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TITLE: Increasing Psychological Health and Performance in Soldiers Applying Advanced Eye-Tracking-Based Attention Bias Modification

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CONTRACTING ORGANIZATION: Tel Aviv University

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Prof. Yair Bar Haim

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Tel Aviv University

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13. SUPPLEMENTARY NOTES

14. ABSTRACT

Background: Aberrant threat monitoring has been established as a risk and a maintaining factor in anxiety and stress-related disorders. The goals of the current grant are to establish the efficacy of a promising 2nd generation eye-tracking-based ABM protocol in: a) reducing risk for deployment-related stress symptoms (focus on prevention); b) enhancing performance of infantry soldiers (focus on performance); and c) reducing stress-related symptoms following combat (focus on treatment). These goals will be tackled through three randomized controlled trials. Together the findings will provide an effective evidence-based means to support soldiers' performance and psychological adjustment throughout the deployment cycle.

Specific aims and design: ***Study1***: The overarching goal is to test the efficacy of an eye-tracking-based cognitive training procedure in reducing risk for post-combat stress-related psychopathology. To this end, we will conduct a RCT with three arms (N=540 IDF infantry soldiers). Specific aims are: (1) To determine whether GCFT is superior to RT-based ABMT and a RT-based neutral control condition in enhancing vigilance toward threat; (2) To determine whether GCFT is superior to RT-based ABMT and a NC condition in reducing risk for post-combat stress-related disorders; and (3) To test whether change in threat-related attention mediates change in symptoms post combat. ***Study 2***: The overarching goal is to test the efficacy of an eye-tracking-based cognitive training procedure in enhancing military performance of infantry soldiers. To this end, we will conduct a RCT with three arms (N=180 IDF infantry soldiers). Specific aims are: (1) To determine whether GCFT is superior to RT-based ABMT and N-CFC in enhancing vigilance toward threat; (2) To determine whether GCFT is superior to RT-based ABMT and N-CFC in enhancing military performance in infantry soldiers; and (3) To test whether change in threat-related attention mediates change in military performance**.** ***Study 3***: The overarching goal is to test the efficacy of an eye-tracking-based treatment procedure in reducing stress-related symptoms in veterans with PTSD. To this end, we will conduct a RCT with three arms (N=150 IDF veterans with PTSD). Specific aims are: (1) To determine whether GCFT is superior to RT-based ABMT and N-CFC in reducing vigilance toward threat; (2) To determine whether GCFT is superior to RT-based ABMT and N-CFC in reducing stress-related symptoms; and (3) To test whether change in threat-related attention mediates symptom reduction.

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
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1. INTRODUCTION:

Aberrant threat monitoring has been established as a risk and a maintaining factor in anxiety and stress-related disorders. The goals of the current grant are to establish the efficacy of a promising 2nd generation eye-tracking-based ABM protocol in: a) reducing risk for deployment-related stress symptoms (focus on prevention); b) enhancing performance of infantry soldiers (focus on performance); and c) reducing stress-related symptoms following combat (focus on treatment). These goals will be tackled through three randomized controlled trials. Together the findings will provide an effective evidence-based means to support soldiers' performance and psychological adjustment throughout the deployment cycle.

2. KEYWORDS:

Combat Stress, Deployment, Attention Bias, PTSD, Attention Bias Modification, gaze-contingent feedback training

3. ACCOMPLISHMENTS:

What were the major goals of the project?

Study 1:

a) To determine whether GCFT is superior to RT-based ABMT and a RT-based neutral control condition in enhancing vigilance toward threat

b) To determine whether GCFT is superior to RT-based ABMT and a NC condition in reducing risk for post-combat stress-related disorders

c) To test whether change in threat-related attention mediates change in symptoms post combat

Study 2:

a) To determine whether GCFT is superior to RT-based ABMT and N-CFC in enhancing vigilance toward threat

b) To determine whether GCFT is superior to RT-based ABMT and N-CFC in enhancing military performance in infantry soldiers

c) To test whether change in threat-related attention mediates change in military performance

Study 3:

a) To determine whether GCFT is superior to RT-based ABMT and N-CFC in reducing vigilance toward threat in veterans with PTSD

b) To determine whether GCFT is superior to RT-based ABMT and N-CFC in reducing stress-related symptoms

c) To test whether change in threat-related attention mediates symptom reduction

What was accomplished under these goals?

Study 1:

a) The needed equipment has been purchased, tested and prepared towards data collection.
b) IDF IRB: protocol has been approved – awaiting final procedures
c) TAU IRB: protocol submitted for review
d) HRPO approval: translation of protocol and approvals from IDF and TAU IRBs are prepared – will be submitted for approval once final documents are received from the IDF and TAU IRBs.
e) Six research assistants were recruited and trained.
f) Dates of data collection in the military bases were scheduled and rescheduled (See COVID-19-related delays below).

Study 2:

a) The needed equipment has been purchased, tested and prepared towards data collection.
b) IDF IRB: protocol has been approved – awaiting final procedures
c) TAU IRB: protocol submitted for review
g) HRPO approval: translation of protocol and approvals from IDF and TAU IRBs are prepared - will be submitted for approval once final documents are received from the IDF and TAU IRBs.
d) Same research assistants as for Study 1 were trained to assist in this study.
e) Dates of data collection in the military bases were scheduled and rescheduled (See COVID-19-related delays below).

Study 3:

a) The needed equipment has been purchased and tested
b) Submission to Institutional IRB is being processed
c) Insurance quotations for the trial have been solicited and approved

What opportunities for training and professional development has the project provided?

