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# From risk communication to lifestyle modification

*Interactions of reactions for actions*

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## Akademisk avhandling

som med vederbörligt tillstånd av Rektor vid Umeå universitet för avläggande av filosofie doktorsexamen framläggs till offentligt försvar via Zoom, fredagen den 20 september, kl. 09:00. Åhörarplatser även i Hörsal HUM.D.230, Humanisthuset.

För att ansluta via Zoom: <https://umu.zoom.us/j/67093086984>  
Mötes ID: 670 9308 6984

Avhandlingen kommer att försvaras på svenska.

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Department of Psychology

**Organization**  
Umeå University  
Department of Psychology

**Document type**  
Doctoral thesis

**Date of publication**  
30 August 2024

**Author**  
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**Title**  
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### **Abstract**

**Aim** From a health psychological perspective, the great need of effective cardiovascular disease (CVD) prevention and the potential of pictorial presentation of subclinical atherosclerosis as part of risk communication implies two important lines of inquiry which constitute the overall aims of this thesis: 1) To explore and assess psychological intervention response in terms of cognitive and emotional reactions to health risk communication about subclinical atherosclerosis, 2) To assess associations between psychological intervention response and lifestyle modification.

**Methods** The pragmatic population-based randomized controlled trial VIPVIZA investigates the impact of pictorial information about subclinical atherosclerosis, added to traditional risk factor-based communication. The intervention includes a personalized, colour-coded and age-related risk communication strategy and a motivational conversation, and has been shown to reduce cardiovascular disease risk. Study 1 assessed cognitive and emotional reactions to the intervention, and how reactions were associated to lifestyle modification, measured with a lifestyle index based on physical activity, diet, smoking and alcohol consumption. To gain deeper understanding of why the intervention is effective, Study 2 qualitatively explored reactions evoked by the intervention as well as attitudes to any implemented lifestyle changes among VIPVIZA participants in the intervention group with improved health status. Study 3 assessed risk perception and efficacy beliefs in the intervention group and the control group after one and three years. Furthermore, this study assessed whether risk perception increased with message severity. Study 4 assessed the impact of the VIPVIZA intervention on participants' risk perception accuracy, and also whether risk perception accuracy after one and three years was associated with sustained lifestyle change.

**Results** The result letter was easy to understand and the intervention increased understanding of personal CVD risk, the possibility to influence the risk, and how to influence the risk. High level of cognitive response in combination with high level of emotional arousal was found to be most beneficial for lifestyle modification. Informants perceived risk messages to be clear, accurate, reliable and emotionally engaging. Study 1 and Study 2 suggest that an interplay between cognitive and emotional reactions is crucial from early reactions to risk messages, through the decision-making process of behavioural change to maintenance of a healthy lifestyle. The intervention group perceived their cardiovascular disease risk as higher after one year, compared to the control group, with the effect persisting after three years. Within the intervention group, differences in CVD risk perception were found among participants receiving different color-coded risk messages on atherosclerosis status. The intervention had an impact on accuracy of risk perception. Accuracy of risk perception was associated with long-term behaviour change. Underestimating risk was associated with a decrease in health behaviours.

**Conclusions** As captured by the idiom "A picture says more than a thousand words", the results indicate that pictorial communication of atherosclerosis is easy to understand, enhances comprehension of risk, and evoke a powerful response. In other words: the communication is effective. Furthermore, in line with the idiom "Seeing is believing", which suggests that seeing something first-hand makes it more credible or believable, the results suggest that pictorial communicating on atherosclerosis status increase understanding of CVD risk since being perceived as accurate, reliable and convincing. In other words: pictorial communication is trustworthy and convincing. Future CVD interventions should acknowledge the role of accuracy of risk perception for behaviour change and focus on strengthening efficacy beliefs.

**Keywords:** Atherosclerosis, Prevention, Pictorial communication, Risk perception, Efficacy beliefs

**Language**  
English

**ISBN**  
print: 978-91-8070-459-5  
PDF: 978-91-8070-460-1

**Number of pages**  
144 + 4 papers