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# Is Significant Significant? Improving Practical Inferences of Eyewitness Memory Research using the Smallest Effect Size of Interest

*A Data Management Plan created using DMPonline.be*

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**Project abstract:**

Memory scientists sometimes provide expert testimony in the courtroom about whether eyewitness statements accurately reflect what truly transpired. Assessing the accurateness of such statements is crucial as testimonial errors can lead to severe consequences such as false accusations and wrongful convictions. However, when can memory scientists confidently say which factors undermine memorybased statements and recommend that such testimonies cannot be used in legal proceedings? One way to examine this practical relevance of eyewitness memory research is by establishing the minimum amount of memory errors needed to indicate that a testimony is inaccurate, also known as the smallest effect size of interest (SESOI). Interestingly, there is currently not a SESOI for eyewitness memory research. Hence, in the current proposal, I will assess the SESOI for eyewitness memory research through the perspective of memory scientists but also legal professionals. To do so, I will present them with a hypothetical scenario of an eyewitness memory experiment or legal case. Then, they are asked to indicate how many memory errors they will permit before indicating that a testimony is invalid or take certain legal actions. I will also show how to include and assess the practical relevance using the SESOI in the area of eyewitness memory. This project will be the first large scale effort aimed to improve the practical inferences of eyewitness memory research.

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## Application DMP

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### Questionnaire

**Describe the datatypes (surveys, sequences, manuscripts, objects ... ) the research will collect and/or generate and /or (re)use. (use up to 700 characters)**

For my post doctoral fellowship at FWO, I planned to conduct four studies. The following datatypes will be collected/generated:

Workpackages (WP) 1 & 2: I will generate new data by distributing a survey wherein memory scientists (WP1) and legal psychologists (WP2) are asked what they deem the smallest effect size of interest to be for eyewitness memory research (.xlsx, .csx, .R, .Rmd; < 1GB). Personal information (i.e., email address) to enter a raffle will be collected. However, this information will be requested via a separate link and will not be connected to the results of the respondents. This data will also not be shared and only be used for the raffle and then deleted.

WP3: I will reuse existing data by conducting a literature search to gather information about the variation of measurement procedures in eyewitness memory research to show how to conduct power analyses for these types of studies. There will be no personal data (.xlsx, .csx, .R, .Rmd; < 1GB).

WP4: I will reuse existing data by re-analyzing published findings and examine the practical relevance using the smallest effect size of interest. There will be no personal data (.xlsx, .csx, .R, .Rmd; < 1GB).

Other studies:

S5: I will reuse existing data to examine eyewitness identification and memory research in terms of how power analyses are conducted and results are analyzed/interpreted. There will be no personal data (.xlsx, .csx, .R, .Rmd; < 1GB).

S6: I will conducted a simulation study on how to conduct power analyses using the smallest effect size of interest for equivalence and minimum-effect testing for frequently used experimental designs. There will be no personal data (.xlsx, .csx, .R, .Rmd; < 1GB).

S7: Simulation study on how to conduct power analyses using the smallest effect size of interest for equivalence and minimum-effect testing for Receiver Operating Characteristic curves analyses. There will be no personal data (.xlsx, .csx, .R, .Rmd; < 1GB).

**Specify in which way the following provisions are in place in order to preserve the data during and at least 5 years after the end of the research? Motivate your answer. (use up to 700 characters)**

1. Designation of responsible person (If already designated, please fill in his/her name.)

1.     o Paul Riesthuis and Prof. dr. Henry Otgaar (supervisor).

2. Storage capacity/repository

- o During the project: Data will be stored on the internal KU Leuven OneDrive network. Nonanonymized/non-coded personal data will be stored in a digital vault/protected file and deleted after anonymization. Anonymized data will be shared on the Open Science Framework (OSF).
- o After the project: Non-anonymized/non-coded personal data will be removed after anonymization took place. Anonymized/coded data will be stored on Paul Riesthuis' KU Leuven network drive and on OSF.  
In both cases, only me and my supervisors will have access to the non-coded personal data.
- We will store the data for a minimum of 10 years on the Open Science Framework (OSF). Currently, the OSF has funding to last at least 50 years of data storage. KU Leuven's RDM policy states that relevant research data must be stored for a minimum of 10 years and we will also store this on the internal KU Leuven OneDrive network.

