

on an emotion face–word matching task. Subjects had to decide as fast as possible if a word, for example *happy*, matched the expression on a face. McGivern's team found that at age 11, children's speed in this task dropped by up to 20%, recovering each year thereafter, but only returning to pre-pubescent performance levels by age 18. So, when you're next faced with a teenager explaining just how much they hate you, be patient, their prefrontal cortex is probably just undergoing a little re-structuring. *CBJ*

Letters

No need for repression

The recent paper by B.J. Levy and M.C. Anderson on 'Inhibitory processes and the control of memory retrieval' [1] describes interesting new developments in the study of the self-regulation of memory, but the authors' reach exceeds their grasp when they suggest that the processes they have studied might 'provid[e] a mechanistic basis for the voluntary form of repression (suppression) proposed by Freud' (p. 303).

According to psychoanalytic theory, repression operates unconsciously on threatening mental contents, especially those related to primitive sexual and aggressive instincts, so that the person can avoid conscious conflict and anxiety. Moreover, the 'repressed' material must continue to affect the person's ongoing experience, thought and action implicitly, outside of awareness (Freud called this 'the return of the repressed'). Finally, repressed memories have to be recoverable (this was what psychoanalytic interpretation was all about). Consider, for example, the study by Anderson and Green [2], which also has been touted as revealing a mechanism for repression. In that study, the memories in question were pairs of innocuous words, deliberately suppressed by the subjects at the request of the experimenter. Even after 16 suppression trials, the average subject still recalled more than 70% of the targets (and note the worst recall performance depicted in Levy and Anderson's Fig. 3 is still above 65% [1]). There was no evidence presented of persisting unconscious influence of the suppressed items. And there was no evidence that the 'amnesia' could be 'reversed'. Finally, although Anderson and Green apparently did not ask this question in their study,

Psychologist wins Nobel Prize

Daniel Kahneman, the Eugene Higgins Professor of Psychology at Princeton University, has been awarded the 2002 Nobel Prize in economic sciences. His work on human decision-making challenged the traditional foundations of economics, which assume that humans are always rational and motivated by self-interest. He has previously been the recipient of the Hilgard Award for Lifetime Contribution to General Psychology, the

Warren Medal of the Society of Experimental Psychologists, and the American Psychological Association's Distinguished Contribution Award. The last member of Princeton's faculty to win the Nobel Prize in economics was John Nash, about whom the 2002 Hollywood film *A Beautiful Mind* was made. *CBJ*

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it is doubtful that any of their subjects forgot that they had participated in a laboratory experiment.

Of course, Levy and Anderson refer to 'voluntary' suppression, not unconscious repression, but even this turn of phrase assumes that traumatic memories are in fact forgotten, even if they are not repressed in the classically Freudian sense. The fact is, as Piper *et al.* document convincingly [3], the vast majority of trauma victims remember all too well what happened to them, and when we observe instances in which trauma has been forgotten, we rarely if ever need to resort to concepts such as repression, or even 'suppression', to explain what has happened. That is not to say that there are no genuine cases of functional, psychogenic amnesia; there are [4]. It is only to say that trauma and repression have little or nothing to do with them.

The repression (or suppression) of trauma appears to be a clinical myth in search of scientific support. It is unfortunate that Levy and Anderson apparently feel the need to supply it.

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Repression can (and should) be studied empirically

Reply from Anderson and Levy

In his letter regarding our article 'Inhibitory processes and the control of memory retrieval' [1], J.F. Kihlstrom disagrees that the work we report has relevance for understanding Freudian repression [2]. Although the linkage to Freudian theory was not a central point of our review article, we would like to reaffirm our statement here.

The account of Freudian theory presented in Kihlstrom's letter is not universally accepted. Not all scholars believe that Freud intended repression to be an exclusively unconscious process. Erdelyi, for example, reports a scholarly analysis of Freud's writings that dismantles this view – a view that he contends is a historical distortion of Freud's theory [3,4]. Although many in the psychoanalytic field (and all those seeking to criticize it) presume that Freud intended repression to be unconscious, Erdelyi argues that Anna Freud, not Sigmund Freud, imposed this requirement. By contrast, Erdelyi persuasively illustrates that Sigmund Freud wrote about repression in terms that sometimes allow for it to be an active, intentional process, of exactly the sort characterized in the work we reported in *Nature* [5].

The main goal of the work reported in [5], however, was not to evaluate Freudian theory, but rather to address a straightforward empirical question: when people encounter reminders to memories that they do not wish to think about, what effect does pushing the memory out of