

# CROSS-CULTURAL CONSIDERATIONS IN SOCIAL COGNITION

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## 1. INTRODUCTION

How do we understand other people's behaviours? The standard answer, according to our best philosophy of mind textbooks and social cognition papers, is that we understand another's behaviour by attributing beliefs and desires to them, and this practice of attributing beliefs and desires to others in order to explain and predict their behaviours is known as 'commonsense' or 'folk' psychology. These epithets were intended to capture the humdrum nature of such explanations: one need not be a professional psychologist to apply them; any person, without any formal training, can, and indeed does, create explanations of their own behaviours and those of others using the belief-desire framework. It is, as Fodor puts it, the daily psychological strategy deployed by the 'Man on the Clapham Omnibus' (1985/1993, p. 272).

As readers of this volume will no doubt appreciate, folk psychology has dominated the social cognition research programme. Few have questioned the end-point,<sup>1</sup> namely, that everyone acquires the belief-desire framework; efforts have instead focussed on how that framework is acquired. Nowhere is this more apparent than in the huge literature examining young children's ability to attribute false beliefs to others. As Daniel Dennett (1978) and Gilbert Harman (1978) famously observed, understanding that another person's beliefs may not match with how the world actually is, is a hallmark of a mature folk psychology. We are all familiar with what followed: Wimmer and Perner's seminal finding that, prior to their fourth birthday, children systematically fail to attribute false beliefs to others (1983); Baron-Cohen and colleagues' work demonstrating that children on the autistic spectrum do not develop this ability until their sixth or seventh birthday, and sometimes much later (Baron-Cohen & Leslie, 1985); Onishi and Baillargeon's finding that 15-month old infants appear to pass non-verbal versions of the false belief task (2005; see also Baillargeon, et al. 2010)). These findings have been reliably replicated over countless studies, resulting in an increasingly detailed account of a child's steps towards a mature folk psychology.

The vast majority of these studies use participants from, to coin Henrich and colleagues' acronym, WEIRD populations: groups that are White, Educated, Industrialised, Rich and Democratic (Henrich, Heine, & Norenzayan, 2010). In fact, Henrich and colleagues report that an analysis of the top psychology journals from 2003 – 2007 revealed that 96% of participants came from industrialised Western societies: in sum, that '96% of psychological samples come from countries with only 12% of the world's population' (ibid p. 63). In other words, the Man on the Clapham Omnibus (and his children), is *at best* representative of 12% of the world's population.

This naturally leads to the following questions: when we study the child's ability to attribute beliefs and desires to others, are we studying the development of a cognitive capacity peculiar to a small subset of the world's population? And do we have reason to believe that the considered endpoint – the ability to successfully explain and predict other people's behaviours by appeal to their psychological states – exists in non-WEIRD cultures? These questions need not be worrisome in themselves, provided authors are clear that their participants come from a subset of the world's population whose strategy for understanding others may be unique to that group. What is worrisome is a tacit assumption in the social cognition literature that experiments conducted with children from WEIRD populations have the potential to yield insights into a human-wide ability and that the belief-desire framework is a universal strategy for

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<sup>1</sup> Although as Ian Apperly (2010) has observed, there are still significant lacunae in our understanding of adult mindreading abilities.

understanding others. Fodor is a paradigm of the former claim, writing ‘There is, so far, no human group that doesn’t explain behaviour by imputing beliefs and desires to the behaviour. (And if an anthropologist claimed to have found such a group, I wouldn’t believe him.)’ (1989, p. 132).

This chapter presents some data, some of which comes from anthropologists, that might be taken to challenge Fodor’s claim (sections two and five). But it will also present work that appears to demonstrate a significant amount of congruency in children’s performance on various social cognition tasks (sections three and four). The second part of the chapter explores how these findings affect two, overlapping but distinct, debates in cognitive science: the very large debate concerning Nativism and Empiricism; and the on-going disagreement about how to explain the difference between infants’ performance on implicit response social cognition tasks, and pre-schoolers’ failure in comparable tasks that require explicit responses. The overall moral will be that while cross-cultural data have undoubtedly contributed to more rigorous and detailed accounts of social cognition, they cannot in and of themselves arbitrate between the main contenders. However, the role these data play in forcing each position to become more specific and careful continues to be invaluable in advancing our understanding of the field.

## 2. WHY THERE MIGHT BE DIFFERENCES

There is huge variation in human culture: from what we eat and where we live, to moral and political systems, there are indefinitely many dimensions along which we vary. There is no obvious reason why our strategies for understanding and explaining other people’s behaviour might not also vary across populations. Two broad examples serve to illustrate this point: more specific cases will follow later in the chapter.

First, there is the well-documented difference between ‘holistic’ and ‘analytic’ systems of thought, demonstrated across East Asian (e.g. Chinese, Japanese, Korean) and European/American<sup>2</sup> populations respectively. Holistic cultures prioritise group harmony, resulting in a collective society where the flourishing of the group is considered more important than that of the individual.<sup>3</sup> As a result, there is a strong emphasis on roles and hierarchy within society and family, which promotes group cohesion. By contrast, analytic cultures value the needs of the individual over group harmony, resulting in more frank discussions and a higher tolerance of disagreement between individuals. Michael Morris and Kaiping Peng (1994) have argued that this is reflected in the explanatory frameworks preferred by each group when it comes to explaining another’s behaviour, with collectivist groups preferring to explain other people’s behaviours by reference to situational factors, e.g. that person’s role in society, or how they relate to other people in that situation; and more analytic groups with a strong emphasis on the individual preferring explanations which reference the actor’s character traits or inner psychological states. They support this claim with their study which contrasted Chinese language and American newspapers’ accounts of two mass murders (ibid). The first was a Chinese graduate student who had lost an award competition and subsequently failed to get an academic posting. He shot his advisor, the person handling the award process, several bystanders and then himself. The second was an Irish-American postal worker who lost his job and was unable to find employment. He shot his supervisor, the person handling his appeal, several bystanders and then himself. A comparison of different newspaper reports revealed that American papers referenced the psychological state of the killer in each case, e.g. ‘a very bad temper’, ‘a darkly disturbed man who drove himself to success and destruction’, ‘mentally unstable’ (ibid p. 961). Chinese newspapers, by contrast, focussed on the relationships between the victims and the killer, e.g. ‘did not get along with his advisor’ and the status pressures of being a top Chinese student ‘Lu was a victim of the ‘Top Students’ Education Policy’. These differences in reporting were said to illustrate different priorities in East Asians’ and Westerners’ explanatory accounts of behaviour, with Western explanations highlighting inner psychological states as causes and East Asian accounts focussing on external, situational factors. This is

