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## Slow open science 2021 : Modèles de méta-analyses reproductibles

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HAL Authorization

# Modèles de méta-analyses reproductibles

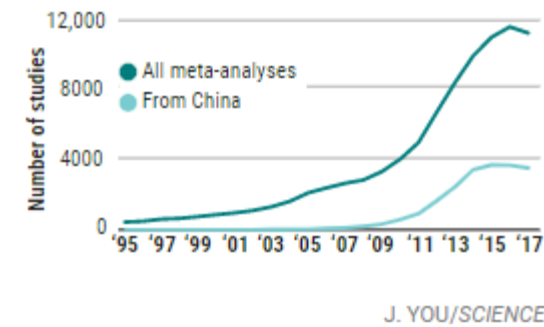
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@adfillon

# Méta-analyse

- Fait partie de la science cumulative
- Pour certains, c'est le plus haut niveau de preuve scientifique
- Permet de faire des recommandations (Exemple : Cochrane)
- Permet d'évaluer les différences entre les études individuelles (hétérogénéité)
- Les méta-analyses sont à la mode
- Les méta-analyses sont très mouvantes




# Methodological quality of meta-analyses indexed in PsycINFO: leads for enhancements: a meta-epidemiological study

Victoria Leclercq<sup>1</sup>, Charlotte Beaudart<sup>2</sup>, Sara Ajamieh<sup>2</sup>, Ezio Tirelli<sup>3</sup>, Olivier Bruyère<sup>2</sup>

**Results:** According to AMSTAR2 criteria, 95% of the 206 MAs were rated as critically low quality. Statistical methods were appropriate and publication bias was well evaluated in 87% and 70% of the MAs, respectively. However, much improvement is needed in data collection and analysis: only 11% of MAs published a research protocol, 44% had a comprehensive literature search strategy, 37% assessed and 29% interpreted the risk of bias in the individual included studies, and 11% presented a list of excluded studies. Interestingly, the explicit mentioning of PRISMA suggested a positive influence on the methodological quality of MAs.

# An Empirical Review of Research and Reporting Practices in Psychological Meta-Analyses

Richard E. Hohn , Kathleen L. Slaney, Donna Tafreshi

First Published May 21, 2020 | Research Article |  Check for updates

## Abstract

As meta-analytic studies have come to occupy a sizable contingent of published work in the psychological sciences, clarity in the research and reporting practices of such work is crucial to the interpretability and reproducibility of research findings. The present study examines the state of research and reporting practices within a random sample of 384 published psychological meta-analyses across several important dimensions (e.g., search methods, exclusion criteria, statistical techniques). In addition, we surveyed the first authors of the meta-analyses in our sample to ask them directly about the research practices employed and reporting decisions made in their studies, including the assessments and procedures they conducted and the guidelines or materials they relied on. Upon cross-validating the first author responses with what was reported in their published meta-analyses, we identified numerous potential gaps in reporting and research practices. In addition to providing a survey of recent reporting practices, our findings suggest that (a) there are several research practices conducted by meta-analysts that are ultimately not reported; (b) some aspects of meta-analysis research appear to be conducted at disappointingly low rates; and (c) the adoption of the reporting standards, including the Meta-Analytic Reporting Standards (MARS), has been slow to nonexistent within psychological meta-analytic research.

# Les méta-analyses de qualité

- Suivent les guides standards de rapport
  - Sont transparentes et reproductibles de bout en bout
  - Cherchent à réduire et examiner les biais de publication
  - Ne sont pas elles-mêmes victimes de biais de publication
-

# Modèles de méta-analyses sous format registered reports

- 1 manuscrit sous la forme d'introduction/méthode/résultats/discussion
- 1 supplementary avec les modèles d'e-mail, les checklists, les diagrammes et des ressources complémentaires
- 1 modèle de feuille Excel pour coder les données
- 1 modèle de code R pour traiter les données et créer automatiquement une feuille de résultats en PDF



### Introduction

In the past [duration of time, e.g., number of decades], there has been a growing interest of research in [construct m]. [construct m] refers to [description of the construct] and has been associated with [descriptions of its associates]. [construct m] is important to our understanding of [describe the impact and implications of the construct], and particularly, has been linked to [construct n or relation with this construct], [brief description of the construct and why such connection is important and interesting].

Studies so far have provided preliminary evidence regarding the relationship between [construct m] and [construct n]. For example, [describe studies that investigated the correlation between the constructs of your interest]. Nonetheless, the relative strength and direction of these associations tended to vary across [sub-construct, operationalization, sample demographics, etc.]. For example, [describe inconsistent findings in the literature]. So far, there have been no systematic mappings of the association between [construct m] and [construct n] to help form a unified framework connecting these two constructs and reconcile conflicts in concepts and empirical findings.

