

# OVERCOMING BARRIERS TO CONDUCTING SYSTEMATIC REVIEWS OF NON-INTERVENTION RESEARCH

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# MY BACKGROUND

**Field:** Cognitive psychology, neuroscience, neurodevelopment

**Methods:** Cross-sectional and experimental. Cognitive tasks, cognitive assessments, EEG, questionnaires and self/parent-reports

*I worked with educational interventions as well for a period of 2 years after my PhD.*

**Now:** My work is focused on meta-science and both interventional and cross-sectional/experimental research in the field of disabilities.

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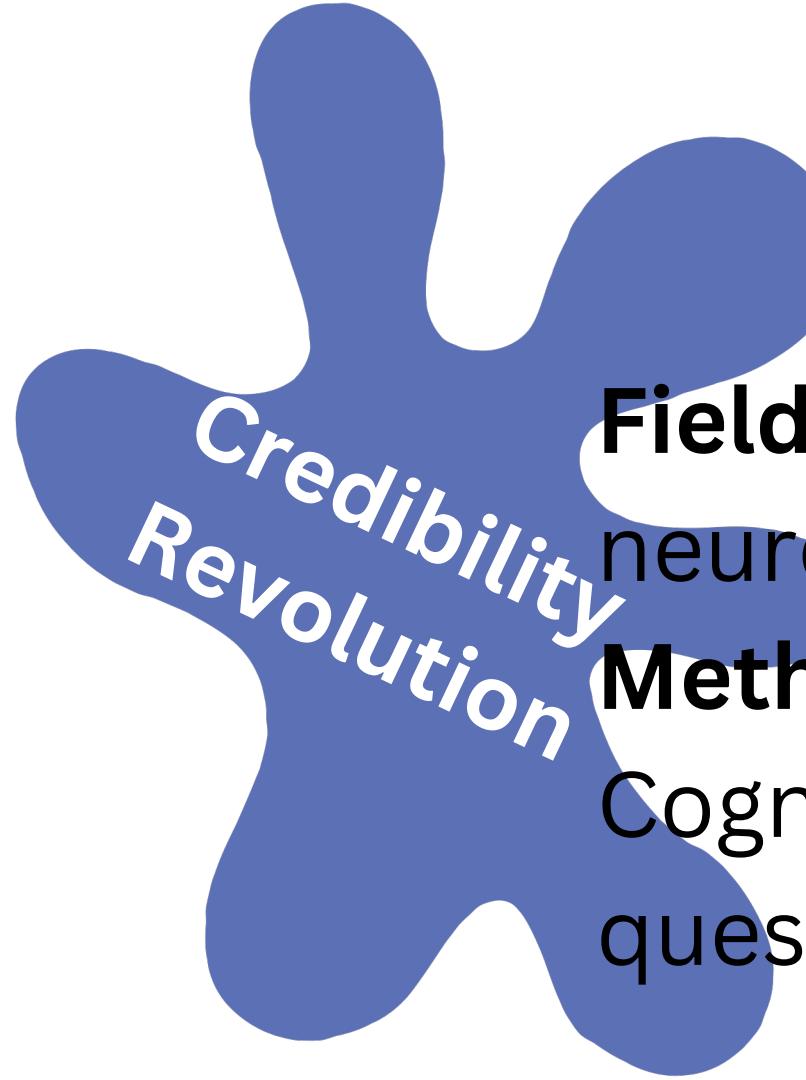
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# MY BACKGROUND



Credibility  
Revolution

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Systematic  
Reviews

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**BARRIERS**



**SOME  
SOLUTIONS**



**SOME IDEAS**

# BARRIERS

## Why systematic reviews?

**Traditionally:** To evaluate the general efficacy of interventions, for example, in clinical, educational or health research.

### Benefits of doing an SR:

- In-depth knowledge of the literature (including grey literature)
- Knowledge that is less clouded by biases (e.g. citation bias, confirmation bias)
- Awareness of gaps and issues
- Knowledge about the quality of studies in this field
- Accessible - Detailed guidance tools available to support researchers through the process

### More possible benefits:

- New collaborations
- A publication
- Enhanced evidence-based focus for future empirical work

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**vs**

(Before embarking on a new non-interventional project)

**To · synthesise the knowledge and understand the field.**

- Which theories are supported by data
- Are results consistent between studies
- Sources of heterogeneity
- Confounds
- Methodology & Analyses
- What we know and what we don't know

# BARRIERS

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## PICOS

- Population/patients/problem
- Intervention
- Comparator
- Outcome
- Study design

### CASE 1 (me)

(cognitive neuroscience - motor functioning and cognition)

- Was advised to use a checklist for health-related research and adapt it to fit the chosen topic
- Ended up doing what I thought was right and I had no idea how to make these decisions

### CASE 2

(cognitive neuroscience - executive functioning in Parkinson's)

- Research question didn't fit PICOS model
- Risk of bias/quality assessment - no applicable guidance
- Tried making a bespoke one - did not go well

### CASE 3

(social psychology - jury decision-making in criminal trials)

