

# Researchers find negative social interactions can lead to increased amounts of internal inflammation

January 24 2012, by Bob Yirka

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(Medical Xpress) -- Researchers from the University of California have found that negative social interactions can cause internal inflammation that may over time lead to possible health consequences. In the study, the results of which the team has published in the *Proceedings of the National Academy of Sciences*, the team writes that stressful events can lead to increased production of cytokines, molecules that are produced when inflammation occurs.

To find out if cytokines are produced from everyday stressful events, the team recruited 122 young adults (69 women and 53 men) as volunteers to take part in a study. Each participant was asked to keep a very detailed diary describing the events of their day, for eight consecutive days, focusing most specifically on personal or social conflicts. Each volunteer also had a saliva sample taken each day, followed by a [stress test](#) followed by another [saliva test](#) to check for cytokine levels.

Following the completion of the study, the research team compared cytokine levels against diary entries and found that cytokine levels rose predictably during those periods when the volunteers were reporting negatively stressful events, such as arguing with a roommate. Interestingly, they found that positive stress factors, such as participating in team sports did not cause any increase.

Inflammation occurs, the authors explain, in response to [stressful](#)

[situations](#). It is believed it happens as our immune systems prepare to deal with the possibility of injury or disease, which is of course a good thing. Problems creep in however, when inflammation and the increased production of cytokines occurs over long periods of time. Prior research has shown it can lead to hypertension, cardiovascular disease, cancer, diabetes and mental disorders.

The team also notes that it is unlikely that short term negatively [stressful events](#) such as those experienced by the volunteer group would cause health problems, it's only when such conditions persist for many years that people begin showing symptoms of stress induced diseases.

The authors suggest that their findings indicate that people would be wise to remove themselves from long term relationships that continually cause negative stresses and instead pursue supportive relationships that foster harmony and good will.

**More information:** Negative and competitive social interactions are related to heightened proinflammatory cytokine activity, *PNAS*, Published online before print January 23, 2012, [doi: 10.1073/pnas.1120972109](#)

## **Abstract**

Research has consistently documented that social relationships influence physical health, a link that may implicate systemic inflammation. We examined whether daily social interactions predict levels of proinflammatory cytokines IL-6 and the soluble receptor for tumor necrosis factor- $\alpha$  (sTNF $\alpha$ RII) and their reactivity to a social stressor. One-hundred twenty-two healthy young adults completed daily diaries for 8 d that assessed positive, negative, and competitive social interactions. Participants then engaged in laboratory stress challenges, and IL-6 and sTNF $\alpha$ RII were collected at baseline and at 25- and 80-min poststressor, from oral mucosal transudate. Negative social interactions

predicted elevated sTNF $\alpha$ RII at baseline, and IL-6 and sTNF $\alpha$ RII 25-min poststressor, as well as total output of sTNF $\alpha$ RII. Competitive social interactions predicted elevated baseline levels of IL-6 and sTNF $\alpha$ RII and total output of both cytokines. These findings suggest that daily social interactions that are negative and competitive are associated prospectively with heightened proinflammatory cytokine activity.

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