# Towards evidence-based practices in early childhood education: supporting executive functions of children from different socioeconomic backgrounds.

*A Data Management Plan created using DMPonline.be*

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**Project abstract:**

Deficits in executive functions (EF) at a young age negatively impact school success and predict future behavioral problems. With EF being highly influenced by classroom quality, the focus on supporting EF in the preschool classroom has been on the rise. This specifically, in the context of supporting children from low socioeconomic status (SES) backgrounds. Our project aims to research a classroom EF intervention in the Flemish early childhood education. Firstly, we will determine the theoretical foundations, and look at the effects of the intervention on both children (EF and adjustment) and teacher (EF supporting behaviors) outcomes through a cluster RCT across schools in a low SES student population, with attention for the implementation quality. However, current literature indicates that teacher-child relationships (TCR) play an important role in the effectiveness of classroom interventions delivered by teachers. Albeit research being scarce, the latest studies suggest that low EF children have poorer TCR, and that these may hinder the effectiveness of interventions delivered by teachers. Therefore, we also aim to obtain an in-depth description of TCR with low EF children using questionnaires and interviews with teachers. Furthermore, we will examine the moderating role of the TCR in limiting/facilitating the intervention effects. Via this project we hope to improve Flanders' preschool education.

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## FWO DMP (Flemish Standard DMP)

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**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 |
| Questionnaires | Demographics, SDQ, STRS, TRSSA, BRIEF-P | Reuse existing data | Digital Physical | Numerical Textual | pdf doc xlsx csv sav | < 1 GB | 400 sheets |
| Interviews | FMSS Focus Group | Reuse existing data | Digital | Sound Audiovisual Numerical Textual | wav mp4 pdf doc xlsx csv | < 100GB | |
| Observations | classroom observations | Reuse existing data | Digital | Audiovisual Sound Numerical | wav mp4 xlsx csv | < 1TB | |
| EF-performance measures | Tower Task, CORSI, Knock-Tap | Reuse existing data | Digital Physical | Numerical Textual | xlsx csv | < 1 GB | 1000 sheets |
| ICs | informed consents | Reuse existing data | Physical | | | | 500 sheets |
| Implementation | InterventionDiary InterventionQuestionnaire | Reuse existing data | Digital Physical | Numerical Textual | xlsx csv | < 1 GB | 100 sheets |

**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 being used was collected within a prior C2-project (C24/18/027). Note that this data was collected by the current research team. Thus, the FWO project works with the already collected data.

**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

SMEC G-2020 02 1991 (approved)

**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

SMEC  G-2020 02 1991 (approved)
Questionnaire with demographic variables of teacher (e.g. age, gender, years of teaching experience, ethnic background…) and child (e.g. age, gender, SES, …)
Audio/video recordings of classroom observations and interviews with teachers.

**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).**

All data files will be accompanied by a codebook that explains the labels used, as well as the analysis code. Each data component will have its own OneDrive folder, which will contain additional information about the selection of tasks or items. For the interviews and observations, a procedure manual and a coding scheme will be created. Similarly, coding manuals will be developed for the questionnaires.
Additionally, the full data collection outline/process, as well as the general study set-up, is documented within the SMEC application.

**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

Albeit, data shared via KU Leuven RDR will use DataCite.

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

**Where will the data be stored?**

Digital data will be stored on the secure KU Leuven OneDrive (protected with Multifactor authentication) during the project and afterwards on the Shared network drive (J-drive).
The physical documents will be stored in a locked closet within the main researcher's office.

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

Standard back-up provided by KU Leuven ICTS for my storage solution: Backups of project data on faculty network shares are made using “snapshot” technology, which is the online storage of incremental data changes. The end user can use his own PC to restore files to an older version using the “previous versions” function. According to the backup scheme, it is possible to go back in time up to 12 weeks (~3 months).

**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

The shared network drive has 'endless' capacity. Concerning the OneDrive, up to 2TB is available. This is sufficient for the project.

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

Personal information of participants will be saved separately from other data. Both datasets can, if needed, be linked using codes, which are again saved in a separate file. Technical and organizational controls are in place to protect these files that contain mappings between pseudonyms and the original personally identifiable information (CODES). At KU Leuven Faculty of Psychology and Educational Sciences (PPW), a CODES share for each research unit is available on the J: network drive. These shares are not exposed to the internet. Only data managers of the respective research unit have read/write access to the CODES share. This allows research groups to isolate codes from researchers where needed. To enable the use of network shares for this purpose, the faculty’s IT service organizes the raw network storage it procures from central ICT services in such a way that access permissions are limited, fixed, delegated to and audited by data managers who do not need to have an IT background. In combination with the hard disk encryption standards and other security controls at the faculty, this approach mitigates the majority of technical risks targeted by the GDPR. Additionally, Digital data will also be stored in a restricted area of the secure OneDrive of the unit, which is also protected by two-factor authentication. This data can only be accessed by the involved researchers and the unit’s data manager. Involved researchers will be granted access to the project drive, eliminating the need to transfer data. If for any reason data needs to be transferred between devices this will be done either via Belnet Filetransfer (encrypted) or encrypted USB drives.

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

During the project, data will be stored on the secure KU Leuven OneDrive, which is free of charge.

### 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...).**

All data* will be preserved for 10 years according to KU Leuven RDM policy.
*except raw video/audio recordings, transcripts will be kept

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

KU Leuven RDR
Shared network drive (J-drive)
Physical archive within the secure research unit's basement.

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

The Large Volume storage of the KU Leuven charges € 104,42 / TB / year. This has to be purchased in segments of 5TB. However, this cost can be shared between different researchers within the research group, decreasing the individual costs.

Costs will be covered using the FWO bench fee.

**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 a restricted access repository (after approval, institutional access only, …)

Pseudonymised CSV data used for publications will be made available within a restricted access repository, as well as the transcripts and manuals, if needed, to aid the interpretation of the data file.

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

During the project, the audio/visual data will only be shared within the KU Leuven association. After the project, the raw audio/visual data will be deleted, and only anonymized transcripts will be kept.

**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.**

- Yes, Privacy aspects

The audio/visual data will only be shared within the KU Leuven association during the project and deleted afterwards.

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

KU Leuven RDR

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

The data will be made available at the end of the FWO project after completing all planned publications. Additionally, note that only the data currently not used by the research unit will be made available as to give colleagues the chance to work with the data first.

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

CC-BY-SA/CC-BY-NC for anonymised quantitative/qualitative data. The specific license will depend on the data. If new materials are created, e.g. new coding systems for observations, these will be released under 'NC'.

**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

DIO via KU Leuven RDR

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

KU Leuven RDR is free of charge up to 50GB.

**6. Responsibilities**

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

Fren Dieusaert

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

Fren Dieusaert

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

Fren Dieusaert in collaboration with Jantine L. Spilt (Supervisor)

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

Fren Dieusaert up untill the end of the project. Afterwards, responsibility will be shared between Jantine L. Spilt and Fren Dieusaert