

While taking a break, we are happy to republish some of our favorite 'oldies but goodies'. This one was first put online in December of last year (2008). It was the first installment of a series of posts on [Richard Nisbett](#)'s theory of culture and perception. Enjoy!

In a lively account published in Trends In Cognitive Sciences (see [here](#)), Nisbett and Miyamoto (2005) made the case for "cultural" influences on perception. The crux of the argument is this : visual perception in Americans is more analytical, while in Asians it is more holistic. Americans pay attention to details, Asians to the larger picture. Americans examine objects in isolation, Asians are more sensitive to context. In the authors' own words (p. 469):

"[...], we believe there is considerable evidence that shows that Asians are inclined to attend to, perceive and remember contexts and relationships whereas Westerners are more likely to attend to, perceive and remember the attributes of salient objects and their category memberships. It should be noted that the perceptual and attentional differences just described are in general quite large, sometimes even close to one standard deviation. Indeed, in the typical study, Asians and Westerners were found to behave in qualitatively different ways."

The evidence referred to above consists of psychological experiments that compared the behaviour of Westerners and Asians using mostly well-established paradigms. Change blindness, for example, is a popular staple of visual psychology: people often fail to detect large differences between two pictures shown in succession.

Masuda and Nisbett have found that Japanese subjects are more likely to detect changes to the background, while Americans are relatively more likely to detect changes in salient objects. From this and other findings, the authors argue that Asians and Westerners show qualitative differences in patterns of attention

This is meant as a challenge to a well-entrenched view in psychophysics (the part of psychology that deals with perception) that the main features of visual perception are defined by the common biological background of the human species and that issues of culture are, thankfully, someone else's headache. This allows for a convenient focus on exclusively running work colleagues and undergraduate students as subjects.

Psychophysicists like to cut up visual perception into an ill-defined hierarchy that runs from low-level stuff to high-level stuff. Examples of low-level stuff include contrast detection and orientation discrimination, whereas face perception is high-level stuff, and the perception of emotions is practically social psychology (ewww). It is understood that any topic that falls a level or two below your own favourite object of study is terribly technical and therefore boring, and anything above your own level is badly-controlled pop science, and boring. Hence, to someone who studies orientation discrimination, the properties of receptors in the retina is too low-level a topic and boring, and object recognition is a high-level nightmare, a philosophical quagmire, and boring.

It's probably fair to say that most people working in the field assume that low-level mechanisms are less susceptible to interindividual variation (pathologies aside), whereas high-level mechanisms are less constrained, people have better conscious control over them, etc. It is absolutely fair to question this assumption, but that is not really the point here. The point is that, given this assumption, evidence for inter-cultural variations in low-level mechanisms is more surprising and can be construed as going against the consensus. Color perception is thought to be low-level, and that is why there has been much interest in potential influences of language on the perception of colors ever since the original Berlin & Kay study. So when Nisbett & Masuda (2006) talk about cultural

variation in "basic visual processes", what level in the hierarchy are they really talking about?

We would all be surprised to see intercultural variability in orientation selectivity in primary visual cortex cells, not because it is set in genetic stone (it isn't), but because we don't have any plausible reasons to expect variability. We all share a visual environment where all orientations are represented, it isn't like some people can get by without horizontal selectivity. What about visual attention, which is at the heart of Nisbett's theory?

The place of visual attention in the low-level/high-level hierarchy is hard to pin down. On the one hand some people argue that it influences vision all the way down to the appearance of visual objects, and the other hand others will argue that it's a catch-all term for what are actually several distinct phenomena. Some of it is thought to be an automatic response to certain stimuli, and therefore low-level, but to a large extent visual attention is modulated by conscious strategies and by context. In most contexts, your gaze will be automatically attracted to a large, looming object, but it is easy to learn to suppress that response.

Moreover, there are probably hundreds of studies that have trained people and monkeys to use specific patterns of visual attention. Anything related to the Posner paradigm probably falls under that description: subjects learn to allocate their attention flexibly given the constraints of the task. Therefore writing that

"This research provides evidence that cultural variations are observable even in patterns of attention that one might assume to be governed by basic, invariant psychological processes" (Masuda & Nisbett, 2006)

is a bit of a stretch, to say the least. I don't know of anyone who ever wrote that the allocation of attention is an invariant psychological process.

