FWO DMP Template - Flemish Standard Data Management Plan

1.	General Project Information
Name Grant Holder & ORCID	**Christopher Linden — ORCID ID: 0000-0003-3086-9375**
Contributor name(s) (+ ORCID) & roles	**Johan Wagemans (Supervisor) — ORCID ID: 0000-0002-7970-1541**
Project number & title	11E3723N — ART PERCEPTION AND APPRECIATION IN GALLERIES AND MUSEUMS: MULTI-METHOD STUDIES WITH A FOCUS ON MOBILE EYE-TRACKING AND QUESTIONNAIRES
Funder(s) GrantID	11E3723N
Affiliation(s)	KU Leuven
Please provide a short project description	Research in empirical aesthetics has mainly been limited to laboratory experiments or large-scale online studies, presenting natural images or images of paintings to convenience samples. The insights gained from such studies have limited generalisability to the deep aesthetic emotions (e.g., thrills, awe, sublime) that some art lovers experience when they view real art in galleries and museums. However, most researchers have shied away from ecologically valid contexts due to the difficulties of tapping into these experiences with the objective, quantitative tools that we deal with in experimental psychology. In this project, we will take this daunting step and tackle theory-driven questions regarding the factors that determine the perception and appreciation of real art works by visitors of art galleries and museums. We will do so by combining questionnaires with new mobile eye-tracking devices. This project aims to establish (a) the role that free exploration of virtual galleries can play in bringing ecological validity to laboratory studies, (b) the role that art historical information about artworks and curatorial intent in exhibition design has on art perception, and (c) the best way to represent 3D artworks with 2D images for laboratory use. Several case studies are planned in museums such as M in Leuven and Tate Modern in London, as well as in smaller galleries in collaboration with contemporary artists.

2.	Research Data Summary

Each study within my project will collect and use the same kinds and similar quantities of digital data. The descriptions below outline the data that would result from a single study, hence the total expected quantity of data would be the estimate multiplied by the number of studies (also listed as the total expected maximum). The (currently planned) studies are as follows: (1) Vermeersch Exhibition, (2) Take Your Time, (3) Virtual Vermeersch, (4) London Context, (5) Pictorial Geometry. Each of these studies will generate (or has generated, in the case of 1 and 2 from which the data collection is already complete) new observational data, all of which is in digital format. There are two main data types: surveys and mobile eye-tracking (MET) data.

The surveys are collected either via Microsoft Forms (connected to the Grant Holder's KU Leuven One Drive account) or through a survey-hosting service such as Qualtrics. These will be downloaded as tabular data (.tsv and .csv files primarily), with distinct files for (anonymised) demographic information, artwork ratings, and outcome measures. Each study typically generates <100mB of survey data.

The MET data are collected with Tobii's Mobile Eye-Tracking Glasses 3. The raw data files for each participant are saved on SD cards within the recording unit. Each participant's set of raw data files includes a .mp4 video recording of the scene from the participant's perspective and a series of .json files that contain information about the eye-movement coordinates [pupil position relative to glasses frame, pupil size], head movement [accelerometer and gyroscopic measurements], and participant ID. These must be read into Tobii's analysis software to be accessed and processed into meaningful eye-movement data (fixations, saccades, etc.), for these eye-movements to be mapped onto reference images and for the participants behaviours to be coded according to what is visible in the video recording. This processing ultimately produces further sets of tabular data (.tsv files). Study 2 also generated eye-tracking data from a stationary eye-tracker (Eyelink 1000). This is tabular data representing the eye-movements of each participant in reference to the computer screen on which the stimuli were presented (i.e., the data is similar to the MET data, but does not contain head-movement or video data). Each MET study typically generates ~50 - 90GB of MET data.

In total, this research project will generate approximately 500GB of data.

Are there any ethical issues concerning the creation and/or use of the data (e.g. experiments on humans or animals, dual use)? If so, please describe these issues further and refer to specific datasets or data types when appropriate.	Yes, human subject data. All of our data will be created from psychological experiments with human participants. The data are low-intervention (surveys and video recordings), and will be anonymised where possible. None of the data we collect contain sensitive information, and all video recordings (from the MET glasses) are created in public spaces (and therefore should not contain any sensitive information). We will always follow standard ethical standards for these studies, obtaining clearance from the KU Leuven ethics board (SMEC) prior to data collection.
Will you process personal data? If so, briefly describe the kind of personal data you will use. Please refer to specific datasets or data types when appropriate. If available, add the reference to your file in your host institution's privacy register.	Yes The only personal data that we may (for some studies) collect are names and email addresses used for scheduling participants. These are always kept in separate data files from any of the observational data collected for use in the research analyses, and are only kept during the data collection period of a given study (unless the participant agrees, with informed consent, to allow us to retain the email as a contact for future research participation).
Does your work have potential for commercial valorization (e.g. tech transfer, for example spin-offs, commercial exploitation, …)?	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)?	No
Are there any other legal issues, such as intellectual property rights and ownership, to be managed related to the data you (re)use?	No

