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## Effects of a neuroscientifically-based intervention on acute stress and PTSD: report of four studies

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### Background

Neuropsychology of trauma informs us that people who develop PTSD process the event in a fragmented manner, in mostly limbic and less frontal regions, which explains the thought intrusions, avoidance and excessive arousal. We developed the memory structuring intervention (MSI) that aims to shift the trauma processing to a more frontal, verbal and cognitive manner, later supplemented by vagal nerve breathing (VB).

### Methods

We present findings from 4 randomized-controlled trials. In study (ST) 1, we randomized 17 Israelis after traffic accidents to the MSI or supportive listening (control). In ST2, we randomly assigned 34 Israelis after traffic accidents to the MSI or supportive listening. In both ST1 and 2, PTSD symptoms were blindly assessed 3 months later. In ST3, we added VB to the MSI and examined anxiety, heart-rate (HR) and pain in an emergency room in Israel. Finally, in ST4, we included 25 Belgians at risk for PTSD and also assessed the perceived traumatic experience (PTE) and verbal fluency, a marker of frontal activation, in the emergency room.

### Results

In ST1, people assigned to the MSI had significantly lower PTSD symptoms than controls. In ST2, women benefited from the MSI while men from supportive listening. In ST3, the MSI + VB, but not the control group, led to reductions in anxiety, pain and HR. Finally, in ST4, the MSI + VB led to reduced PTE and prevented increases in HR, the latter seen in controls. Importantly, beyond groups, increases in verbal fluency positively correlated with reductions in PTE. We will provide examples of application to people exposed to terrorism and war in Israel.

### Conclusions

These studies together support the effectiveness of a new emerging intervention, which has short-term effects on acute stress reactions and possible long-term effects on PTSD prevention. It is neuroscientifically based and easy to implement in emergency settings after terrorist attacks, during war and after disasters.