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<sup>2</sup> More specifically, North American and Northern/Western Europeans.

<sup>3</sup> These differences and possible historical causes for them, are comprehensively discussed in Richard Nisbett and Ara Norenzayan’s work (Nisbett, 2003; Nisbett, Peng, Choi, I., & Norenzayan, 2001; Choi, Nisbett, & Norenzayan, 1999).

not to say that East Asians do not ever use or understand explanations that reference inner psychological states, but rather that this mode of explanation is not the default, which contrasts against Western cultures.

A second point of comparison comes with different groups' willingness to talk about psychological states. For example, many Pacific Island societies maintain that 'it is impossible, or at least extremely difficult to know what other people think or feel' (Robbins & Rumsey, 2008, p. 407; see also Lillard 1998, Barrett et al. 2013a,b). As a consequence, commenting on someone else's thoughts is a taboo, as one should not comment on what one cannot know. Gossip speculating on the contents of another's mind results in informal social punishment, e.g. ostracism. Other groups have a significantly smaller mental state vocabulary in contrast to Western cultures: for example, Angeline Lillard (1998, p. 13) cites anthropologists who claim that the Chewong in Malaysia have just five mental state terms in their vocabulary ('want', 'want very much', 'know', 'forget', 'miss/remember'). This linguistic feature is taken to reflect a broader cultural attitude to psychological states, namely, that they take less precedence as explanations or justifications of behaviours than other factors (e.g. strict societal rules).

In short, practices concerning reasoning about mental states, and the precedence they are given in everyday explanations, vary considerably across human cultures. What exactly does this evidence with regard to universal cognitive structures? A bias towards non-psychological explanations does not mean that psychological explanations are beyond the conceptual capacities of the populations in question. But it might suggest that mental state concepts are less central to their understanding of others, and in doing so challenges the tacitly accepted claim that social cognition consists primarily in the ability to attribute psychological states to others.

### 3. SYNCHRONY IN THE DEVELOPMENT OF FALSE BELIEF UNDERSTANDING

What kind of factors might we expect to affect a group's everyday understanding of psychological states? Three have already been mentioned: the precedence given to psychological explanations; societal attitudes to commenting on psychological states, and linguistic resources available for describing psychological states. These factors are clearly related: groups which consider it taboo to talk about psychological states must appeal to different types of explanation for behaviour; and a diminished societal emphasis on psychological explanations might reasonably correlate with a more minimal vocabulary for dealing with such explanations, as appears to be the case with the Chewong mentioned above. This section examines how such variation in social attitudes to psychological states might affect how children learn and develop psychological state concepts.

Clark Barrett and colleagues offer some insights to this question in their 2013 work, which describes a series of implicit response false-belief trials with children from three non-Western cultures: Shuar (Ecuador), Salar (China) and Yasawan (Fiji). These groups were chosen in part because of their quite different attitudes to children, and particularly the exposure children have to talk about mental states. In North American/Western European cultures, children are usually cared for by an adult, and direct speech between adults and babies is commonplace. In particular, it is not unusual for young children to be asked about their own mental states or for caregivers to talk aloud about their mental lives with the child, e.g. 'Mummy wants a coffee, what do you want?' This contrasts with the groups in Barrett and colleagues' study, where child-directed speech is less common, and children's opinions are rarely sought. For example, the authors write of the Yasawan that

'Yasawan children are typically regarded as the lowest ranking members of Yasawan society. Not only are children regarded as low ranking, parents also report that children do not 'understand' language and cannot 'think' or 'feel' pain or pleasure until well into their second year of life. [...] Yasawan parents' beliefs are also reflected in their behaviour, as they engage in very little face-to-face dialogue with infants and young children [...] It is also uncommon to have discussions about the feelings or thoughts of a child' (2013b, p.10)

Barrett and colleagues issued a variety of implicit response false belief tests with children in each of these cultures, using experimenters and artefacts which were familiar to the children. In each study an implicit measure was used, e.g. how long a child looked at a particular event, or where the child looked first.

