

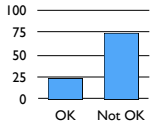
Can there be "victimless crimes"?

A woman was dying, and on her deathbed she asked her son to promise that he would visit her grave every week. The son loved his mother very much, so he promised to visit her grave every week. But after the mother died, the son didn't keep his promise, because he was very busy.



Haidt et al. (1993)

Can there be "victimless crimes"?

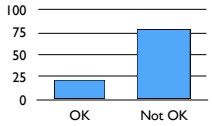


A family's dog was killed by a car in front of their house. They had heard that dog meat was delicious, so they cut up the dog's body and cooked it and ate it for dinner.

Haidt et al. (1993)

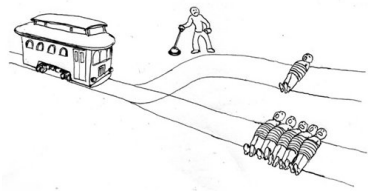
Can there be "victimless crimes"?

A brother and sister like to kiss each other on the mouth. When nobody is around, they find a secret hiding place and kiss each other on the mouth, passionately.



Haidt et al. (1993)

Emotion vs. Reason



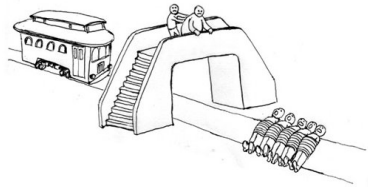
The **trolley problem**

OK or not OK?

A. OK

B. Not OK

Emotion vs. Reason



The **trolley problem**

OK or not OK?

A. OK

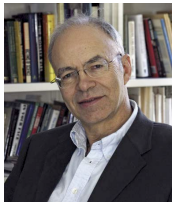
B. Not OK

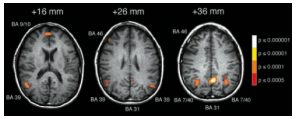
deontology

rules and obligations

utilitarianism

"the greatest good for the greatest number"





An fMRI Investigation of Emotional Engagement in Moral Judgment

Joshua D. Greene,[1,2]* R. Brian Sommerville,[1] Leigh E. Nystrom,[1,3] John M. Darley,[3] Jonathan D. Cohen[1,3,4]

The long-standing rationalist tradition in moral psychology emphasizes the role of reason in moral judgment. A more recent trend places increased emphasis on emotion. Although both reason and emotion are likely to play important roles in moral judgment, relatively little is known about their neural correlates, the nature of their interaction, and the factors that modulate their respective behavioral influences in the context of moral judgment. In two functional magnetic resonance imaging (fMRI) studies using moral dilemmas as probes, we apply the methods of cognitive neuroscience to the study of moral judgment. We argue that moral dilemmas vary systematically in the extent to which they engage emotional processing and that these variations in emotional engagement influence moral judgment. These results may shed light on some puzzling patterns in moral judgment observed by contemporary philosophers.