**What's the reason why you wish to deviate from the principle of preservation of data and of the minimum preservation term of 5 years? (max. 700 characters)**

I do not wish to deviate from the minimum preservation term of 5 years because KU Leuven can guarantee safe data storage (OneDrive, L-drive and Digital Vaults).

**Are there issues concerning research data indicated in the ethics questionnaire of this application form? Which specific security measures do those data require? (use up to 700 characters)**

I do not expect any issues concerning research data indicated in the ethics questionnaire of this application form. However, we will request ethical approval for each study to make sure that any ethical concerns are taken care of. No personal/non-coded data will be shared and will only be stored on the internal KU Leuven OneDrive until the data is anonymized. Afterwards it will be removed to guarantee the safety of personal information.

**Which other issues related to the data management are relevant to mention? (use up to 700 characters)**

I do not foresee any other issues related to the data management because only anonymized data will be shared and there are enough resources to preserve the data for at least 5 years. The size of the datafiles will also be rather small and therefore I do not expect any issues in terms of capacity to store the data.

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## FWO DMP (Flemish Standard DMP)

### 1. Research Data Summary

List and describe all datasets or research materials that you plan to generate/collect or reuse during your research project. For each dataset or data type (observational, experimental etc.), provide a short name & description (sufficient for yourself to know what data it is about), indicate whether the data are newly generated/collected or reused, digital or physical, also indicate the type of the data (the kind of content), its technical format (file extension), and an estimate of the upper limit of the volume of the data.

				Only for digital data	Only for digital data	Only for digital data	Only for physical data
Dataset Name	Description	New or reused	Digital or Physical	Digital Data Type	Digital Data format	Digital data volume (MB/GB/TB)	Physical volume
S1	Survey data from memory scientists about their perspective on the smallest effect size of interest for eyewitness memory research	Please choose from the following options: <ul style="list-style-type: none"> <li>• Generate new data</li> </ul>	Please choose from the following options: <ul style="list-style-type: none"> <li>• Digital &amp; Physical</li> </ul>	Please choose from the following options: <ul style="list-style-type: none"> <li>• Observational</li> </ul>	Please choose from the following options: <ul style="list-style-type: none"> <li>• .csv,.xlsx, .R, .Rmd</li> </ul>	Please choose from the following options: <ul style="list-style-type: none"> <li>• &lt; 100MB</li> </ul>	
S2	Survey data from memory scientists about their perspective on the smallest effect size of interest for eyewitness memory research	<ul style="list-style-type: none"> <li>• Generate new data</li> </ul>	<ul style="list-style-type: none"> <li>• Digital</li> </ul>	<ul style="list-style-type: none"> <li>• Observational</li> </ul>	<ul style="list-style-type: none"> <li>• .csv,.xlsx, .R, .Rmd</li> </ul>	<ul style="list-style-type: none"> <li>• &lt; 100MB</li> </ul>	Physical data will be gathered from judges who attend a training. The physical data will be scanned and PDFs will be created. Then physical data will be removed. Physical data will only two sheets of paper for the judges to respond on.