For instance, in one verbal, anticipatory looking study, children were told a story, each sentence of which was illustrated with two pictures.<sup>4</sup> The methodology of this study was based on the established phenomenon that children and adults prefer to look at pictures which match sentences they hear (e.g. Scott et al., this volume; Scott et al. 2012; Tanenhaus et al. 1995).<sup>5</sup> For example, the Shuar experimenter reads 'Noemi has an orange. See? Noemi has an orange' while two pictures, one of Noemi holding an orange, and another of Jacqueline holding a corn cob are displayed. Children reliably looked longer at the picture of Noemi holding an orange, which matches the sentence they heard. The story follows a typical false belief set-up, each stage of which is illustrated with two pictures, one of which is congruent with the sentence read and another which is not. Noemi hides her orange then leaves the scene; Jacqueline moves the orange to a new location; Noemi returns to retrieve her orange. In this final, critical stage, children hear 'Noemi wakes up and is hungry. She looks for her orange', while being shown two pictures: one of Noemi looking in the container where she left her orange and another of her looking in the container that the orange has been moved to. North American toddlers (M = 31.6 months) looked reliably longer at the picture showing the protagonist looking where she left her object, that is, they look longer at the picture which matches the sentence they have heard. This finding was replicated in all three field sites, with children aged between approximately 25.5 – 52 months.<sup>6</sup> Similar results were reported for the other tasks: in each case the response of infants and children from Salar, Yasawan and Shuar communities matched those of American infants and children on the same tasks.

These data suggest that performance in false belief tasks that use implicit measures is the same in infants from diverse cultures. Infants and children raised in social environments that have quite different attitudes to psychological states and the status of children in contrast to European-American cultures, nevertheless appear to perform in just the same way as their European-American peers in these social cognition tasks. Further discussion of these results will follow in section six.

#### 4. DIFFERENCES IN THE DEVELOPMENT OF FALSE BELIEF UNDERSTANDING

When it comes to explicit, verbal false belief tasks, the cross-cultural story is significantly more complicated, and lively debates persist as to whether the data supports synchrony in the development of false belief understanding, or cultural differences. Tara Callaghan and colleagues (2005) argue for synchrony. These researchers conducted an interactive false belief paradigm with children in Peru, Canada, India, Thailand and Samoa. Here, the false belief task was set up as a game, where the child helped move the object from one location to another in the protagonist's absence. Children were then asked to point to the location the protagonist would go to when she returned. Children's performance was comparable across the groups, with few three year olds passing the task, 45% of four year olds passing, and 85% of five year olds passing. As in European-American cultures, age was a clear predictor of success in this particular false belief task.

However, attempts to replicate these data have met with varied success. Mayer and Träuble (2013) tested Samoan children, aged 3 – 14yrs on a false belief task nearly identical to that used by Callaghan and colleagues, and found that it wasn't until children were 8 years old that the majority (32 out of 58) were able to succeed (p.25). Of the five year olds tested, just 11 out of 35 children passed. By contrast, Callaghan and colleagues reported that 13 out of 18 Samoan five year olds were able to pass the task (2005, p. 381). Like Callaghan and colleagues, Mayer and Träuble concluded that age was a significant predictor of children's performance in false belief tasks; however, unlike Callaghan and colleagues, they also believe that the Pacific Island cultural reticence to discuss mental states affects children's performance in false belief tasks, by delaying their ability to pass them relative to European/American children.

Passing a false belief task which involves pointing to or articulating where a character will look for their hidden toy is only one of many measures for understanding another's mental states. In recognition of this,

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<sup>4</sup> This matched a procedure used earlier by Scott and colleagues (2012).

<sup>5</sup> For more information on why longer looking time at the 'correct' false belief scenario is indicative of false belief understanding using this method, as opposed to looking longer at the 'wrong' false belief outcome, as is the case with the violation of expectation method, see Scott et. al., this volume.

<sup>6</sup> A larger age range was used to maximise the number of participants.

Henry Wellman and David Liu (Wellman & Liu, 2004; Wellman, Fang, Liu, Zhu, & Liu, 2006) developed a 'theory of mind' scale, describing a series of mental state attribution tasks in the order that children are able to pass them. The pattern follows the Guttman scale, meaning that children who can pass the later tests can also pass all the earlier ones. Beginning with the task that the youngest children are able to pass, and ending with the most difficult, the scale is as follows (Wellman et al. 2006, p.1075):

- a) Diverse desires (people can have different desires for the same thing)
- b) Diverse beliefs (people can have different beliefs about the same situation)
- c) Knowledge-ignorance (something can be true, but someone might not know that)
- d) False belief (something can be true, but someone might believe something different)
- e) Hidden emotions (someone can feel one way, but display a different emotion).

Children in Australia, the United States and Germany follow this developmental pattern in their understanding of other's mental states, beginning first with grasping diverse desires at around 2yrs 11 months, and ending with being able to attribute hidden emotions to others sometime around their fifth birthdays (Wellman 2014, p.95). However, one does observe differences in the order of the scale across cultures. For example, Chinese pre-schoolers' success on the 'knowledge-ignorance' task precedes success on the 'diverse beliefs' task (Wellman et al. 2006). Wellman attributes this to the greater emphasis placed on knowledge acquisition in Chinese cultures, writing that while both Chinese and American parents talk to their children about other people's mental states, 'Chinese parents comment predominantly on knowing (Tardiff & Wellman, 2000), whereas U.S. parents comment more on thinking (Bartsch & Wellman, 1995)' (ibid p.99). Iranian children also manifest understanding of 'knowledge-ignorance' prior to grasping 'diverse desires', and in Iranian culture there is a similar strong emphasis on knowledge acquisition (Shahaeian et al, 2011).

Wellman's use of Iranian, Chinese, and Australian/European/American pre-schoolers serves to demonstrate a particular strength of three-cultural comparisons. As is discussed in Norenzayan and Heine (2005), it's not always clear when comparing data from two cultures, A & B, what the relevant causal factor may be. For example, in contrasting the Chinese and European/American sample, the explanatory cause for the change in the developmental pattern may be due to the majority of Chinese children being raised as only-children. There is robust evidence that children from larger families pass false belief tasks earlier than those in smaller families (Perner, Ruffman, & Leekam, 1994), and one might therefore argue that it is the family size that causes Chinese children to pass the knowledge/ignorance task prior to the diverse beliefs task, and not a cultural emphasis on knowledge acquisition. However, by introducing the Iranian group, Wellman and colleagues bring a third culture into the mix, one that shares a feature with the Chinese group by having a strong cultural emphasis on knowledge acquisition, but unlike Chinese children (and more like the European/American group) Iranian children are usually raised with siblings. The discovery that Iranian children also succeed on knowledge-ignorance before diverse belief tasks strengthens the claim that it is the cultural emphasis on knowledge acquisition that is the main contributing factor, and not the size of the family.

