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Response

WE THANK HOLROYD, COLES, AND Nieuwenhuis for suggesting that their computational model of the error-related negativity (ERN) (*1*) predicts the response of the medial-frontal negativity (MFN) to monetary losses (*2*). Their model is an important exploration of the role that phasic changes in dopaminergic activity could play in generating event-related potential responses to motivationally significant events such as errors and monetary losses.

We respectfully disagree, however, with a few of their points. First, the MFN and the feedback- and response-related ERNs do not share identical scalp distributions (although they are similar), and thus they should not be considered identical phenomena. The feedback- and response-related ERNs have more posterior scalp foci than the MFN (*1*, *3*, *4*), and even the two types of ERN differ in their cortical origins (*5*). It is unlikely that a single cortical source (and single computation) accounts for all of these phenomena. If a common source contributes to the ERNs and the MFN, it is likely that other concurrent, overlapping sources also make differential contributions in each case (*5*).

Moreover, evidence suggests that the distinction between utilitarian and performance feedback is not artificial. There are a number of ways in which an event can be motivationally relevant (*6*), and different cortical systems may code for different motivational attributes of an event (*7*). In particular, neurophysiological evidence supports the distinction between the absolute status of a reward as a gain or a loss and its status relative to other alternatives. Some reward-sensitive neurons in the orbitofrontal cortex do not code the absolute desirability of a reward, but, instead, its desirability relative to other alternatives in a particular context (*8*). Numerous behavioral studies of human decision-making have demonstrated that utilities are affected by a comparison between the obtained outcome and unobtained alternatives (*9*).

Finally, because the Holroyd *et al.* model does not distinguish between utilitarian and performance feedback, it is unclear whether the model necessarily predicts our results. The model could do so, but it could just as plausibly predict outcomes contrary to our results, such as an error signal sensitive to the value of the chosen response relative to that of the response that was not chosen. For this reason, our data do not support the model in its current form. Further testing of the model will require its assumptions to be constrained more definitively.

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DNA Replication and Traintracks

THE PRESCIENT WORK OF THE RUSSIAN theoretician Alexei Olovnikov (*1*, *2*) was omitted from Jean Marx's News Focus article "Chromosome end game draws a crowd" (29 March, p. 2348).

In the late 1960s, Olovnikov, who had just heard a lecture on my finding that normal human cells have a finite capacity to replicate and that a counting mechanism must exist (*3*), entered a Moscow subway station (*4*). When the train approached, he had an astonishing flash of insight. He saw an analogy between the engine, which he imagined represented the DNA polymerase, and the track, which he saw as the DNA. Because the first DNA segment (the track) was under the engine (the polymerase) at the start, Olovnikov reasoned that only this segment would not be replicated. When this occurred at each station, he surmised that the track (the DNA) would become shorter. This analogy to "the end replication problem" prompted Olovnikov to arrive at his imaginative solution. He proposed that telomeres might consist of repeated nucleotide sequences that did not contain genetic information, but behaved like a buffer whose loss would not affect downstream genes. The length of the repeated sequences would determine the number of rounds possible for DNA replication and, consequently, provide a molecular explanation for our finding of the finitude of normal cell replication.

As reported by Marx, laboratory findings more than a decade later showed that Olovnikov's remarkable insight was extraordinarily accurate.

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The Globalization of Nature

THE EXCELLENT SUMMARY AND ANALYSIS BY Kerry ten Kate ("Science and the Convention on Biological Diversity," Policy Forum, 29 March, p. 2371) of the significance of the United Nations Convention on Biological Diversity (CBD) to science and research points out some successes and failures since the Earth Summit at Rio de Janeiro in 1992. The human assault on Earth's natural environments was universally acknowledged by the international representatives attending that meeting, which was a turning point in the conservation, understanding, utilization, and sharing of the planet's biological riches. We view the CBD as a pivotal event in the globalization of Nature, in which the air we breath, the water we drink, the oceans we fish, and the plants and animals of Earth are at the center of perhaps the most profound economic development of the turn of the century.

As one of the world's major natural history museums, charged with documenting and understanding the diversity and distribution of species past and present, the National Museum of Natural History and the Smithsonian Insitution are calling for international cooperation among scientists to utilize new technologies to enhance the sharing of information on biodiversity. During the past decade, like minerals and fossil fuels, Earth's living organisms have become international commodities that are valued, owned, traded, and protected by local and national governments. A clear distinction must be made between scientific understanding and commercial exploitation of Nature. If we are to protect biodiversity, we must understand it, and to understand it, we must cooperate in a worldwide fashion. Such efforts are essential if the globalization of Nature is to benefit our society.

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CORRECTIONS AND CLARIFICATIONS

NEWS OF THE WEEK: "Public group completes draft of the mouse" by E. Marshall (10 May, p. 1005). The annotated draft sequence of the mouse genome (Mouse Genome Version 3) was released by Ensembl, a joint European Bioinformatics Institute/Sanger Institute project, not by the European Molecular Biology Laboratory, as stated in the article.

NEWS FOCUS: "Tuning in the radio sky" by R. Irion (3 May, p. 830). The article misrepresented the origin of the Allen Telescope Array (ATA). Radio astronomer Frank Drake first conceived in 1964 of linking multiple small antennas to achieve a large collecting area at relatively low cost. A team including Drake, radio astronomers John Dreher and Jack Welch, and electrical engineer Sander Weinreb devised plans for the multiple-dish One Hectare Telescope—later renamed the ATA—at a series of SETI Institute workshops in the late 1990s.

NEWS OF THE WEEK: "'Fantastic' fossil helps narrow data gap" by E. Stokstad (26 April, p. 637). Guillermo Rougier's affiliation was listed incorrectly. He is at the University of Louisville.