



Self-rated Health in Response to Experimental Manipulations of Inflammation is mediated by Sickness Behavior as assessed by Sickness Questionnaire.

Lisa Lidberg^{1,2}, Anna Nixon Andreasson^{1,2,3}, Bianka Karshikoff^{2,4}, John Axelsson^{2,4}, Caroline Olgart Höglund⁵, Mats Lekander^{1,2}

¹Stress Research Institute, Stockholm University, Sweden, ²Osher Center for Integrative Medicine, Karolinska Institutet, Stockholm, ³Centre for Family Medicine, Karolinska Institutet, Huddinge, ⁴Section for Psychology, Department of Clinical Neuroscience, Karolinska Institutet, Stockholm, ⁵Department of Physiology and Pharmacology, Karolinska Institutet, Stockholm

Background

Factors that influence subjective health ratings (e.g. pain, tiredness and negative affect) resemble immune activated sickness behavior. Accordingly, we have previously shown a relation between inflammatory cytokines and poor self-rated health (e.g. Andreasson 2012). However, neither the causality of the association, nor if it is actually mediated by subjective symptoms of sickness, is clear. In this study we investigated if a transient immune activation would affect subjective health perception and if an effect would be mediated by symptoms of sickness behavior.

Methods

Using a between-subject design, 51 healthy subjects were injected with either LPS (0.6 ng/kg) or placebo. Stimulation resulted in a peak response in pro-inflammatory cytokines (e.g. TNF-alpha and IL-6) after 90 minutes. Self-rated health and sickness behavior were assessed before, 90 minutes after and 270 minutes after injection. Sickness was assessed by a new instrument, the Sickness Questionnaire (Andreasson et al, in prep). Indirect statistical effects ("mediation") were tested by Sobel-Goodman test, using bootstrapping for estimates of variance.

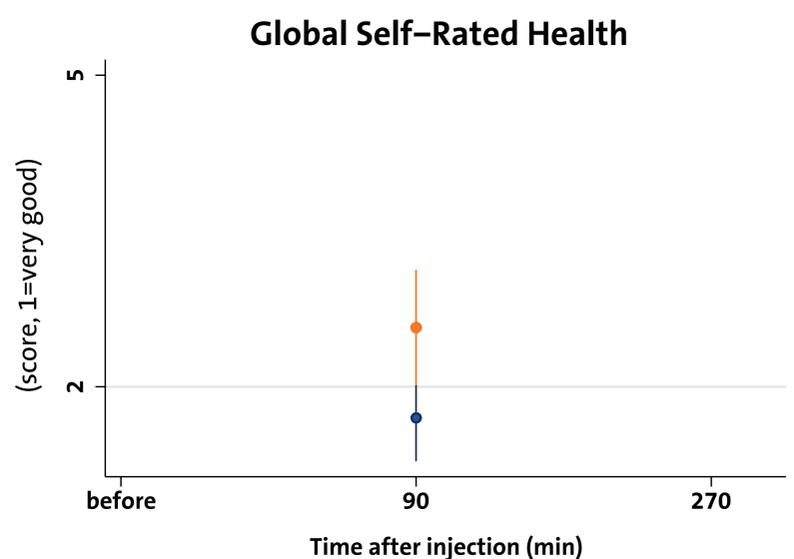
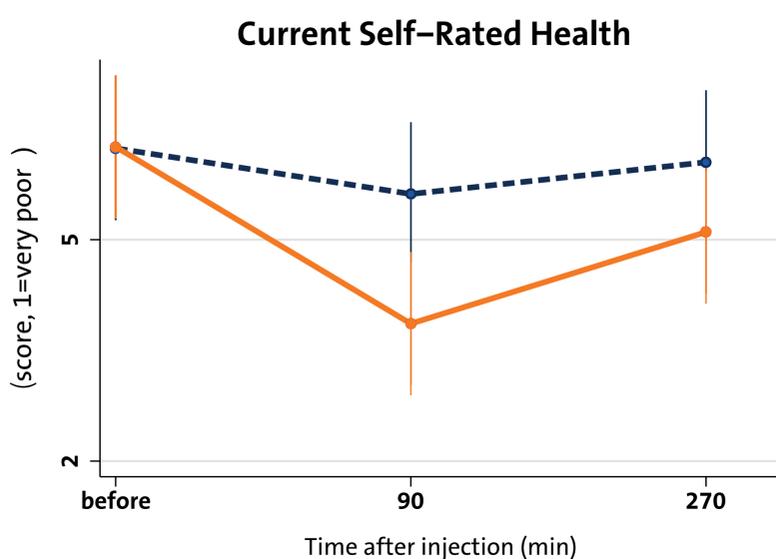
Results

Ninety minutes after injection, both perceived health framed to represent current ("How is your health right now?") and global health ("How would you rate your general state of health?") was significantly lower in the endotoxin condition (p's<.01). The effect of endotoxin on self-rated health was statistically mediated by sickness behavior, explaining 91% of the variance in current and 68 % in global health.

Conclusion

It is demonstrated that a transient inflammatory activation strongly affects both subjectively perceived current health as well as how health status on the more general level is appraised. This effect is likely caused by more intensely perceived symptoms of sickness.

	Indirect	p	Direct (c')	p	Total (c)	p	Proportion mediated (%)	c/c'
Global	.56	.005	.26	.25	.82	.003	68.0	3.15
Current	-1.54	<.0001	-.15	.56	-1.69	<.0001	91.3	11.3



Referenser

Andreasson et al. 2012

Andreasson, A.N., et al., Inflammation and Positive Affect are associated with Subjective Health in Women of the General Population. J Health Psychol. 2012

Andreasson et al, in prep

Andreasson, A.N., et al., Development and preliminary validation of the Sickness Questionnaire. In preparation.

CONTACT

Lisa Lidberg, Stress Research Institute, Stockholm University
E-mail lisa.lidberg@stressforskning.su.se Phone +46 739 097 808