## 5. MICRO- OR MACRO-CULTURAL DIVERGENCE?

This array of data into false belief understanding in children across the world is a step towards broadening the participant base for this research. But how should we begin to make sense of this data, and how does it affect our accounts of mindreading? This section highlights some of the messier issues raised by these findings.

Nisbett's work describing the differences in thought between 'collectivist' and 'individualist' cultures has been highly influential in the cross-cultural mindreading debate. These categorisations apply at a macro-level, describing the biases of entire populations. However, one may worry that by looking at differences between large-scale populations, more significant local factors may be overlooked. Just within the European/American groups it has been documented that children with siblings pass the classic 'Maxi' false belief test earlier than only children (see above); that children from families with low SES are slower to develop mastery of false belief tasks (Homes, Black, & Miller, 1996); and that the frequency of mental state

talk within the family affects false belief performance (Brown, Conelan-McCall, & Dunn, 1996). Although these children are raised in a broadly 'individualistic' culture with an emphasis on mental states, they nevertheless display developmental differences in their understanding of mental states due to factors in their immediate family surroundings. One finds analogous results in non-Western cultures too. Mele Taumoepeau (2015) worked with families from the Pacific Islands living in New Zealand, examining the relation between the strength of caregivers' ethnic identity and children's use of mental state terms. While all the caregivers increased their use of mental state terms in their conversations with their toddlers as they aged, those caregivers who strongly identified with Island culture were slower to do so in contrast to those who identified less with Island culture. This in turn predicted children's performance on knowledge attribution and emotion understanding tasks, with children in families with strong Island identities passing these tasks slightly later. A broad focus on Pacific Islanders' general tendency to use mental state terms less than other groups is in danger of blurring more subtle, but nevertheless important differences between families, and the effects this has on children's understanding of mental states. Similarly, a study conducted by Ike Anggraika Kuntoro and colleagues (2013) comparing children from a low SES background in Indonesia with middle class Indonesian children found that the low SES children were slower to understand another's knowledge access and emotional situation compared to the middle class children (their understanding of another's false belief, however, developed at the same time). While broadly speaking Indonesian parenting practices share the East Asian emphasis on knowledge acquisition, one sees local differences in children's grasp of another's access to knowledge dependent on SES related factors (level of education of caregivers; amount of time spent with adults, etc.).

Of course this is not to imply that macro- and micro-cultural influences are distinct. Caregivers from Pacific Island cultures may well use fewer mental state terms in their interactions with children in contrast to other groups, and this is compatible with the finding that within the population there are differences in children's development of mental state understanding dependant on the strength of their family's ethnic identity. The point is, simply, that we should be careful not to be distracted by exotic broad distinctions between groups at the risk of missing more local, and possibly more salient, factors.

## 6. Universality, Nativism and Empiricism

The second part of this chapter explores some of the ways in which the data presented above might affect debates within cognitive science more generally, and social cognition more specifically. This section examines how the data affects the perennial tension between Nativists and Empiricists; the next looks more closely at how it affects on-going arguments about the cognitive architecture underlying social cognition.

The terms 'Nativism' and 'Empiricism' are well-established in philosophy and psychology, with both Nativists and Empiricists agreeing that a trait is innate if it is not learned. There is, however, a growing movement of philosophers questioning the usefulness of the distinction (Griffiths, 2002, Oyama, 2000; see Samuels 2007 in response). For example, Matteo Mameli and Patrick Bateson (2011) suggest that researchers use the concept 'innate' in a way that conflates several distinct properties, including (but not limited to): not learned; genetically coded; robustly developing; heritable. This is problematic, as there are tensions between these properties. To take one of Bateson and Mameli's examples, one might find that in a species of songbird the ability to produce a specific song correlates with the presence of a particular gene. But, there is also learning involved in acquiring the song, and only those birds with the specific gene are able to develop the learning processes required to acquire the song. It therefore seems as though the acquisition of the song is both genetically coded (meeting one of the criteria for innateness) but learned (contravening a broadly agreed criterion for a trait being innate). It may be that the properties associated with the concept 'innate' have an underlying common feature: whether this is so is an empirical question. But it might just as easily be the case that this congeries of properties shares no common thread, in which case 'Innate' ends up being what Mameli and Bateson refer to as a 'clutter' concept. A more careful discussion of whether 'innate' is a clutter concept is beyond the scope of this chapter. The lesson to draw from this discussion is that it is not always enough to ask whether a set of data points to a trait being

'innate'; one must specify exactly which property associated with the innateness concept one is referring to, and to judge the evidence on this basis.

We are now in a position to ascertain how the data presented in this chapter impacts on the debate between Nativists and Empiricists with respect to mental state attribution. First, it seems that some psychological abilities appear to be universal across cultures, e.g. success in implicit false belief tasks, and the order in which one passes various tasks as presented on Wellman and Liu's 'Theory of Mind Scale' (with the exception of the diverse beliefs/knowledge attribution task, on which more presently). Which of the properties associated with innateness does this evidence?