The present investigation aims to contribute to the literature on the association between [construct m] and [construct n]. We begin with the theoretical accounts of these two constructs and our hypotheses on why and how the two may be connected. We proceed to report the methods and findings of this registered correlational meta-analysis.

[construct m]

[construct m] was firstly proposed by [pioneer conceptualizations and studies on this

En clair, proposé pour l'écriture

En surligné entre crochet, à adapter

Des tableaux et figures sont  
proposées

[construct name] and [construct name]: A correlational meta-analysis

17

Table 2

*All studies/datasets included in the meta-analysis*

No.	Article	N	construct m	Scale and reliability	construct n	Scale and reliability	Publication status	Country
1	Joe & Jane (2020)	100	construct m.1		construct n.2		Yes/No	

### Coding

Data extraction from the included studies was recorded in the “main coding sheet” tab. When available, the main correlations between [construct m] and [construct n] were recorded, along with intercorrelations between [construct m, construct n, or both], the type of scale used, sample demographics, and publication information [Add or modify relevant moderator]. During the coding process, if the correlation between [construct m] and [construct n] were reported both as a single correlation and also as a result when split by a moderator, the results will be listed as separate rows. Moderator variables will be coded for each study where identified as present and analyzed using a meta-regression.

### Analysis

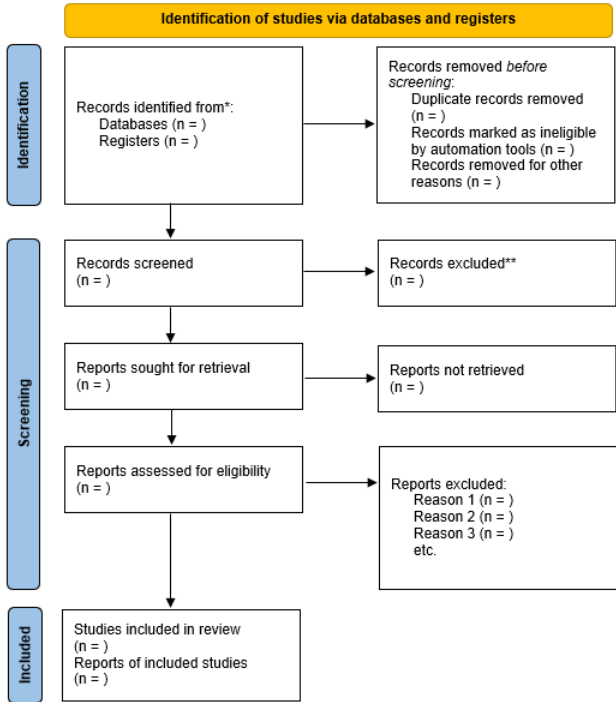
[Note: You may use more than one method for main effect and moderator analyses. In any case, please justify your choice(s) transparently and reasonably, as different analytical choices sometimes lead to different results. In cases if two or more methods are used for analyses, please explain the possible reasons behind the results differences in the Discussion section]

We used a Rmarkdown Script for statistical analyses. The packages used are indicated

En police plus petite, des  
indications sur l’utilisation  
du modèle

Section and Topic	Item #	Checklist Item	Location where item is reported
<b>TITLE</b>			
Title	1	Identify the report as a systematic review.	
<b>ABSTRACT</b>			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	
<b>INTRODUCTION</b>			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	
<b>METHODS</b>			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1	Last Modified by: Author, date		In Orange is the non-necessary columns that can be left blank during Stage 1 and/or for simulation																		
2	Article Information										Paper Info										Demographic
3	Article	Study	Sample	Coder	Status	Date started coding	Date ended coding	Verified by	Verification date	General Notes	Pre-Registered (Y/N)	Data Shared? (Y/N)	Any Manipulation used in this study? (Y/N)	Interrelations	Setting of Study (1=Lab/2=Online/3=Field)	Country	N.before	N.post	Reasons for exclusion	Age	Age SD
4	Article 1	1	1	Adrien				Joe					Y		France	714	714		68	8	
5	Article 1	2	1	Adrien				Joe					Y		France	447	447		31	2	
6	Article 2	1	1	Adrien				Joe					N		France	182	182		55	7	
7	Article 2	1	2	Adrien				Joe					N			69	69		28	4	
8	Article 3	1	1	Adrien				Joe					N			249	249		34	3	
9	Article 4	1	1	Adrien				Joe					N			865	865		49	2	
10	Article 4	2	1	Adrien				Joe					N			469	469		69	6	



Checklist  
 Diagramme transparent sur les critères d'inclusion/exclusion  
 Partage des données  
 Analyses reproductibles  
 Tester les biais de publication



