



Evidence from controlled exposures of human volunteers



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Can subjects detect if MP signals are on or off better than chance?

yes/no



Do MP signals cause symptoms in some exposed people ?

self reported symptoms



Provocation studies

Causal connection between agents
and symptoms

How to measure the response ?

Questionnaire: Field on/off
Symptoms



Exposure chamber



Operating desk



Inclusion criteria

Electrosensitive people

ES, EHS, IEI- attributed to EM-fields

1% - 10%

MP-sensitive people

symptoms only related to MP use

7% - 22%

Healthy volunteers



Exposure set up

GSM 900

GSM 1800

UMTS-signals

Base station like signals

Mobile phone



antennas

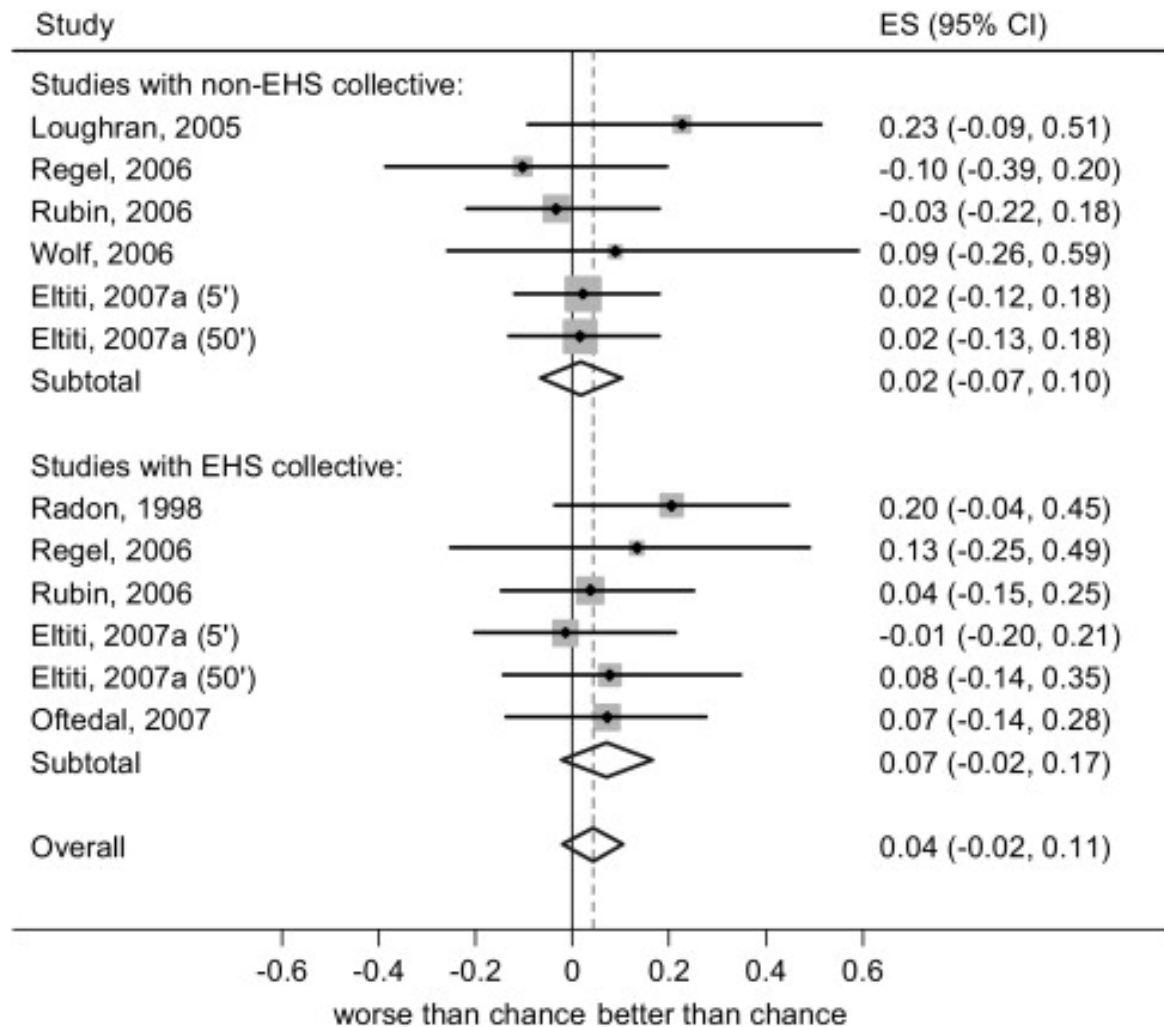
Improved exposure set up

Duration of exposure

2 minutes – 3 hours



Can subjects detect if MP/Base station signals are on or off better than chance?



Röösli M. Environ Res. 2008 Mar 20.



Myoung Soo Know et al. Bioelectromagnetics
29:154-159 (2008)

84 healthy subjects, 600 trials

Hillert et al. Bioelectromagnetics
(2007)

38 symptom group/33 non-symptom group

1 exp/1 sham



Can subjects correctly detect if MP/Base station signals are on or off?

No, there is today no such evidence

MP/base station signals - subjective symptoms

Röösli M. Radiofrequency electromagnetic field and non-specific symptoms of ill health: A systematic review. Environ Res. 2008.

– 2007

8 studies, peer reviewed

194 EHS or with MP related symptoms

346 healthy subjects

“There is no evidence that short term low level exposure causes non specific symptoms in EHS or other individuals”





Eltiti et al. Does short term exposure to Mobile phone base station signals increase symptoms in individuals who report sensitivity to electromagnetic fields?
Environ Health Perspect 115:1603-1608 (2007).

44 EHS 114 controls

4 trials: open provocation, sham, UMTS, GSM

Arousal increased in EHS during the UMTS exp. compared to sham.

"Most likely due to exposure order"



Hillert et al. The effect of 884 MHz GSM wireless communication signals on headache and other symptoms: an experimental provocation study *Bioelectromagnetics (2007)*

3 hour exposure (SAR 1.4 W/kg)/sham and habituation session

38 with headache or vertigo in relation to MP use
33 non symptom subjects

"larger number of subjects who reported headache and more severe headache in the non symptom group after 2 3/4 h RF exposure"



Summary

- There is today no convincing evidence that people with symptoms/without symptoms related to MP use can detect low levels of RF signals by a simple yes/no
- EHS subjects report more symptoms compared to controls after open provocation
- Nocebo effects occur
- No convincing data that EHS/MP subjects experience more symptoms after RF exposure

Still discussed

well being - short term exposure to UMTS signal
headache - GSM signals



Comments:

Different protocols

Inclusion criteria

Different mood

Selection criteria

Background exposure

Exposure parameters

Duration of exposure

Noise

No mechanism for low level fields!