It is tempting to assume that if a cognitive feature appears in all human populations, and particularly in all human infants, then it is highly unlikely to be learned. There are two strands to this way of thinking:

1. What an infant learns will depend strongly on what she is exposed to in her immediate surrounds. Infants across the world have quite different environmental surroundings, therefore it is infeasible to think that infants would all learn the same concepts by the same age given the quite different experiences they each have shaping their learning.
2. If a relatively complex concept appears to be present in young infants, then Poverty of the Stimulus arguments urge us towards the view that it cannot be learned

Those of an Empiricist leaning would challenge both strands of this argument. Their first point is that it is possible that a particular cognitive trait is found across human cultures because there are experiences in common across those groups (Norenzayan and Heine, 2005, p.778). Henry Wellman, for instance, warns against assuming that uniformity in infants' performances on implicit false belief tasks is best explained by claiming that the mindreading concepts which facilitate this performance are innate (2014). Instead, he suggests that Bayesian learning mechanisms allow infants to learn low-level mindreading concepts from their experiences of the world. When faced with the counter that infants have very different experiences depending on their cultural environment, Empiricists can respond by suggesting that the differences are not as great as we think. People the world over look for objects where they believe them to be, have broadly similar perceptual limitations, and the things they reach for are nearly always things that they want. Infants do not face such a varied behavioural data-set as one may initially suppose.

Wellman cites research with deaf infants to support this view. Meristo and colleagues (2012) conducted an anticipatory looking study of 17-26 month old infants in Sweden, contrasting the performance of deaf infants from hearing families with that of hearing infants (in hearing families) on implicit non-verbal false belief tasks. They found that 'all 10 of the hearing infants – but none of the 10 deaf infants – looked first at the correct location in the FB [false-belief] condition' (p.636), but nearly all the infants in both groups looked at the correct location in the true-belief condition. It is well documented that deaf infants in hearing families face significant challenges in their access to communication and linguistic input (see Schick et. al. 2007 for a review), and Wellman implies that these data suggest that one's immersion in language can affect the acquisition of low-level mindreading concepts. This speaks to an empiricist mindreading account, for if the infant's low-level mindreading concepts were innate one would not expect experience to play such a critical role in their manifestation.

In response, Nativists would point out that 'innate' does not mean 'blind to environmental factors'. Experience can and does play a critical role in the Nativist views of mindreading, and Nativism would be incoherent if it did not accommodate this. For example, Peter Carruthers, known predominantly for his Nativist stance towards mindreading, maintains that there is a critical role for learning in his account of cognition. Specifically, he claims that we have cognitive modules, which are domain-specific 'innate learning mechanisms' (2011, p. 228), each of which evolved to learn about particular aspects of the world, e.g. number, minds, object-permanence, spatial location, etc. Because these modules are learning systems, what they learn will of course be affected by the agent's environment. A deaf infant in a hearing family lacks the environmental triggers of over-hearing conversation, and the aural cues that draw hearing

infant's attention to daily mindreading events, and as a consequence does not acquire mindreading at the same time as her hearing peers.

The second strand of the Nativist's argument, namely, that concerns growing from the Poverty of the Stimulus arguments should push us towards Nativism, is challenged by a growing corpus of research based on computational models of Bayesian hierarchical learning (E.g. Goodman et. al 2012), which strongly suggest that theories, even theories of quite abstract concepts like causality, can be learned after far fewer trials than had originally been thought. While there are indefinitely many hypotheses available to explain the data, learners nevertheless converge on the same one after relatively few trials. A Bayesian explanation for this is that there are priors which constrain the space of hypotheses available to learners, as Gopnik and Wellman explain:

'While many structures may be possible, some of the structures are going to be more likely than others. Bayesian methods give you a way of determining the probability of the possibilities. They tell you whether some hypothesis is more likely than others given the evidence'. (2012, p. 1088)

There is space for disagreement within Empiricist views as to which priors are innate, in the sense of being robustly developing and not learned, and which are learned. Wellman, for instance, maintains that there are likely non-learned domain-specific priors, e.g. prior probabilities assigned to hypotheses about the causal power of mental states, of physical forces, of addition and subtraction etc (2014). Mindreading priors shape the space of hypotheses for picking a particular type of mental state as a cause of a token behaviour. As the child develops, so too does the precision of her mindreading hypotheses, building from the very general e.g. reaching is caused by a goal, to the more specific, e.g. reaching for that cup means the agent is thirsty.

Does the cross-cultural data documented in this chapter advance our understanding of the debate between Nativists and Empiricists? Both sides maintain that there is a critical role for learning in their accounts, and appeal to this to explain differences in children and adult's social cognition across cultures. That both sides agree on this is indicative of a broader trend in cognitive science, namely, that the divide between Nativism and Empiricism is becoming increasingly blurred. Peter Carruthers writes of Gopnik's Constructivist thesis that

'In light of her most recent position, however, it might be possible for Gopnik to claim that there are multiple statistical-learning mechanisms in the human mind capable of extracting underlying causal structure (one for mindreading, one for physical forces, one for biological kinds, and so forth). [...] Notice, however, that the upshot would be indistinguishable from a form of modular account. For it would postulate an innate specialized learning mechanism designed for mindreading'. (2011, p. 232).

While one may tweak the rhetoric to suit one's own dialectic preferences (Nativists welcoming Empiricists over to their side, or vice-versa), the overall moral is the same: the division between the two positions is a messy one, and likely to manifest itself in details over how learning progresses. If this is the case, then cross-cultural data will be but one small contribution to the debate, with more of the work stemming from computer models of learning and testing the different predictions yielded by alternative accounts of learning.

