

Uncertainty Can Be More Stressful Than Clear Negative Feedback

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We are faced with uncertainty every day. Will our investments pay off? Will we get the promotions we are hoping for? When faced with the unknown, most people experience some degree of anxiety and discomfort. Exactly how much anxiety someone experiences during uncertain times depends on his or her personality profile. In particular, it is the personality trait of Neuroticism that predicts how distressed people will be when confronted with the unknown.

In a new study published in *Psychological Science*, a journal of the Association for Psychological Science, University of Toronto psychologists Jacob Hirsh and Michael Inzlicht examined whether neurotic individuals would react more strongly to clear negative information or to uncertainty. The researchers administered a computerized time-estimation task, in which the participants had to indicate when they thought one second had passed from the appearance of a symbol on the screen. The participants were then given clear positive, clear negative, or uncertain feedback (i.e., a question mark). All the while, the researchers measured the participants' brain activity using electroencephalography (EEG).

Hirsh and Inzlicht focused on the responses of the anterior cingulate cortex (ACC), a brain area associated with error-monitoring and conflict-related anxiety, instrumental in regulating our behavior to environmental change. The results were clear: stronger responses were observed in this brain region in neurotic individuals when they were given uncertain feedback compared to when they were given unambiguous negative feedback.

In other words, neurotic individuals experience an immediate, uncomfortable response to uncertainty, even more so than when they are faced with clear negative information. This suggests that neurotic individuals would rather receive clear negative feedback than uncertain feedback, even though the outcome of the uncertain feedback could potentially be positive. "Uncertainty can be very stressful," says Hirsh, "and high levels of Neuroticism contribute to this dislike of the unknown." The results of this study have important implications for human behavior, as they suggest that some individuals, namely those high in Neuroticism, "prefer the devil they know over the devil they do not know."