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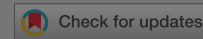
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# From Warning to Wallpaper: Why the Brain Habituates to Security Warnings and What Can Be Done About It

Bonnie Brinton Anderson, Anthony Vance, C. Brock Kirwan, Jeffrey L. Jenkins & David Eargle

Pages 713-743 | Published online: 07 Dec 2016

Cite this article <https://doi.org/10.1080/07421222.2016.1243947>



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## Abstract

Warning messages are fundamental to users' security interactions. Unfortunately, they are largely ineffective, as shown by prior research. A key contributor to this failure is

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experiment (n = 80), we implemented the four most resistant polymorphic warnings in

a realistic setting. Using mouse cursor tracking as a surrogate for attention to unobtrusively measure habituation on participants' personal computers, we found that polymorphic warnings reduced habituation compared to conventional warnings. Together, our findings reveal the substantial influence of neurobiology on users' habituation to security warnings and security behavior in general, and we offer our polymorphic warning design as an effective solution to practice

Q Key words and phrases: behavioral information systems security cybersecurity fMRI functional magnetic resonance imaging habituation mouse cursor tracking neurobiology NeuroIS polymorphic warnings security warnings

## Supplemental File

Supplemental data for this article can be accessed on the publisher's website at <http://dx.doi.org/10.1080/07421222.2016.1243947>

## Notes

1. See <http://neurosynth.org/analyses/terms/visual;>  
[https://wikipedia.org/wiki/Visual\\_cortex](https://wikipedia.org/wiki/Visual_cortex).

2. [http://neurosynth.org/analyses/terms/default;](http://neurosynth.org/analyses/terms/default)  
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# Notes on contributors

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