## 7. THE IMPACT ON THEORIES OF MIND

A good account of social cognition must be able to explain both the similarities and the differences that we see in the ability to attribute mental states to others. As should now be clear, the phenomenon to be explained is complicated, and acknowledging this forms the first step towards a clearer understanding of it.



A rough and ready summary of the data presented above brings out the following explanatory desiderata for a theory of mindreading:<sup>7</sup>

#### IMPLICIT RESPONSES TASKS

Why infants' responses in implicit response false belief trials seem to be the same across cultures.

#### DIFFERENCES IN THE THEORY OF MIND SCALE

Why we see some differences in the theory of mind scale (see section 4) across cultures, e.g. Chinese children pass 'knowledge-ignorance' tasks before the 'diverse beliefs' task, whereas the converse obtains for North American children.

#### SIMILARITIES IN THE THEORY OF MIND SCALE

Why some features of the 'Scaling' task can change, but others appear to remain consistent (e.g. there is evidence for 'knowledge-ignorance' and 'diverse beliefs' switching, but none as yet for understanding 'diverse beliefs' prior to 'diverse desires')

#### ADULT MINDREADING DIFFERENCES

How there can be such variation in mature mindreading, e.g. some groups prefer non-mentalistic to mentalistic explanations of behaviour (section 2).

One question that arises from these data is whether they all involve attributing psychological states to others. In particular, there are several philosophers and psychologists, call them 'infant behaviourists', who deny that success in implicit response false belief tasks actually requires a grasp of false belief (Heyes, 2014; Perner & Ruffman, 2005). This contrasts with 'mentalistic' approaches which claim that the best explanation of the 'implicit response' data is that infants can attribute false beliefs to others (Carruthers, 2011, 2013; Onishi and Baillargeon, 2005; Scott et al. 2010, this volume). A third set of views are the 'Conceptual Shift' approaches, which argue that infants' success in implicit response tasks is best explained by an ability to attribute psychological states to others, but that the states they attribute are not representational, and therefore do not warrant the label 'belief'. Both the 'Conceptual shift' and 'Infant behaviourist' approaches maintain that success in explicit, verbal false belief tasks does require that the child has the concept of false belief; where they differ from mentalistic approaches is in their shared claim that infants' performance in implicit response trials does not evidence a grasp of the concept of false belief. The rest of this piece offers some thoughts on how two of the mindreading accounts mentioned, the 'conceptual shift' and 'mentalistic' accounts might address the data summarised above.

#### Mentalistic accounts

Mentalistic accounts of mindreading hold that infants can attribute false beliefs to others. Moreover, nearly all the advocates of this approach make the further claim that this ability is 'innately channelled'.<sup>8</sup> This naturally leads to the question: if infants can attribute false beliefs to others, why do pre-schoolers fail on the verbal false belief task? There is disagreement within the mentalistic camp over the best explanation for this phenomenon, however, the general view seems to be that explicit tasks require considerably more in the way of cognitive processing than implicit ones, as the child is required to produce a response (by pointing, or saying what the character will do next). Failure in verbal tasks is taken to show that the cognitive demands of the task hinder the proper use of the false belief concept; it is not indicative of the absence of that concept. Rose Scott and colleagues (this volume) are among those who take the mentalistic approach. They explain cross-cultural differences in children's performances on explicit false

<sup>7</sup> Mindreading is, of course, just one aspect of the broader phenomenon that is social cognition.

<sup>8</sup> This is not a necessary commitment: one could claim that infants attribute false beliefs to others and that this concept is learned.

belief tasks by reference to the impact the environment has on the cognitive demands that mask false belief competence in these tasks. On their view, three factors affect children's performance on explicit tasks: attentional and motivational factors, inferential factors, and processing factors.

The first of these, attentional and motivational factors, refer to Scott and colleagues' claim that having the capacity to attribute false beliefs to others does not guarantee that one is motivated to use this ability in social interactions. In addition, one must also have the inclination to attend to other people before any successful false belief reasoning can take place. Scott and colleagues suggest that attentional and motivational factors could explain why children in environments where there is less talk about mental states pass explicit false belief tasks later than their counterparts in environments where conversations about mental states are more frequent. In environments where mental states are not mentioned very much, children are not inclined to pay attention to them, and this is said to explain their delayed performance on explicit false belief tasks; their performance does not indicate a delay in acquiring the concept of false belief. It's not clear that this can explain the difference in infant and pre-school performances in experiments, though, as one needs to explain why infants are motivated to attend to the stimuli whereas pre-schoolers are not.

The second feature Scott and colleagues mention is inferential factors: having the false belief concept is distinct from the ability to infer the contents of another's false belief in all situations, and pre-schoolers' performance in explicit false belief tasks could be indicative of a failure to infer the protagonist's false belief. This response faces the same problem as mentioned above, namely, why infants are able to successfully infer false beliefs in tasks that are comparable in their set-up to the explicit tasks that pre-schoolers fail. If one can overcome this, however, a neat response to cross-cultural differences becomes available: children learn new strategies to infer other people's mental states, and the strategies that are learned, and how quickly they are acquired, will depend on their social environment. Plentiful exposure to references to mental states should correlate with faster learning of strategies to infer them; less exposure correlates with slower learning, and possibly fewer strategies that are learned.

The final explanans for pre-school performances on explicit tasks is 'processing factors'. This is nicely explained by Peter Carruthers (2011, 2013) who observes that the verbal nature of such tasks place a triple burden on the mindreading module (2013, p.153):

1. Keeping track of the character's false belief
2. Interpreting the experimenter's communicative intention behind her question
3. Generating an action that will communicate to the experimenter a prediction of the character's behaviour.