3.	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.	Since each project will be working with the same basic data types, and very similarly formatted data from both the surveys and the MET tabular output, we will be able to keep the data organised by using consistent and standard organisational scripts (mostly through R as an analysis environment. Where applicable, these scripts will be explained via in-line notes and via external README.txt files that will clarify any variable names, necessary coding protocols, and the orders in which to run the organisational and analytical scripts.
Will a metadata standard be used to make it easier to **find and reuse the data**? If so, please specify which metadata standard will be used. If not, please specify which metadata will be created to make the data easier to find and reuse.	No If no, please specify which metadata will be created: As mentioned above, all of the datasets will follow a consistent format (unique to survey data and MET data as necessary) that will be implemented with organisational scripts and clarified in README.txt files that will be stored alongside each of the datasets.

4.	Data Storage & Back-up during the Research Project
Where will the data be stored?	On password-protected lab computers (secured through icts) when in use, and in the KU Leuven one drive when not in use.
How will the data be backed up?	Regular backups (at least twice yearly) will be made to the Grant Holder's KU Leuven One Drive and to secure external hard drives (managed in collaboration with lab IT personnel).

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 If yes, please specify concisely: On KU Leuven OneDrive (2TB), and on external hard drives for broader backups of projects within the lab.
How will you ensure that the data are securely stored and not accessed or modified by unauthorized persons?	Network security will be maintained by following the recommended protocols for the use of the KU Leuven One Drive and the KU Leuven computers that will be used to run analyses on actively used data sets. In addition, any external hard drives used for data backups will be stored securely at our offices (i.e., in locked rooms that are only accessible to lab personnel).
What are the expected costs for data storage and backup during the research project? How will these costs be covered?	Minimal - already covered through the broader lab/university (aka, no additional costs for data storage/management from my project).

5. 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?	All of the data will be able to be retained for at least 5 years beyond the end of the project. These data will be retained on
Where will these data be archived (stored and curated for the long-term)?	Within lab servers on the KU Leuven One Drive?
What are the expected costs for data preservation during the expected retention period? How will these costs be covered?	Minimal - already covered through the broader lab/university (aka, no additional costs for data storage/management from my project). Any costs associated from this will be covered via the supervisors' (Johan Wagemans) broader data management systems established within the lab.

6. Data Sharing and Reuse	
Will the data (or part of the data) be made available for reuse after/during the project? Please explain per dataset or data type which data will be made available.	Yes, in an Open Access repository The data which can be anonymised (survey results, post-processed MET data) will be made available in an open access repository such as Open Science Framework (OSF) No (closed access) The MET data in the unprocessed state (inclusive of video recordings made while participants are wearing the MET glasses), will not be made available due to privacy concerns.
If access is restricted, please specify who will be able to access the data and under what conditions.	
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 per dataset or data type where appropriate.	Yes, privacy aspects If yes, please specify: The coded data frames (i.e., post-processed MET data) will be anonymised and therefore possible to be made available in an open-access repository such as OSF, but the full data sets, inclusive of video recordings from the MET glasses will potential contain some identifying information of the participant (or of other museum visitors in the public space), and as such will not be made publicly available.
Where will the data be made available? If already known, please provide a repository per dataset or data type.	The data sets that will be made available will most likely be presented through the Open Science Framework (OSF).
When will the data be made available?	Data that can be shared will be made available upon publication of the research results.

Which data usage licenses are you going to provide? If none, please explain why.	Data from the project that can be shared will be made available under a creative commons attribution license (CC-BY 4.0), so that users have to give credit to the original data creators.
Do you intend to add a PID/DOI/accession number to your dataset(s)? If already available, please provide it here.	No.
What are the expected costs for data sharing? How will these costs be covered?	The expected costs are minimal, since the data will only be digital, and will be uploaded to a free, open access repository such as OSF.

7. Responsibilities	
Who will manage data documentation and metadata during the research project?	Christopher Linden
Who will manage data storage and backup during the research project?	Christopher Linden
Who will manage data preservation and sharing?	Christopher Linden & Johan Wagemans
Who will update and implement this DMP?	Christopher Linden