POLICE IN-ACTION: The role of freeze-fight-flight in posttraumatic stress symptoms

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The main objective of this study is to determine the role of freeze-fight-flight reactions in the development and maintenance of PTSD symptomatology.

Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Anxiety disorders and symptoms
Study type	Observational invasive

Summary

ID

NL-OMON44532

Source
ToetsingOnline

Brief title
freeze-fight-flight

Condition

- Anxiety disorders and symptoms

Synonym
posttraumatic stress; anxiety

Research involving
Human

Sponsors and support

Primary sponsor: Radboud Universiteit Nijmegen
Source(s) of monetary or material Support: Netherlands Organization for Scientific Research (NWO VICI grant awarded to prof. dr. Karin Roelofs)

Intervention

Keyword: freeze, prospective study, PTSD

Outcome measures

Primary outcome

Psychophysiological recordings (electrodermal activity, electromyographic

activity, breathing rate, heart rate, pupil diameter)

Behavioral recordings (reaction times, decision making, memory performance)

Brain function (f)MRI)

Self-report questionnaires & and one clinical interview

Secondary outcome

Salivary cortisol, alpha-amylase and testosterone

Hair hormones (cortisol, testosterone)

Epigenetic and genetic profiles as assessed from saliva

Study description

Background summary

Police officers are trained to deal with acute threat and to control their automatic action tendencies in order to optimize adequate response capacity. In stressful situations, however, most people tend to fall back on primary *freeze-fight-flight* (FFF) tendencies and have great difficulty controlling their actions (Leach, 2004). This forms a major problem for people in high-risk professions, such as police officers, whose control over automatic action tendencies is essential for optimal performance during stressful situations (Nieuwenhuys et al., 2012). The relation between automatic and controlled emotional behavior has considerable consequences for our society. For instance, with increasing regularity police officers are confronted with violence, and with growing frequency they respond to this by drawing their firearms, enhancing the risk of unintended damage and of violence escalation. For these reasons, stress-induced lack of control over freeze fight or flight tendencies forms an increasingly recognized problem in high risk professions. Indeed, over

30% of young, inexperienced police recruits develop stress-related symptoms of fearful avoidance or aggression after being exposed to a life-threatening situation (Maguen et al., 2009). Moreover, chronic manifestations of increased flight as well as fight reactions have been associated with avoidance and aggressive symptoms in victimized veterans and police officers with full blown posttraumatic stress disorders (PTSD) (Lenhardt et al., 2012). Avoidance behavior is considered the major maintaining factor in PTSD. Despite the largely automatic nature of the response tendencies supporting avoidance and aggressive behavior, previous research has primarily accounted for these disorders in terms of cognitive biases involving attention, memory, and belief. However, a large number of patients suffering from stress-related disorders, such as PTSD, are resistant to current cognitive and pharmacological therapies, and it remains unclear whether cognitive biases are so pervasive that they can influence automatic behaviors in PTSD. The most promising road, in fact, is to test whether such behaviors can be explained by automatic response tendencies. It is all the more remarkable that this approach has not been applied to posttraumatic stress symptoms, given that there is a large body of work on freeze-fight-flight behavior in animals, which comprises a basic adaptive mechanism that might account for the persistence of posttraumatic anxiety and aggression in humans. For these reasons, the main objective of this study is to determine the role of FFF reactions in the development and maintenance of PTSD symptomatology.

Study objective

The main objective of this study is to determine the role of freeze-fight-flight reactions in the development and maintenance of PTSD symptomatology.