While a child's executive functions are relatively immature this load is too much to bear. The mindreading system has tracked the character's false belief, but this representation is 'lost' under the considerable processing strain undergone by the rest of the mindreading system. As a consequence, the child defaults to reality when indicating where the character will look; a strategy that works in the majority of social cognition cases, but not in false belief tasks. Passing these tasks comes with 'maturational expansion of the processing resources available to the mindreading faculty', meaning that it is able to process this triple burden placed upon it (ibid). Alternatively, or perhaps additionally, 'increasing efficiency in the interactions between the thought attribution systems and executive systems' also helps, as the systems which generate the child's communicative action have swifter access to the output of the mindreading system.

In order for this response to accommodate the data above, though, the mentalistic account must address the following issues. First, it needs to explain the 'scaling' phenomenon, that is, why giving verbal responses to some types of mindreading tasks is easier for younger children, than responding to the false belief task. A first pass at an answer is that the other tasks do not involve inhibiting one's own knowledge of reality to the same extent as the false belief task (e.g. in the diverse belief task the child does not know

whether her own belief, or that of the protagonist, is true), and therefore require less in the way of executive function. But does the account have the potential to explain the differences in scaling phenomena? Carruthers claims that while 'mindreading capacities are independent of language' (2011, p. 253), 'experience with language (and with communication more generally) might enhance the development of the mindreading system itself, helping to improve its efficiency' (2013, p. 153). The precise details of the relation between mindreading and language comprehension and production have yet to be fully developed. However, there is enough here to sketch out the beginning of an explanation for the differences perceived in children passing the 'knowledge/ignorance' and 'diverse beliefs' tasks on the theory of mind scale. In those groups where there is a strong emphasis on knowledge acquisition, and ignorance is stigmatised, both concepts will become more salient for children than other psychological concepts, like belief. The increased salience of these concepts means that interpreting questions about them becomes easier for the child, meaning that the cognitive burden of (2) is greatly reduced. By contrast, if beliefs are not so salient in the culture, then the cognitive burden of (2) is more significant, making the task more difficult to solve.

How do mentalistic accounts explain the differences perceived at an adult level in the types of explanation given for behaviour? The answer to this is not clear, but one interpretation is that such accounts maintain that infant and pre-school mindreading draw on different conceptual resources to those used to construct explanations for behaviour, and that therefore the latter is a quite different phenomenon. Carruthers touches on this (2006, pp.203 - 210) by suggesting that children and adults acquire norms of explanation from their social group. The normative explanatory practices of a group may well be distinct from the psychological mechanisms that facilitate successful interaction, with roots in the social history of the group rather than in the individual's psychology. There is much more to be explored here, and I will return to this theme presently.

Mentalistic accounts appeal to the effect of the environment on processing demands, inferring mental states, and attention and motivation to mindread, to explain the differences perceived across cultures in passing explicit mindreading tasks. Critically, for this account, cross-cultural differences are not indicative of the absence of the false belief concept, but rather of the effect of the environment on manifesting an understanding of false belief. However, there is a competing explanation for the data in the form of the 'conceptual shift' accounts.

### Conceptual shift accounts

There are a variety of 'conceptual shift' accounts of mindreading, but the one I focus on here is the 'Two systems' account proposed by Stephen Butterfill and Ian Apperly (2009, 2013; Apperly 2010). Two systems accounts maintain that humans have available to them two distinct mindreading strategies, one of which is metarepresentational, dubbed 'high level mindreading', and another which is not, namely, 'low-level mindreading'. Furthermore, low-level mindreading is the strategy that facilitates the majority of our social interactions, and indeed is the only strategy available to infants and non-human animals.

Low-level mindreading entails attributing relational, rather than representational states to others. Apperly and Butterfill introduce two relational states: *encounterings* and *registrations*. They also introduce the concept of a 'field': 'An agent's field at any given time is a set of objects' (B&A 2013, p.10). There are reliable physical and spatial constraints which determine an agent's field, and these constraints are easily tracked by infant and animal cognitive systems using a few basic rules, e.g. if there is an opaque barrier between the other's eyes and an object, that object is not in the other's field. The relation between an agent and an object in her field is captured by the ENCOUNTERING concept. An agent can only act on those objects she has encountered, so, a cognitive system which has the ENCOUNTERING concept can track those objects which are in another's field, and which the agent could potentially act on. This yields considerable manipulative and predictive power: for example, if you know that a competitor will take your food if she encounters it, and you can track what the other encounters, then you can safe-guard your food by ensuring that the other does not encounter it.

'Registrations' are like encounterings, but they persist even when the object is no longer in an agent's field. A&B initially characterise registrations as holding between an agent, an object and a location: 'One stands in the registering relation to an object and location if one encountered it at that location and if one has not since encountered it somewhere else' (A&B, 2009, p. 962). Registration relations therefore have correctness conditions: one can encounter and thus register an object at location A, but the object might move to B when you are not encountering it (e.g. you have your back turned), consequently your registration relation is incorrect.

'High-level' mindreading refers to the ability to grasp representational states like beliefs, desires etc. It allows for significantly more flexibility than low-level mindreading, as it allows one to recognise how a particular state of affairs is represented to the other, e.g. that she sees the man over there as 'Clark Kent' whereas I see him as 'Superman'. The concepts of high-level mindreading just are our folk psychological concepts, as used by other people to explain behaviour and to talk about psychological states.