**Publication biases analyses results**

Publication bias analysis method	Results and adjusted models
Three-parameter selection model	Likelihood Ratio Test: 9.22, $p = .002$ Adjusted Model: $g = 0.60$ , 95% CI [0.41, 0.79]
PET	$b = 0.59$ [0.21, 0.96], $p < .01$
PEESE	$b = 0.55$ [0.31, 0.80], $p < .001$
Puniform	Adjusted Model: $g = 0.81$ , 95% CI [0.67, 0.93], 26 significant
Henmi & Copas (2010)	Adjusted Model: $g = 0.60$ , 95% CI [0.41, 0.79]
Trim and fill funnel plot asymmetry	Eight studies missing on the left side.
Rank correlation test (Begg & Mazumdar, 1994)	Kendall's tau = 0.14, $p = .24$
Egger's regression test	$z = 1.06$ , $p = .288$

*Note.* Values in parentheses indicate 95% confidence intervals [lower bound, upper bound]. We ran publication bias analyses on collapsed effect sizes by study, leading to one effect size per study.



# 2 modèles de méta-analyse sous format Registered reports

## Modèle de méta-analyse expérimentale

- Compare la différence entre deux groupes
- L'objectif est de trouver l'effet de l'expérimentation
- Basé sur le  $g$  de Hedge

## Modèle de méta-analyse corrélacionnelle ou psychométrique

- Mesure le lien entre deux construits
  - Basé sur le  $r$  de Pearson
  - Peut évaluer les inter-relations entre sous-construits
  - Prend en compte la fiabilité des échelles de mesure dans la mesure du lien entre les construits ( $\alpha$  de Cronbach)
-

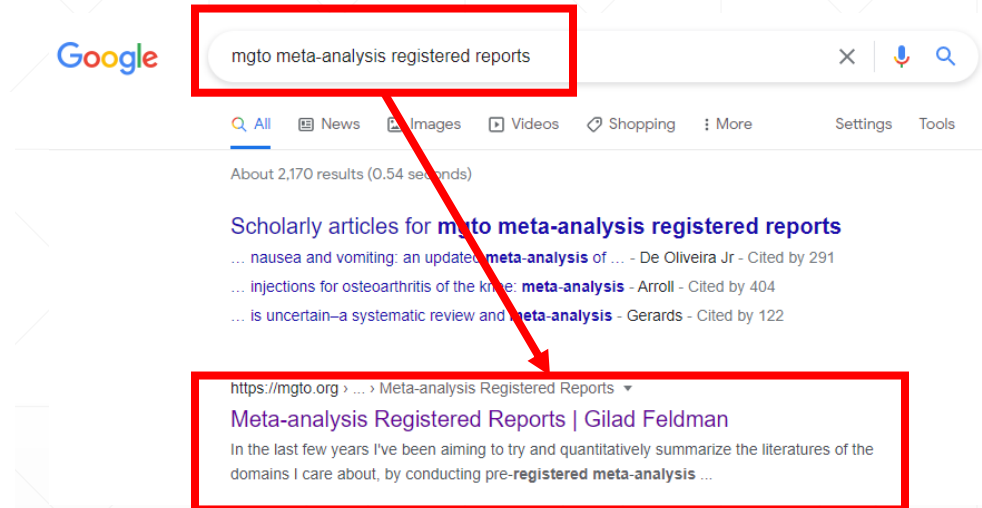
# Disponible à ce lien :

<https://mgto.org/meta-analysis-registered-reports/>

We've developed the following resources to support doing meta analyses as Registered Reports:

- [Experimental Meta-Analysis Registered Report Template: Main manuscript](#)
- [Experimental Meta-Analysis Registered Report Template: Supplementary](#)
- [Experimental Meta-Analysis Registered Report Template: Coding sheet](#)
- [Experimental Meta-Analysis Registered Report Template: Cloud folder](#)
- [Correlational Meta-Analysis Registered Report Template: Main manuscript](#)
- [Correlational Meta-Analysis Registered Report Template: Supplementary](#)
- [Correlational Meta-Analysis Registered Report Template: Coding sheet](#)
- [Correlational Meta-Analysis Registered Report Template: Cloud folder](#)

See [this list](#) (column 6 – “offered for meta-analysis”) for the journals willing to accept meta-analysis registered reports.



