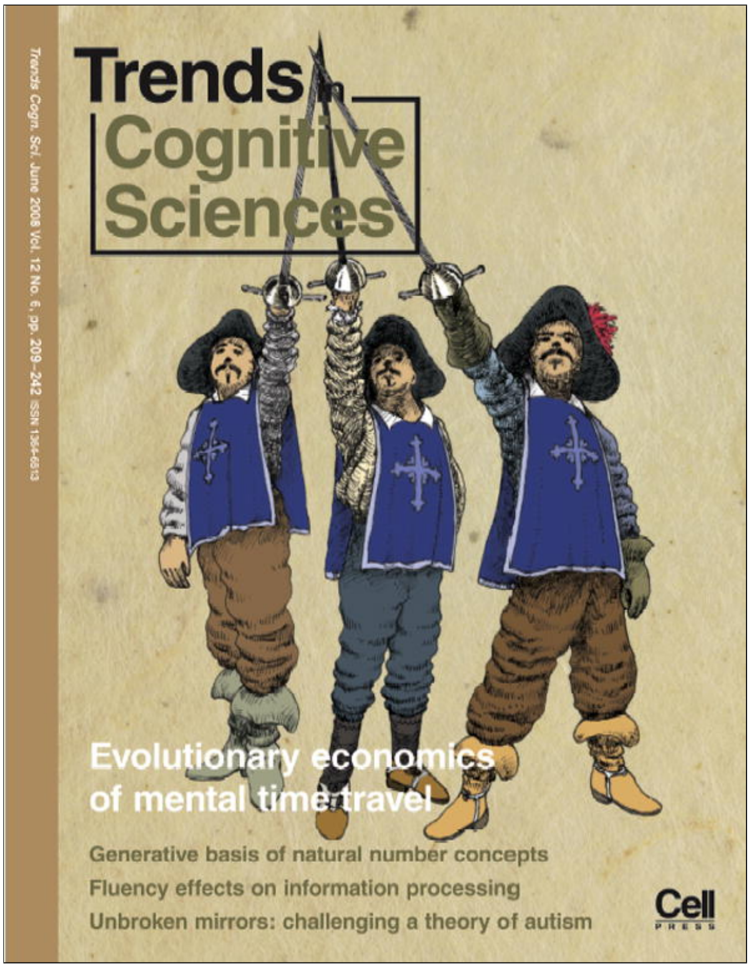
Trends in Cognitive Sciences
Trends Cogn. Sci. June 2008 Vol. 12 No. 6, pp. 209–242 ISSN 1364-6613
Evolutionary economics of mental time travel
Generative basis of natural number concepts
Fluency effects on information processing
Unbroken mirrors: challenging a theory of autism
Cell
PRESS

cal validity of this method would need to be tested experimentally, it skirts the problem of loss aversion and has the potential to meet the coin toss condition for an adequate filtering criterion.

References

1 Clifford, C.W.G. *et al.* (2008) Getting technical about awareness. *Trends Cogn. Sci.* 12, 54–58
2 Persaud, N. *et al.* (2007) Post-decision wagering objectively measures awareness. *Nat. Neurosci.* 10, 257–261
3 Kahneman, D. and Tversky, A. (1979) Prospect theory - analysis of decision under risk. *Econometrica* 47, 263–291
4 Johnson, E.J. and Goldstein, D. (2003) Do defaults save lives? *Science* 302, 1338–1339

doi:10.1016/j.tics.2008.02.012 Available online 14 May 2008

Letters Response

A good bet to measure awareness?

Colin W.G. Clifford, Ehsan Arabzadeh and Justin A. Harris

School of Psychology, The University of Sydney, Sydney, NSW 2006, Australia

Persaud *et al.* [1] proposed that post-decision wagering can be used to measure awareness objectively. However, the relationship between wagering and awareness is far from direct because post-decision wagering reflects not only awareness of the sensory evidence, but also the wagering strategy of the subject. In an effort to disambiguate the effects of strategy and awareness, we showed how the pay-off matrix for post-decision wagering could be designed to reward a particular strategy [2]. In their response, Schurger and Sher [3] pointed out that the subjective pay-off of a wager can differ markedly from its objective value. They refer in particular to the well-known phenomenon of loss aversion, whereby people typically exhibit greater sensitivity to losses than to equivalent gains when making decisions. Given that subjects differ in the degree to which they demonstrate loss aversion [4], a possible method for achieving the desired ratio of high to low wagers would be to determine the pay-off matrix adaptively for each subject. Consider, for example, the pay-off matrix designed by Schurger and Sher [3] to counter loss aversion. If a subject was making predominantly low wagers with this pay-off matrix (i.e. still showing loss aversion), then the penalty for a low wager following an incorrect decision could be increased. If, instead, a subject made exclusively high wagers (i.e. showed no loss aversion), then they could be encouraged to bet low by decreasing the penalty for a low wager below the size of the corresponding reward (as in Clifford *et al.* [2], Table 3). In this way, individual subjects could be encouraged to make approximately equal numbers of high and low wagers.

Schurger and Sher [3] also propose an alternative means to counter loss aversion by fixing the amount to be wagered and thus the magnitude of any potential loss. Instead of wagering low or high on the correctness of the preceding perceptual decision, the subject wagers a fixed amount either on a 50–50 default option or on the correctness of their decision. Assuming that the perceptual decision is never worse than a guess, the best strategy of the observer for maximizing their expected gain is to wager always on the correctness of their decision, regardless of the weight of the sensory evidence. Schurger and Sher [3] suggest that subjects might exhibit a default bias to wager on the 50–50 option when they feel that their perceptual decision was no more than a guess, such that the choice to wager on the 50–50 default option potentially constitutes a sufficient condition for the absence of any awareness on a trial. Nonetheless, given that there is no gain in wagering on the 50–50 default option rather than wagering on the decision, one needs to be cautious in interpreting the reasoning behind the choice of a subject. For example, they might be less averse to losing money on the 'unlucky' outcome of a coin toss than on the basis of their own wrong decision. In this case, the choice to wager on the 50–50 default option would not be sufficient grounds for inferring absence of awareness. Thus, it remains an empirical question whether there is any advantage to trading loss aversion for default bias. To establish the answer requires that the data are analyzed in a way that distinguishes a suboptimal wagering strategy from a genuine lack of awareness, such as the application of signal detection theory that we described previously [2].

References

1 Persaud, N. *et al.* (2007) Post-decision wagering objectively measures awareness. *Nat. Neurosci.* 10, 257–261
2 Clifford, C.W.G. *et al.* (2008) Getting technical about awareness. *Trends Cogn. Sci.* 12, 54–58
3 Schurger, A. and Sher, S. (2008) Awareness, loss aversion, and post-decision wagering. *Trends Cogn. Sci.* 12, 209–210
4 Tom, S.M. *et al.* (2007) The neural basis of loss aversion in decision-making under risk. *Science* 315, 515–518

doi:10.1016/j.tics.2008.02.011 Available online 24 April 2008

Corresponding author: Clifford, C.W.G. (colinc@psych.usyd.edu.au).