INPLASY PROTOCOL

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Conflicts of interest:
The authors have no conflicts of interest to disclose.

Facial emotion recognition in adult with traumatic brain injury: a protocol for systematic review and meta-analysis

Lin, XG[1]; Zhang, XL[2]; Liu, QQ[3]; Zhao, PW[4]; Zhang, H[5]; Wang, HS[6]; Yi, ZQ[7].

Review question / Objective: **We will conduct a meta-analysis to investigate facial emotion recognition performance in adult with TBI across the available published literature.**
Condition being studied: **Traumatic brain injury (TBI) refers to head injuries that disrupt normal function of the brain. TBI commonly lead to a wide range of potential psychosocial functional deficits. Although psychosocial function after TBI is influenced by many factors, more and more evidence shows that social cognitive skills are critical contributors. Facial emotion recognition, one of the higher-level skills of social cognition, is the ability to perceive and recognize emotional states of others based on their facial expressions. Numerous studies have assessed facial emotion recognition performance in adult patients with TBI. However, there have been inconsistent findings. Understanding the patterns of emotion recognition function in adult patients with TBI is important for identification of targets for affect recognition interventions and developing useful training intervention programs.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 29 May 2020 and was last updated on 29 May 2020 (registration number INPLASY202050109).

INTRODUCTION

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influenced by many factors, more and more evidence shows that social cognitive skills are critical contributors. Facial emotion recognition, one of the higher-level skills of social cognition, is the ability to perceive and recognize emotional states of others based on their facial expressions. Numerous studies have assessed facial emotion recognition performance in adult patients with TBI. However, there have been inconsistent findings. Understanding the patterns of emotion recognition function in adult patients with TBI is important for identification of targets for affect recognition interventions and developing useful training intervention programs.

METHODS

Search strategy: Three electronic databases: PubMed, Web of Science, and Embase were searched from inception to May 19th, 2020 with no restriction of publication dates. The following terms were used for the searches: ((Traumatic brain injury) OR (Brain Injury, Traumatic) OR (Traumatic Brain Injuries) OR (Trauma, Brain) or (Brain Trauma) OR (Brain Traumas) OR (Traumas, Brain) OR (TBI) OR (Traumatic Brain Injury) OR (Encephalopathy, Traumatic) OR (Encephalopathies, Traumatic) OR (Traumatic Encephalopathies) OR (Injury, Brain, Traumatic) OR (Traumatic Encephalopathy) OR (TBIs) or (Traumatic Brain Injuries) OR (head injury) OR (closed head injury) OR (head trauma) OR (Closed Head Injury) OR (Head Injury, Closed) OR (Head Injury, Nonpenetrating) OR (Head Injuries, Nonpenetrating) OR (Nonpenetrating Head Injuries) OR (Nonpenetrating Head Injury) OR (Head Trauma, Closed) OR (Closed Head Trauma) OR (Closed Head Traumas) OR (Head Traumas, Closed) OR (Closed Head Injuries) OR (Injuries, Closed Head) OR (Head Injury, Blunt) OR (Blunt Head Injuries) OR (Blunt Head Injury) OR (Head Injuries, Blunt) OR (prefrontal cortex damage)) AND ((social cognition) OR (facial emotion recognition) OR (emotion recognition) OR (emotion)).

Participant or population: Adult patients (aged ≥18 years) with traumatic brain injury. No restrictions on sex, ethnicity, education or economic status.

Intervention: Studies compare facial emotion recognition performance between a group of adult with TBI and a sample of healthy controls.

Comparator: Facial emotion recognition performance.

Study designs to be included: Case-control studies.

Eligibility criteria: Inclusion criteria: The articles have to satisfy following inclusion criteria: (1) The study should be published as a primary peer-reviewed research article in English; (2) The onset age of TBI patients was not less than 18 years old; (3) The study had to examine emotion recognition abilities; (4) Sufficient data to calculate effect sizes and standard errors of the emotion recognition measure were reported; (5) A matched HC group had to be included. Exclusion criteria: Reports were excluded if they met the following criteria: (1) The onset age of TBI patients was less than 18 years old; (2) The study with the patient samples was overlapped with another one with a larger sample size; (3) The study lacked an HC group; (4) A study with a sample size under 10 will be excluded to ensure the reliability of the outcome; (5) The publication was not an original type, such as research protocols, letters, conference abstracts, reviews, and editorials.

Information sources: Three electronic databases: PubMed, Web of Science, and Embase were searched from inception to May 19th, 2020 with no restriction of publication dates. The reference lists of the included articles and any relevant review articles were manually reviewed other potentially qualified studies.

Main outcome(s): Main outcomes will include the facial emotion recognition measure used and the data used for calculating the effect sizes and standard

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errors of the facial emotion recognition measure between patients with traumatic brain injury and healthy controls.

Additional outcome(s): None.

Quality assessment / Risk of bias analysis: Quality assessment will be independently assessed by two authors using Newcastle-Ottawa scale for all included studies.

Strategy of data synthesis: Data analysis will be performed using Stata 15.0 software. The total emotion labeling score and separate effect sizes for six basic emotions (anger, fear, disgust, sad, happy, and surprise) were calculated. A separate negative emotion recognition score was obtained by calculating the pooled effect size and standard error of anger, disgust, sad, and fear recognition. Similarity, a separate positive emotion recognition score was obtained by calculating the pooled effect size and standard error of happy and surprise recognition.

Subgroup analysis: Subgroup analysis will be performed in different aspects of facial emotion recognition (including negative emotion recognition, positive emotion recognition, and six basic emotion recognition) and in clinical subtypes (such as mild TBI patients and moderate to severe TBI patients).

Sensibility analysis: To assess the stability of the results, a sensitivity analysis was performed by repeating the same analyses by consecutively removing one study at a time.

Language: English.

Country(ies) involved: China.

Keywords: traumatic brain injury; facial emotion recognition; systematic review; meta-analysis; protocol.

Contributions of each author:
Author 1 - XiaoGuang Lin - The author drafted the manuscript.
Author 2 - XueLing Zhang - The author provided statistical expertise.
Author 3 - QinQin Liu - The author contributed to the development of the selection criteria, the risk of bias assessment strategy, and data extraction.
Author 4 - PanWen Zhao - The author contributed to the development of the selection criteria, the risk of bias assessment strategy, data extraction, and drafted the manuscript.
Author 5 - Hui Zhang - The author provided statistical expertise.

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