S3	Literature search of eyewitness memory research to extract information regarding the variation of measurement procedures	<ul style="list-style-type: none"> <li>Reuse existing data</li> </ul>	<ul style="list-style-type: none"> <li>Digital</li> </ul>	<ul style="list-style-type: none"> <li>Scientific articles</li> </ul>	<ul style="list-style-type: none"> <li>.csv,.xlsx, .R, .Rmd, .pdf</li> </ul>	<ul style="list-style-type: none"> <li>&lt; 1GB</li> </ul>	
S4	Re-analyzing published research in the field of eyewitness memory research using the smallest effect size of interest	<ul style="list-style-type: none"> <li>Reuse existing data</li> </ul>	<ul style="list-style-type: none"> <li>Digital</li> </ul>	<ul style="list-style-type: none"> <li>Scientific articles</li> </ul>	<ul style="list-style-type: none"> <li>.csv,.xlsx, .R, .Rmd, .pdf</li> </ul>	< 1GB	
S5	Examining eyewitness identification and memory research in terms of how power analyses are conducted and results are analyzed/interpreted	Reuse existing data	Digital	Scientific articles	.csv,.xlsx, .R, .Rmd, .pdf	< 1GB	
S6	Simulation study on how to conduct power analyses using the smallest effect size of interest for equivalence and minimum-effect testing for frequently used experimental designs	Simulation of data	Digital	Simulation data	.csv,.xlsx, .R, .Rmd,	< 1GB	
S7	Simulation study on how to conduct power analyses using the smallest effect size of interest for equivalence and minimum-effect testing for Receiver Operating Characteristic curves analyses	Simulation of data	Digital	Simulation data	.csv,.xlsx, .R, .Rmd,	< 1GB	

**If you reuse existing data, please specify the source, preferably by using a persistent identifier (e.g. DOI, Handle, URL etc.) per dataset or data type:**

The data I intent to reuse is the published literature in the field of eyewitness memory research. This data will be available on LIMO and will be extracted from PsycINFO, PsycArticles, GoogleScholar, and all editions of the Web of Science Core Collection. Each article will have its personal DOI but I currently do not have this infomation.

**Are there any ethical issues concerning the creation and/or use of the data (e.g. experiments on humans or animals, dual use)? Describe these issues in the comment section. Please refer to specific datasets or data types when appropriate.**

- Yes, human subject data

I will collect survey data from memory scientists and legal professionals. I do not foresee any misuse of this data. No personal data will be shared or connected to the results (email-addresses will be requested in seperate links).

I will ask ethical approval from Sociaal-maatschappelijke Ethische Commissie (SMEC) and PRivacy and ETHics (PRET) for each study.

**Will you process personal data? If so, briefly describe the kind of personal data you will use in the comment section. Please refer to specific datasets or data types when appropriate.**

- Yes

I will only ask participants for their email address if they want to take part in the raffle. This is completely voluntary. Upon completion of the

experiment we will do the raffle. After the raffle, all email addresses will be permanently deleted. If participants wish to enter the raffle, they can click on a qualtrics link at the end of the study where they will be redirected to another Qualtrics study wherein they can leave their email address to enter the raffle. This way their email address is not linked to their study results in any way.

I will also collect data about age, gender, ethnicity, nationality, education, and current and previous profession.

**Does your work have potential for commercial valorization (e.g. tech transfer, for example spin-offs, commercial exploitation, ...)? If so, please comment per dataset or data type where appropriate.**

- No

**Do existing 3rd party agreements restrict exploitation or dissemination of the data you (re)use (e.g. Material/Data transfer agreements/ research collaboration agreements)? If so, please explain in the comment section to what data they relate and what restrictions are in place.**

- No

**Are there any other legal issues, such as intellectual property rights and ownership, to be managed related to the data you (re)use? If so, please explain in the comment section to what data they relate and which restrictions will be asserted.**

- No

## 2. Documentation and Metadata

**Clearly describe what approach will be followed to capture the accompanying information necessary to keep data understandable and usable, for yourself and others, now and in the future (e.g., in terms of documentation levels and types required, procedures used, Electronic Lab Notebooks, README.txt files, Codebook.tsv etc. where this information is recorded).**

For each project, I will create the R code and R Markdown files wherein clear explanation are given about the project, data, and analyses step-by-step. This includes a short explanation of the study that was conducted, how the data was cleaned, exclusion criteria, the variables of interest (and their meaning), how they are analyzed (in the Rcode analyses are given), and how they are visualized. I provide the Rmarkdown files for people who are not proficient in R but still want to understand the analyses and variables used.

**Will a metadata standard be used to make it easier to find and reuse the data? If so, please specify (where appropriate per dataset or data type) which metadata standard will be used. If not, please specify (where appropriate per dataset or data type) which metadata will be created to make the data easier to find and reuse.**

- No

This will be created specifically for each dataset. The R code and RMarkdown files wherein the data is stored, explained, and usable will be stored on the open science framework and KU Leuven network drives.