Study design

The study consists of two waves of data assessment. The first assessment wave takes place before (scan 1; pre-exposure) police recruits make the transition from the relatively save environment of theoretical training to their first services in the emergency aid. The second assessment wave takes place after (scan 2; post-exposure) the police recruits have been exposed to the relative stressful services in the emergency aid. After completion of data collection we will be able to prospectively predict trauma-related changes in phenotypic PTSD symptoms, on the basis of pre-existing FFF markers (i.e., measures on the behavioral, psychophysiological, neuroendocrinological and MRI levels) assessed at Scan 1. In addition, we will test whether changes in FFF markers from Scan 1 to Scan 2 relate to PTSD-symptomatology after exposure to aversive events. This prospective study approach enables us to distinguish predisposing from acquired abnormalities in FFF reactions to predict PTSD symptomatology after the experience of aversive events.

Study burden and risks

During testing, participants will undergo established behavioral tasks and MRI scans. Some are stress induction and anxiety provocation procedures that may cause a moderate level of subjective distress. Our lab has extensive previous experience with these procedures (see e.g., CMO protocol numbers 2010/257, 2011/382 and 2013/551). All procedures described in this protocol are well established, carry negligible risk, and constitute a minimal burden for the participants. Young healthy police recruits at the police academy are chosen as subjects in the study because subsyndromal PTSD-symptoms are highly prevalent among police officers. Further, the current design has a baseline assessment when police recruits are still in the relatively safe environment provided by a police academy training, and a follow-up measurement wave after 12 months of which 6 months have been spent during armed duty in emergency aid, were they will be exposed to critical incidents (involving suicide, violence, childhood abuse, disasters etc) on a regular basis. Consequently, participants only have to visit the lab twice; once at the beginning of their police education (Scan 1), the other towards the end (Scan 2), with approximately 12 months in between. No pharmacological or otherwise invasive interventions are applied.

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adults (18-64 years)
Elderly (65 years and older)

Inclusion criteria

• Between 18 and 45 years of age.
• Predominant right-handedness.
• Normal or corrected-to-normal vision
• Normal uncorrected hearing
• Body mass index between 18.5 and 30
• Willingness and ability to give written informed consent and willingness and ability to understand the nature and content, to participate and to comply with the study requirements

Exclusion criteria

• Abnormal hearing or (uncorrected) vision.
• Average use of more than 3 alcoholic beverages daily.
• Average use of psychotropic medication or recreational drugs weekly or more.
• Use of psychotropic medication, or of recreational drugs over a period of 72 hours prior to each test session, and use of alcohol within the last 24 hours before each measurement.
• Regular use of corticosteroids.
• Metal objects in or around the body (e.g., braces, pacemaker, metal fragments, insulin pump, and hearing devices).
• Metal fragments in the body, in particular in the eye.
• Using a medical plaster that cannot or may not be taken off.
• History of neurological treatment or current neurological treatment.
• History of endocrine treatment or current endocrine treatment.
• History of head surgery.
• Current parodontitis.
• Claustrophobia.
• Epilepsy.
• Pregnancy.
• Irregular sleep/wake rhythm (e.g., regular nightshifts or cross timeline travel).
• Experience in law enforcement

Study design

Design

Study type:	Observational invasive
Intervention model:	Other
Allocation:	Non-randomized controlled trial
Masking:	Open (masking not used)
Control:	Active
Primary purpose:	Other

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	24-11-2014
Enrollment:	410
Type:	Actual

Ethics review

Approved WMO Date:	04-06-2014
Application type:	First submission
Review commission:	IRB Nijmegen: Independent Review Board Nijmegen (Wijchen)
Approved WMO Date:	06-11-2014
Application type:	Amendment
Review commission:	IRB Nijmegen: Independent Review Board Nijmegen (Wijchen)
Approved WMO Date:	09-04-2015
Application type:	Amendment
Review commission:	IRB Nijmegen: Independent Review Board Nijmegen (Wijchen)
Approved WMO Date:	23-02-2016
Application type:	Amendment

Review commission:	IRB Nijmegen: Independent Review Board Nijmegen (Wijchen)

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

ID: 24254
Source: NTR
Title:

In other registers

Register	ID
CCMO	NL48861.072.14
OMON	NL-OMON24254

Study results

Date completed:	26-02-2018
Actual enrolment:	425