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Serotonin: A critical chemical for human intimacy and romance

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The judgments we make about the intimacy of other couples' relationships appear to be influenced by the brain chemical serotonin, reports a new study published in *Biological Psychiatry*.

Healthy adult volunteers, whose levels of serotonin activity had been lowered, rated couples in photos as being less intimate and less romantic than volunteers with normal serotonin activity.

The approach involved giving amino acid drinks to two groups of volunteers in order to manipulate blood concentrations of the amino acid tryptophan, which is a vital ingredient in the synthesis of serotonin. One group received drinks that contained tryptophan. The other group received drinks that did not contain tryptophan. They were then asked to make judgments about sets of photographs of couples. Differences in the judgments made by the two groups reflected changes in their serotonin activity.

"Serotonin is important in social behavior, and also plays a significant role in psychological disorders such as depression," explained Professor Robert Rogers of Oxford University, who led the research. "We wanted to see whether serotonin activity influences the judgments we make about peoples' close personal relationships."

The volunteers who received the drink without tryptophan consistently rated the couples in the photos as being less 'intimate' and 'romantic' than the participants who received the control drink.

This finding is an important reminder that our relationships with other people are influenced by processes beyond our awareness and control. But we should not be surprised by this revelation. Serotonin function drops in association with episodes of depression, where the capacity for intimacy also is often compromised.

Understanding the powerful influence of these chemicals is important as supportive close relationships are known to protect against the development of mental illnesses and to promote recovery in those affected by psychiatric conditions. The opposite is also true: dysfunctional relationships can be triggers for those at risk of these conditions.

The results raise the possibility that lower serotonin activity in people with depression and other psychiatric conditions could contribute to changes in the way they perceive personal relationships, or even in their ability to maintain positive personal relationships.

"Although this is only a small study, the same patterns may well extend to the way we perceive our own relationships," said Professor Rogers.

"The ability to chemically influence the capacity for intimacy could be very important. Reduced capacity for intimacy can be a vexing symptom of many psychiatric disorders and an important target for treatment," noted Dr. John Krystal, Editor of Biological Psychiatry. "Drugs that ameliorate the impact of serotonin deficits might play a role in the treatment of this symptom."

Although much more research is necessary before a drug might come to market that can help promote intimacy, it is clear for now that our chemistry has an impact on nearly aspect of our lives, from our most public actions to our most private, as we see here with human intimacy and romantic feelings.

More information: "Serotonergic Activity Influences the Cognitive Appraisal of Close Intimate Relationships in Healthy Adults" by Amy C. Bilderbeck, Ciara McCabe, Judi Wakeley, Francis McGlone, Tirril Harris, Phillip J. Cowen, and Robert D. Rogers. Bilderbeck, McCabe, Wakeley, Cowen, and Rogers are affiliated with Oxford University, Oxford, United Kingdom. McGlone is affiliated with University of Liverpool, Liverpool, United Kingdom. Harris and Cowen are from King's College, London, United Kingdom. The article appears in *Biological Psychiatry*, Volume 69, Number 8 (April 15, 2011)

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