- PICOS inappropriate
- Health-research guidance didn't align with aims and methods
- Risk of bias/quality assessment - no applicable guidance

# SOME SOLUTIONS

Guidance Tools  
Aligned with aims and methods

Relevant Risk of bias &  
Quality assessment

Open and reproducible  
practices

## PICOS

- Population/patients/problem
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# SOME SOLUTIONS

Jade Pickering and I started coordinating an international collaboration called Non-Intervention Open and Reproducible Evidence Synthesis (**NIROES**)

## **NIROES has:**

- Contributors at different career levels - from MSc to Prof
- Different fields of research mainly within psychology
- Collaborators in North America, Europe, Asia and Australia

# SOME SOLUTIONS

## PROJECT

1

Relevant Risk of bias &  
Quality assessment

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# SOME SOLUTIONS

# PROJECT 1

## Non-Intervention Open and Reproducible Systematic Reviews Tool (NIRO-SR)

Glossary of terms used in the tool	
PART A: Preparing the Protocol for Pre-registration	PART B: Reporting the Review
<p><b>Pre-registration Guidance</b></p> <p><i>Why should you pre-register your systematic review protocol?</i></p> <p><i>When should you pre-register your protocol?</i></p> <p><i>Where can you pre-register your protocol?</i></p> <p><i>What if you need to make changes after the protocol has been pre-registered?</i></p> <p><b>Systematic Review Protocol Guidelines</b></p> <p><i>Title</i></p> <p><i>Description and Aims</i></p> <p><i>Research Question</i></p> <p><i>Search Strategy</i></p> <p><i>Screening</i></p> <p><i>Data Extraction</i></p> <p><i>Critical Appraisal</i></p> <p><i>Synthesis</i></p> <p><i>Transparency</i></p>	<p><b>Reporting guidance</b></p> <p><i>Writing your review</i></p> <p><i>Supplementary materials</i></p> <p><i>Preprinting your review</i></p> <p><b>Title</b></p> <p><b>Abstract</b></p> <p><b>Introduction</b></p> <p><b>Method</b></p> <p><i>Deviations from Protocol</i></p> <p><i>Search Strategy</i></p> <p><i>Screening Method</i></p> <p><i>Data Extraction Method</i></p> <p><i>Critical Appraisal Method</i></p> <p><i>Synthesis Method</i></p> <p><b>Results</b></p> <p><i>Extracted Records Results</i></p> <p><i>Critical Appraisal Results</i></p> <p><i>Synthesis Results</i></p> <p><b>Discussion</b></p> <p><i>Transparency</i></p>

# SOME SOLUTIONS

# PROJECT

# 1

## Non-Intervention Open and Reproducible Systematic Reviews Tool (NIRO-SR)

**PICOS, PRISMA statement; Moher et al.,  
(2009)**

**Item 3, NIRO-SR (Part A)**

Provide an explicit statement of questions being addressed with reference to:

- participants,
- interventions,
- comparisons,
- outcomes,
- study design

What is the primary review question? The review question must be clearly defined and include the following:

- The primary outcome measure(s) of interest (the dependent variables(s); DV)
- The primary independent variables (IVs) of interest
- The population/participants of interest (e.g., undergraduate students, participants with a specific diagnosis, school-age children etc.)
- (optional) Study design(s) of interest, for example:
  - i. observational - measured variables at one time-point
  - ii. cross-sectional - measured variables with different individuals at different ages/timepoints
  - iii. longitudinal - same individuals followed over time; could be prospective or retrospective
  - iv. experimental - examining effect of specific manipulation
- (optional) Any covariates of interest or variables you want to control for (e.g. participant age)

*NB. If you find that your research question does not fit the above, for instance in exploratory or methodological systematic reviews, you should state this in the protocol for transparency. If you cannot operationalise the DV and IV make sure to clearly define the focus (e.g. methodological variation) and the context (e.g. in working memory research) of your investigation.*

# SOME SOLUTIONS

# BARRIERS

# PROJECT

1

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SOME  
SOLUTIONS

# PROJECT

1

## Non-Intervention Open and Reproducible Systematic Reviews Tool (NIRO-SR)

Meta-Psychology, 2023, vol 7, MP.2021.2840  
<https://doi.org/10.15626/MP.2021.2840>  
Article type: Original Article  
Published under the CC-BY4.0 license

Open data: Not Applicable  
Open materials: Not Applicable  
Open and reproducible analysis: Not Applicable  
Open reviews and editorial process: Yes  
Preregistration: No

Edited by: Rickard Carlsson  
Reviewed by: Christina Bergmann, Matthew Page  
Analysis reproduced by: Not Applicable  
All supplementary files can be accessed at OSF:  
<https://doi.org/10.17605/OSF.IO/FG8TZ>

An integrative framework for planning and conducting  
Non-Intervention, Reproducible, and Open Systematic Reviews  
(NIRO-SR)