# Méta-analyses basées sur ces modèles

## Publiées

- Fillon, A., Kutscher, L., & Feldman, G. (2020). [Impact of past behavior normality on regret: Meta-analysis of exceptionality effect](#). *Cognition and Emotion*. DOI: [10.1080/02699931.2020.1816910](#)
- Lim, V., & Feldman, G. (2022). [Values and the dark side: Meta-analysis of links between Dark Triad traits and personal values](#). *Journal of Research in Personality*. [Registered Report Stage 1 in-principle acceptance]
- Nanakdewa, K., et al., Savani, K., & Feldman, G. (2022). [Outcomes associated with believing in free will: Meta-analysis](#). *Journal of Research in Personality*. [Registered Report Stage 1 in-principle acceptance]

## En cours

- Bialek, M., Gao, Y., Yao, D., & Feldman, G. [Owning leads to valuing: Meta-analysis of the Mere Ownership Effect](#). DOI: [10.13140/RG.2.2.13568.33287/1](#) **SMASH**
  - Omission-commission asymmetries in moral judgements and decisions: Meta-analysis of Omission-Bias.
  - Action-inaction asymmetries in judgment and emotions: Meta-Analysis Registered Report of the Action Effect. [[Google Doc manuscript, work in progress](#)]
  - Fillon, A. A., Souchet, L., Pascual, A., & Girandola, F. (2020). The effectiveness of the “But-you-are-free” technique: Meta-analysis and re-examination of the technique. Center for Open Science. <https://doi.org/10.31234/osf.io/3ds26>
  - Jaubert, S., Fillon, A. A., Souchet, L., & Girandola, F. (2020). Vicarious Dissonance : Meta-analysis registered report. Center for Open Science. <https://doi.org/10.31234/osf.io/hc2n3>
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# Merci !

Fillon, A., Xiao, Q., Elsherif, M., Yeung, S.K., Nanakdewa, K., Protzko, J., Brick, C., Moreau, D., Feldman, G. (2021). Correlational Meta-Analysis Registered Report Template [In preparation]

Yeung, S. K., Feldman, G., Fillon, A., Protzko, J., Elsherif, M. M., Xiao, Q., & Pickering, J. (2021). Experimental Studies Meta-Analysis Registered Report Templates [In Preparation]

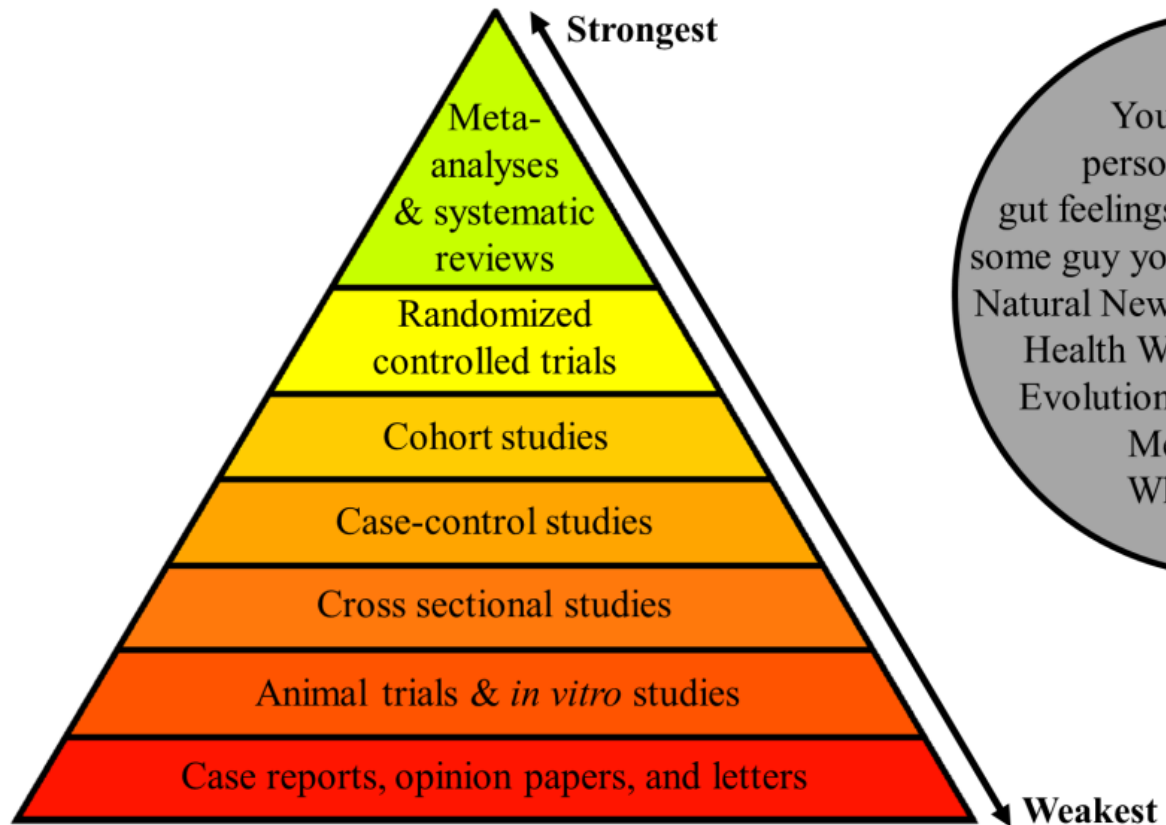


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## Hierarchy of Scientific Evidence



## Not Scientific Evidence