So: would it be surprising to find that attentional patterns vary from one individual to the next? Not that much. We know they are under relatively flexible, top-down control. The most surprising aspect in Nisbett's theory is the way different patterns of attention are supposed to arise in Asians and Westerners: through an internalisation in visual perception of broad cultural features. Western culture, in Nisbett's description, rewards individualistic thinking, while Asian culture favours the group over the individual. Therefore Asians need to "attend to the context", over attending to individual objects as Americans do.

There's quite a gap between having to attend more (as in having to pay more mind to) to social relations and interdependencies and attending more to global features of a visual scene. The potential cultural benefits of doing that are rather hard to discern - it's not as if important social information manifested itself "holistically" in a visual scene but not in its details. Clearly something is missing here.

To explain why holistic cultures should engender holistic perception, Nisbett and Miyamoto point to some observational data (p. 469):

"When mothers and infants are observed playing with toys in their own home [...] it is found that American mothers label toys and point out their attributes more often than do Japanese mothers. By contrast, Japanese mothers tend to engage their infants in social routines more than do American mothers. American mothers' emphasis on labelling objects might lead infants to focus on the objects and their appropriate categorizations whereas Japanese mothers' emphasis on social practices might direct infants' attention to the relationship or to the context in which the object is located."

I'd be interested in an explanation of how exactly an emphasis on \*social practices\* should affect an

infant's attentional patterns, but let's assume the phenomenon is real, and that the experimental findings are solid. Here's a possible summary of what they tell us, along with a few caveats:

1. East Asians and Americans perform differently on average in a range of psychological tasks that are thought to be related to visual attention, whatever that is.
2. The general pattern of results is that Americans seem to have faster/more accurate access to more local aspects of a visual scene, while East Asians have better access to global and/or contextual aspects. The difference can be roughly described in terms of holistic vs. analytic perceptual strategies.
3. There is limited evidence that the two types of strategies can be elicited in bi-cultural individuals if cultural context is primed first. According to some studies, if you prime Chinese-Americans with their Chinese identity, for example by showing them items specific to one culture, they will behave more holistically, and vice-versa if primed with their American identity.

Now for the caveats, listed Asian-style from the more general to the more specific:

1. Very generally speaking, and aside from the priming experiments, all the data cited by Nisbett and Miyamoto are not experimental data. They should be treated with the same caution as survey data showing group differences, because that's what they are. They're subject to sample error and sample bias. There's a hundred potentially relevant variables that haven't been controlled for (more on that below). The causal mechanism evoked in the paper seems to me pretty weak, but others might disagree.
2. In some cases, there might be some non-perceptual confounds at play, especially when the tasks given to subjects are vague. In Masuda and Nisbett (2001), subjects were shown short animations and asked to "report what they had seen". It seems plausible that subjects reported what they felt were the most important aspects of the scene, but importance may not have anything to do with perceptual salience. The fact that Japanese gave more information about the context does not show that they hadn't perceived the features of the individual objects: it could equally well be that they felt they weren't worth reporting. Also, given that the Japanese participants hadn't reported much in way of individual features, it is not so surprising that they were less likely to recall them later on.

A related point is that subjects sometimes try to do what they think the experimenter wants them to do, sometimes they try to second-guess the experimenter's intention, and sometimes they just press response keys at random to get their 10 bucks or course credit. Different cultures may differ in their expectations about psychologists, and also in their view of appropriate ways to get course credit.

3. Visual attention is traditionally described as a filtering process: the brain receives more information than it really needs at any point in time, and needs to select information sources appropriate to the task at hand. The flip side of the coin is to view attention as a resource allocation problem: attention is about trading off accurate information about some aspects of the world for the sake of others. If I focus on one part of a visual scene, I have less information about other parts. In that respect the results of the first change blindness experiment reported in Masuda & Nisbett (2006) are surprising: if the Japanese are as fast as the Americans in detecting focal changes, and faster at detecting changes in the background, then where is the expected trade-off? There's no end of issues when analysing experimental data related to allocation of attention, and the review by Sperling & Doshier (1986) is a good place to start.

Although the results reported by Nisbett and Miyamoto are intriguing, one should be careful not to overinterpret them. Even if Americans and East Asians do indeed differ in how they allocate

attention, that reflects a difference in default perceptual strategies - the data don't say anything about how general the finding is, nor do they imply that the strategies are inflexible. I doubt that Americans and East Asians differ much in their attentional strategies while driving or playing baseball. Not to belabour the point, but if someone were to show that East Asian boxing champions fight while focusing on the relationship between their opponents and its background, now that would be surprising.

The next installment will look at two related papers published recently in PloS ONE, one of them fairly decent and the other absolutely ludicrous. Stay tuned!

## References

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