# SOME SOLUTIONS

## PROJECT 2

Guidance Tools  
Aligned with aims and methods

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Quality assessment

Open and reproducible  
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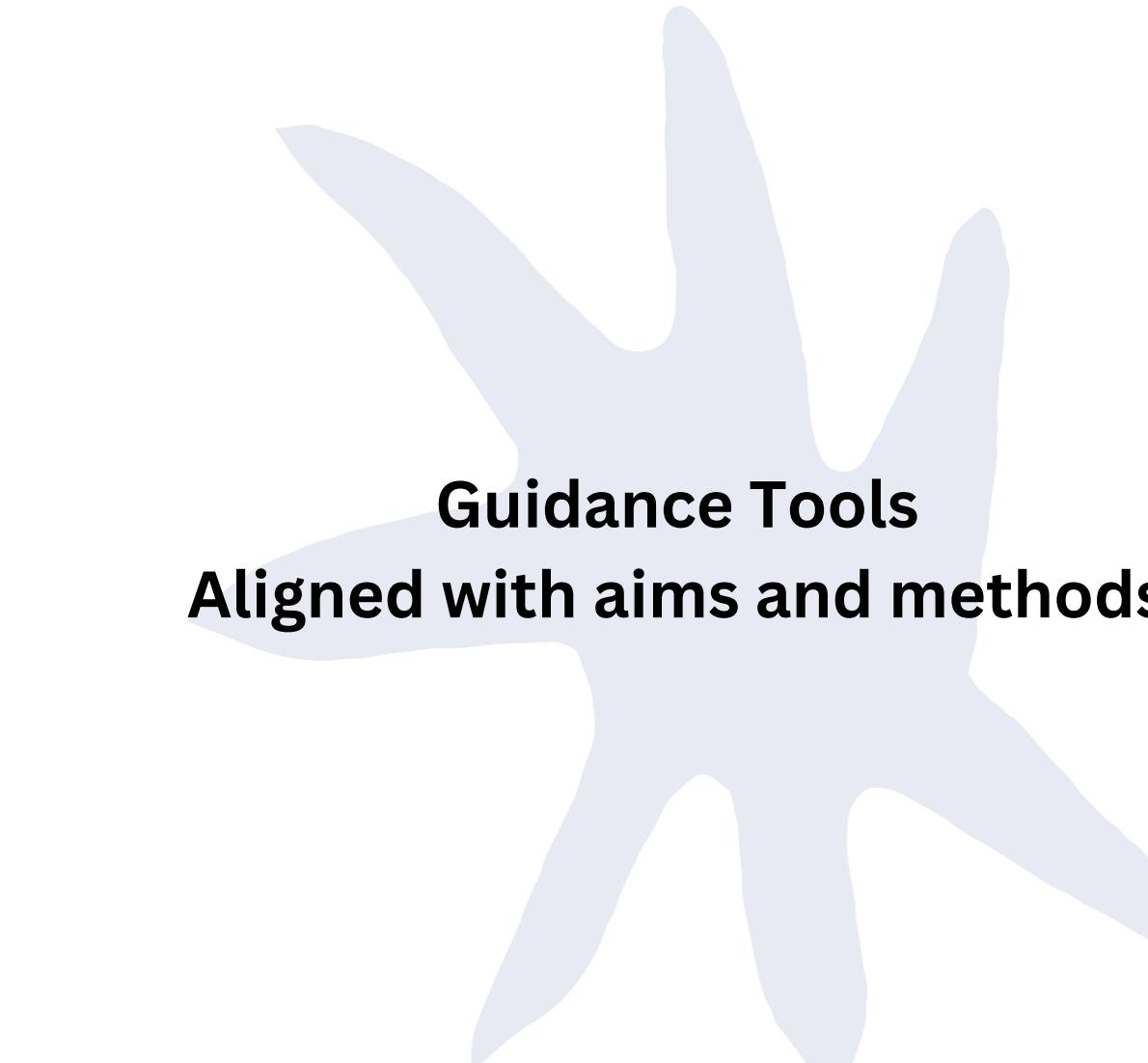
# SOME SOLUTIONS

## PROJECT

2



Relevant Risk of bias &  
Quality assessment



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practices

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# SOME SOLUTIONS

## PROJECT

2

### RISK OF BIAS - QUALITY ASSESSMENT - CRITICAL APPRAISAL TOOL - A SCOPING REVIEW

**Research Question:** “Which existing, available tools are suitable to assess the quality and risk of bias of non-intervention primary studies included in evidence syntheses within the behavioural sciences?”

**Focus on:**

- Relevance to non-intervention research design (cross-sectional, observational, experimental)
- Open & reproducible research practices

*This is being prepared as a registered report and almost ready to be submitted for Stage 1 Approval.*

# SOME IDEAS

A NEW ROB/QUALITY TOOL  
**META-ANALYTIC APPROACHES**  
REPRODUCIBLE SEARCH STRATEGIES

# SOME IDEAS

*We are an open collaboration and we always welcome new contributions and new ideas!*

*We also welcome feedback from those who have used or are planning to use NIRO-SR.*

**You can email me at:**

***marta.topor@liu.se***

**THANK YOU!**