On this view, low-level mindreading is a human universal, and likely to 'develop early, under relatively tight genetic and environmental constraints' (Apperly 2010, p. 137). There is very little variation across individuals in their low-level mindreading abilities, and this neatly accommodates the data demonstrating uniformity in infants' responses in implicit response tests.<sup>9</sup> The story with relation to high-level mindreading is more complicated. This is because Apperly maintains that high-level mindreading is a critical, but not necessarily dominant, ability for navigating the social world. On his view, the role of scripts and situation-models are much under-represented in the social cognition literature. Situation models are models one builds mapping the schemas of situations that most frequently recur in daily life, e.g. going to the shops, classrooms at school, playing with friends, etc. Children and adults recall these models when in the relevant situation, and they guide their actions and attention. The models a child builds is completely dependent on the situations she is exposed to, and how her care-giver guides her through these situations. High-level mindreading is still necessary to interpret details of the model, e.g. one's 'shop' model can guide one's attention to the check-out assistant when bagging and paying for shopping, but one needs high-level mindreading to interpret her instructions and questions to you. On this view, most of our daily social interactions rely on quick responses guided by low-level mindreading, and conforming our behaviours to social scripts and norms. High-level mindreading does not underpin the majority of our social interactions.

What then of the developmental gap between implicit response tasks and verbal social cognition tasks? Are situation models required to pass the verbal false belief task but not the implicit task? The answer is no, for the same reasons rehearsed above: the implicit and explicit tasks are comparable in terms of the scenario the child watches. However, Apperly suggests that it is highly possible that when a child is invited to comment on a situation, her high-level mindreading resources and situation models are automatically invoked to solve the problem, even though it could easily be settled using low-level mindreading abilities. These resources are cognitively draining, and when building her model of the false belief situation she faces, the child initially is prone to egocentric biases, using her own model of the situation rather than the protagonist's (Apperly 2010, p. 154). She gradually overcomes these as she becomes more experienced in false belief and other social cognitive scenarios, and as her model of these situations becomes more detailed.

The situation-models that a child acquires will clearly depend on the norms of her social environment. We should therefore expect to see considerable variation across individuals on any task that invokes high-level mindreading, as this involves the child's ability to successfully model the situation and the protagonist's perspective within it. Furthermore, the models she builds may incorporate folk psychological states to a greater or lesser extent dependent on the practices of her culture. In this instance, the question 'is high-level mindreading a cultural universal' can seem misplaced. While children across the world eventually come to succeed in social cognitive tasks that require explicit responses, the extent to which they all do this because of competence with high-level mindreading concepts is questionable. Each society may have a schema or situation-model that can give an explanation or

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<sup>9</sup> For a detailed account of how low-level mindreading explains infants' performance in implicit response trials, see Butterfill and Apperly, (2013).

prediction of the protagonist's behaviour, but different models may incorporate different psychological concepts, or assign more or less weight to psychological factors, resulting in significant differences across individuals' performances on these tasks. Much more work on the role of situation-models in social cognition is required to fully address the questions raised in this chapter. Situation-models certainly cope easily with differences perceived in social cognitive practices; but more work needs to be done to delimit the scope of their influence. For example, what role do they play in the simple explicit response tasks documented in Wellman and Liu's theory of mind scale? Are they only called into play when dealing with more complex social cognitive explanations as documented in section two? Carruthers' mention of social norms certainly leaves space for situation-models to play a critical role in the latter situation, but his commitment to Mentalistic accounts of mindreading would leave less of a role for such models in the former situations. Future work detailing the scope of high-level mindreading is required in order to progress on these issues.

## 8. Conclusions

This chapter has brought together some of the key findings in the psychological and anthropological literature concerning social cognition across the world. Collecting this data is an on-going challenge, but critical to informing a scientifically responsible account of social cognition. Whatever one's preferred account of social cognition, it must explain why some mindreading phenomena remain robust across populations, while others manifest variation.

Cross-cultural data impacts two significant debates in philosophy. The first is whether it can shed any light on the on-going debate between Nativism and Empiricism. I have argued that cross-cultural data alone cannot arbitrate this particular debate, mainly because there is a larger issue at stake, namely, what the terms of the Empiricist/Nativist debate are. It seems that both sides can accommodate cross-cultural data, and that both do so by appeal to learning. More work, therefore, needs to be done to properly define the scope of this debate before cross-cultural data can be very helpful in contributing to its resolution.

The second debate discussed was between 'Conceptual shift' and 'Mentalistic' accounts of social cognition. Once again, both offer explanations for the cross-cultural data. However, mentalistic accounts need to do more to justify why it is harder to successfully infer or pay attention to psychological states in explicit response tasks than implicit response tasks. They must also develop their 'cognitive load' response to accommodate Wellman and Liu's theory of mind scale phenomenon. Apperly and Butterfill's 'Two-systems' Conceptual Shift account appears to accommodate cross-cultural differences and similarities more easily by appeal to a universally developing 'first' theory of mind system, and a high-level mindreading system that is closely tied to the culturally dependent 'situation models' that children develop. Further work is required to clarify the role of situation-models within social cognitive situations, and to work through the details of how these models interact with high-level mindreading.

Is Fodor right, then, that folk psychology is a universal phenomenon? It depends how one understands folk psychology. If, in-line with mentalistic accounts, you see it as congruent with the concepts infants use to understand other people's psychological states, then you will answer in the affirmative: infants across the world ascribe representational states to others to predict their behaviour, and differences seen in children's performances are best explained by difficulties in applying psychological concepts rather than an inability to grasp the concepts at all. By contrast, 'Conceptual Change' accounts could answer 'no' to this question. Non-folk psychological concepts like 'registrations' and 'encounterings' are universal, but high-level folk psychological concepts like 'belief' and 'desire' could look very different across individuals depending on the normative practices of your group. Once again, cross-cultural work is insufficient on its own to arbitrate between these positions. But it continues to play an essential role in guiding progress in these debates, and in forestalling the pitfalls that accompany the dominant focus on WEIRD populations in psychological literature.

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