## 3. Data storage & back-up during the research project

**Where will the data be stored?**

Data with personal information (e-mail addresses) will be stored temporarily on Paul Riesthuis' KU Leuven network drive until the personal

data (e.g., e-mail addresses) are erased. Multifactor authentication of the KU Leuven authenticator app is activated to ensure the safe storage of (strictly) confidential data. Then the anonymized data will be uploaded and stored on the Paul Riesthuis' KU Leuven network drive, OneDrive of Paul Riesthuis from KU Leuven, and the Open Science Framework. The database will be shared on the Open Science Framework website in order to make the data public with the scientific community. However, all the personal data will be removed before it is uploaded on OSF.

**How will the data be backed up?**

OneDrive automatically makes back-ups of files of the data that are added to Paul Riesthuis' KU Leuven network drive.

**Is there currently sufficient storage & backup capacity during the project? If yes, specify concisely.**

**If no or insufficient storage or backup capacities are available, then explain how this will be taken care of.**

- Yes

KU Leuven personnel can store up to 2TB of data on OneDrive. Most of my projects will be below 1GB of data and thus there is sufficient storage and backup capacity during the projects.

**How will you ensure that the data are securely stored and not accessed or modified by unauthorized persons?**

OneDrive files can only be accessed by me through the multifactor authentication or by the supervisory (Prof. dr Henry Otgaar) on request. Hence, only me and the supervisor will have access to the personal data.

**What are the expected costs for data storage and backup during the research project? How will these costs be covered?**

OneDrive is free for all KU Leuven staff so there are no costs associated with the data storage and backup.

**4. Data preservation after the end of the research project**

**Which data will be retained for at least five years (or longer, in agreement with other retention policies that are applicable) after the end of the project? In case some data cannot be preserved, clearly state the reasons for this (e.g. legal or contractual restrictions, storage/budget issues, institutional policies...).**

The digital anonymized data will be stored for at least 10 years on Paul Riesthuis' network drive of KU Leuven and the Open Science Framework which is in line with the KU Leuven RDM policy.

**Where will these data be archived (stored and curated for the long-term)?**

On the KU Leuven network drive and the Open Science Framework.

**What are the expected costs for data preservation during the expected retention period? How will these costs be covered?**

No costs are expected as the use of the OneDrive and KU Leuven network is free for KU Leuven personnel and the Open Science Framework is also free. The Open Science Framework currently has enough funding for at least 50 years of data storage.

**5. Data sharing and reuse**

**Will the data (or part of the data) be made available for reuse after/during the project? In the comment section please explain per dataset or data type which data will be made available.**

- Yes, in an Open Access repository

All anonymized data will for each study will be made available to the scientific community via the Open Science Framework.

**If access is restricted, please specify who will be able to access the data and under what conditions.**

NA

**Are there any factors that restrict or prevent the sharing of (some of) the data (e.g. as defined in an agreement with a 3rd party, legal restrictions)? Please explain in the comment section per dataset or data type where appropriate.**

- No

**Where will the data be made available? If already known, please provide a repository per dataset or data type.**

On the Open Science Framework on my personal profile page ([osf.io/d6452](https://osf.io/d6452))

**When will the data be made available?**

After anonymization of the data.

**Which data usage licenses are you going to provide? If none, please explain why.**

CC-BY attribution 4.0 International.

**Do you intend to add a PID/DOI/accession number to your dataset(s)? If already available, you have the option to provide it in the comment section.**

- Yes

**What are the expected costs for data sharing? How will these costs be covered?**

The open science framework is free so I do not expect any costs for data sharing.

## **6. Responsibilities**

**Who will manage data documentation and metadata during the research project?**

Paul Riesthuis and Henry Otgaar (supervisor)



**Who will manage data storage and backup during the research project?**

Paul Riesthuis and Henry Otgaar (supervisor)

**Who will manage data preservation and sharing?**

Paul Riesthuis and Henry Otgaar (supervisor)

**Who will update and implement this DMP?**

Paul Riesthuis and Henry Otgaar (supervisor)