I

Nothing to Report

Describe how the results were disseminated to communities of interest. Include any outreach activities that were undertaken to reach members of communities who are not usually aware of these project activities, for the purpose of enhancing public understanding and increasing interest in learning and careers in science, technology, and the humanities.

Nothing to report

Describe briefly what you plan to do during the next reporting period to accomplish the goals and objectives.

Study 1:

a) Finalize IDF IRB approval; Finalize Tel-Aviv University IRB approval; Obtain HRPO approval.
b) Begin data collection from 540 soldiers.

Study 2

a) Finalize IDF IRB approval; Finalize Tel-Aviv University IRB approval; Obtain HRPO approval.
b) Begin data collection from 180 soldiers.

Study 3

a) Finalize consent form & human subjects protocol
b) Coordinate with Tel Aviv University IRB review
c) Coordinate HRPO review

4. IMPACT:

What was the impact on the development of the principal discipline(s) of the project?

Meaningful information and impact awaits further data collection. Thus “Nothing to Report” at this time.

What was the impact on other disciplines?

Nothing to Report

What was the impact on technology transfer?

Nothing to Report

What was the impact on society beyond science and technology?

Nothing to Report

5. CHANGES/PROBLEMS:

Study 1-3: Due to consequences of COVID-19, the starting dates are delayed and as a result the estimated schedule of data collection is delayed as well. Specifically, we were prepared to enroll soldiers into studies 1 and 2 who were recruited into the IDF in March 2020 (starting the study protocols in July-August 2020). These dates did not materialize due to IDF lockdown. We are now scheduled to enroll soldiers recruited into the IDF in August (stating data collection in November-December 2020). This was rescheduled with the relevant commanders. However, the IDF and Israel now went into a second lockdown and these dates are threatened again.

Actual or anticipated problems or delays and actions or plans to resolve them

We intend to begin data collection as soon as the IDF lockdown is lifted.

Changes that had a significant impact on expenditures

Our project was delayed and we did have to keep payment to a small fraction of our personnel despite the fact that data collection hadn't started. We do not expect this delay to impact the completion of the projects and do not anticipate significant budget changes.

Significant changes in use or care of human subjects

Nothing to Report

Significant changes in use of biohazards and/or select agents

Nothing to Report

6. PRODUCTS:

- **Publications, conference papers, and presentations**

  Journal publications.

Nothing to Report

Books or other non-periodical, one-time publications.

Nothing to Report

Other publications, conference papers and presentations.

Nothing to Report

- **Website(s) or other Internet site(s)**

Nothing to Report

- **Technologies or techniques**

Nothing to Report

- **Inventions, patent applications, and/or licenses**

Nothing to Report

- **Other Products**

Nothing to report

7. PARTICIPANTS & OTHER COLLABORATING ORGANIZATIONS

What individuals have worked on the project?

Name: Prof. Yair Bar-Haim
Project Role: PI
Researcher Identifier (e.g. ORCID ID): https://orcid.org/0000-0002-4630-9180
Nearest person month worked: 12
Contribution to Project: Overarching supervision and coordination.

Name: Gal Arad
Project Role: PhD level student
Researcher Identifier (e.g. ORCID ID): https://orcid.org/0000-0002-7229-0516
Nearest person month worked: 12
Contribution to Project: Protocols development, IRB coordination, training and supervision of research assistants.

Name: Omer Azriel
Project Role: PhD level student
Researcher Identifier (e.g. ORCID ID):
Nearest person month worked: 12
Contribution to Project: Protocols development, IRB coordination, training and supervision of research assistants.

Name: Chelse Gober
Project Role: PhD level student
Researcher Identifier (e.g. ORCID ID):
Nearest person month worked: 12
Contribution to Project: Protocols development, IRB coordination, training and supervision of research assistants.

Name: Anat Dafna
Project Role: clinician
Researcher Identifier (e.g. ORCID ID):
Nearest person month worked: 12

Name: Ofer Meiri
Project Role: research assistant
Researcher Identifier (e.g. ORCID ID):
Nearest person month worked: 12
Contribution to Project: practicing research protocols and data collection

Name: Shachar Lando
Project Role: research assistant
Researcher Identifier (e.g. ORCID ID):
Nearest person month worked: 12
Contribution to Project: practicing research protocols and data collection

Name: Noga Mandelblit
Project Role: research assistant
Researcher Identifier (e.g. ORCID ID):
Nearest person month worked: 9
Contribution to Project: practicing research protocols and data collection

Name: Keren Werner
Project Role: research assistant
Researcher Identifier (e.g. ORCID ID):
Nearest person month worked: 7
Contribution to Project: practicing research protocols and data collection

Name: Anastasia Presulov
Project Role: research assistant
Researcher Identifier (e.g. ORCID ID):
Nearest person month worked: 7
Contribution to Project: practicing research protocols and data collection

Name: Amir Eliassaf
Project Role: clinician
Researcher Identifier (e.g. ORCID ID):
Nearest person month worked: 7
Contribution to Project: Protocols development, IRB coordination, training and supervision of research assistants, assessing PTSD symptoms of patients in study 3.

Has there been a change in the active other support of the PD/PI(s) or senior/key personnel since the last reporting period?

Nothing to Report

What other organizations were involved as partners?

Organization Name: Israel Defense Force
Location of Organization: Israel
Partner's contribution to the project: Facilitating IRB process; Facilitating coordination with the studied units; Collaboration on study implementation and IDF data gathering.

8. SPECIAL REPORTING REQUIREMENTS

COLLABORATIVE AWARDS:

QUAD CHARTS:

9. APPENDICES: