**Enhancing NeuroImaging Genetics through Meta-Analysis (ENIGMA)**

**Antisocial Behavior Working Group**

**Memorandum of Understanding**

**Working Group Specifics**

This memorandum of understanding (MOU) pertains to the *ENIGMA Antisocial Behavior (ASB) Working Group*, hereinafter referred to as Working Group or WG.

This Working Group is chaired by *Drs. Stephane De Brito, Graeme Fairchild, Moji Aghajani, Eduard Klapwijk, Charlotte Cecil, Arielle Baskin-Sommers, Daniel Pine, and Adrian Raine*, hereinafter referred to as Working Group Chairs or chairs.

The ENIGMA Antisocial Behaviour Working Group has been set up to answer questions that cannot be addressed by individual research groups, and provide more reliable and replicable findings in the field. We hope that you will enjoy and benefit from this collaboration, and we acknowledge that progress along these lines would not be possible without your valuable contributions.

We are looking for new members on a rolling basis, so if you are interested in contributing to this working group, please do get in touch with the Working Group chairs by email: [enigma.antisocial@gmail.com](mailto:enigma.antisocial@gmail.com)

The members of Working Group’s support group and the participating sites and their PIs are listed on the ENIGMA Working Group website:

[*http://enigma.ini.usc.edu/ongoing/enigma-antisocial-behavior/*](http://enigma.ini.usc.edu/ongoing/enigma-antisocial-behavior/)hereinafter referred to as *ENIGMA Working Group website*.

Individual subject level Working Group data will be stored at the University of Birmingham, Birmingham, UK, or another site where one of the Working Group chairs is based, and will not to be transferred or mirrored to other sites because of privacy concerns. Together these sites are hereinafter referred to as *Main Working Group Data Storage Sites*. Individual subject level data may also be stored at the University of Southern California, the ENIGMA lead PI (Dr. Paul Thompson) site, and/or sites with approved secondary proposals. Together these sites are hereinafter referred to as *Additional Working Group Data Storage Sites*.

In all publications that use the ENIGMA Working Group data, the text “*for the ENIGMA Antisocial Behavior Working Group*”, hereinafter referred as “*for the ENIGMA Working Group*”, will appear the end of the author list.

The Overall ENIGMA PI is Dr. Paul M. Thompson.

**Introduction**

This document outlines the policy for sharing data from the ENIGMA Working Group as well as policies for publication and publication credits for those who use ENIGMA Working Group data. The intent of these policies is to facilitate the sharing of data, to encourage academic productivity, and to provide a mechanism for tracking and archiving data requests, intended analyses, and publications related to and resulting from ENIGMA WG data.

Members of the ENIGMA Working Group include investigators from different centers around the world who are actively engaged in research on antisocial behavior; and who have contributed results from primary analyses of neuroimaging, genetic data, and/or algorithm development for the purpose of meta-analysis and/or mega-analysis, replication, and/or algorithm testing in a collaborative manner. The Working Group’s initial goal is to demonstrate the value of performing collaborative, systematic neuroimaging analyses across multiple centers to clarify the association between Conduct Disorder/Problems, Psychopathy, or Antisocial Personality Disorder with brain structure and function. Future goals will potentially include examination of different phenotypes, population-based samples with dimensional measures of antisocial behavior, and genetic data from case-control and population-based studies. Together, this database will likely be useful to investigators both within and outside of the Working Group who may want to conduct transdiagnostic analyses. This wealth of data requires: (1) organization, (2) protection of authorship rights for contributors to the primary analyses, and (3) oversight of the direction of future analyses.

In order to accomplish these goals, the Working Group’s scientific initiatives and policies will be guided and overseen by the Working Group Chairs. These Group chairs are responsible for ensuring that work is carried out in a timely manner, and within the appropriate ethical guidelines set down for research on human participants. Part of this responsibility is to ensure that all sites have obtained approval from their local Ethics Committees, and that such assurances are updated regularly in accordance with Office for Human Research Protections (OHRP) regulations. In addition, the Working Group chairs will be responsible for oversight of authorship, considering whether a paper constitutes a Working Group Publication, and whether the scientific contributions of the sites have been correctly and fairly acknowledged in the relevant publications.

**Authorship and Publications**

*What constitutes a Working Group publication?*

Working Group publications are papers or abstracts based on investigations that: (1) rely on intellectual resources of the Working Group, (2) use data collected through the efforts of the Working Group, or (3) rely, in whole or in part, on information obtained through Working Group membership.

In agreeing to contribute data to a Working Group meta-/mega-analysis, the members at that site also agree that they will not publish or publicize (to the media or via the Internet) the results of the meta-/mega-analyses prior to the publication from the Working Group. Prior to publication, findings may be presented at conferences after consulting in advance with the Working Group chairs. This process of consultation is designed to ensure that the outputs of the Working Group comply with embargo policies of top-tier journals, thereby protecting the interests of other Working Group members. In addition, secondary analyses based on the findings of the Working Group (for example functional imaging correlates of an Antisocial Behavior-related brain structure identified through a meta-/mega-analysis conducted by the Working Group), may not be submitted to journals for publication until the original Working Group paper is accepted for publication. This is intended to avoid the risk of duplicate submissions that may jeopardize the publication of a Working Group paper.

Any participating site may choose to publish and present the results of brain imaging analysis for a given phenotype conducted at their own site, which does not contain analyses conducted as part of the Working Group. These publications *do not* constitute Working Group publications. If a Working Group meta-/mega-analysis is proposed and a research group is already engaged in an analysis with the same goal, the site agrees to disclose their ongoing project(s) for that goal if they wish to participate in the Working Group analysis. This also is intended to avoid the risk of duplicate submissions that may jeopardize the publication of a Working Group article.

Working Group publications may be classified as primary or secondary publications.

*Guidelines for Primary Publications of the ENIGMA Working Group*

Primary publications of the Working Group are those for which a meta-/mega-analysis is conducted for the first time by the Working Group (e.g., a meta-analysis of subcortical brain volumes).The ENIGMA Working Group will be listed as an author on all Working Group publications, including manuscripts on which all contributing Working Group members are listed by name. The text “*for the ENIGMA Working Group*” (see Working Group Specifics section) will appear the end of the author list.

Based upon the level of contribution, authorship at each site may vary from one publication to another. For each discrete publication, each site PI is responsible for preparing authorship and acknowledgment lists for their site.

Authorship for all ENIGMA Working Group papers will be weighted by current effort and contribution rather than on past contribution to ENIGMA Working Group research. Working Group members will be reasonable and self-critical in their claims for authorship. If a question arises regarding the appropriateness of authorship of (a) member(s), other Working Group members will be asked to advocate for these members in order to avoid putting members in the awkward position of having to advocate for themselves.

*Guidelines for secondary ENIGMA Working Group projects*

Secondary publications are those that rely upon data collected for the purposes of primary publications (e.g., re-analyzing Working Group data using a novel meta-analysis technique after the original meta-/mega-analysis has been accepted for publication).

Each proposal for a publication that relies partly or entirely on Working Group data will be submitted to the Working Group chairs using the analysis plan form that can be found requested from the WG chairs. All WG consortium members are encouraged to submit such proposals, which typically involve novel analyses, answering new questions, and may involve subsets of the available sites (e.g. data collected at a particular magnet strength or using a particular imaging modality). Non-Working Group members can, after consultation with the WG chairs and members, also submit a proposal for data-analysis and publication and will be asked to sign the Memorandum of Understanding regarding authorship and publishing. The WG chairs will screen the proposals for scientific interest, quality, overlap with other plans, appropriateness and feasibility of the proposed timeline, and whether the proposed resources committed to the project are sufficient.

Analysis plans should include a proposal for publication of a specific scientific paper, not for multiple papers on a more general topic or for a "line of work". This implies that the analysis plan should include specific research questions and hypotheses and a detailed plan for data analysis to answer those specific research questions. To attempt to avoid overlap between papers resulting from different analysis plans, the data analyses and results reported in the manuscript are limited to those described in the analysis plan. For additional analyses not described in the analysis plan, a new analysis plan needs to be submitted, also if this concerns a similar topic but different data or different analyses on the same data.

When the analysis plan is approved by the WG chairs, the proposal will be circulated amongst WG members. WG members will have 14 days from the time of the posting to ask for clarification, voice concerns or objections and/or give feedback to the proposal. Each analysis plan will be discussed during a conference call before the project can be initiated and the project leader can invite sites to participate. No site data will be shared without the consent of the PI of that site, who may opt to impose specific conditions or limitations on the use of the data; also ENIGMA PIs and members are not required to take part in any proposed project, participation in projects will be on an opt-in basis. The WG chairs will help enlist members who might be interested in collaborating and will assist in general coordinating tasks. Proposals will be discussed on ENIGMA WG calls and emails to encourage the broadest participation.

Manuscripts using data obtained via this procedure will be considered secondary Working Group publications. We request that the ‘ENIGMA Antisocial Behavior Working Group’ and the liaison person will be listed as co-authors. The Working Group on the byline will reference the PIs of each study, in addition to named contributors at their site. In this way the authors contributing data to the Working Group will be appropriately acknowledged on any publication.

Submission of a proposal implies actual plans for a publication, which will be worked on within a reasonable time frame specified in the proposal. When within 6 months after submitting a proposal there is no evidence of progress in that direction (e.g. preliminary analyses), the topic may be released to be pursued by other interested parties.

**Data sharing**

For groups that can share de-identified subject-level data for the purposes of mega-analyses within or across working groups, the results and/or data files from each group will be housed at the *Main Working Group Data Storage Sites*, and will not be transferred or mirrored to other sites without permission from the site contributing the data because of privacy concerns. With permission from the site PI, data from a site may also be stored at Additional *Working Group Data Storage Sites* for analyses. Any Working Group member (or non-member) wishing to access the results of meta-analyses, group-level summaries and post-estimation statistics or individual subject level data will need to complete an analysis plan. The analysis plan will clearly state which variables will be included in the analysis, and thus what data is requested from each of the participating sites. The level of data-sharing will also be mentioned in the analysis plan, so that it is clear whether raw imaging and/or genetic, individual structural or functional imaging measures derived from software packages including, but not limited to, FreeSurfer (hereinafter referred to as ‘individual data’), or group-level summaries and post-estimation statistics will need to be shared for the project.

The site PIs are responsible for ensuring anonymization of their site’s MR and phenotypic data. Both the site PIs who contribute data to the project as well as the project leader are responsible for complying with all relevant rules and regulations imposed by their institutions. This may mean that the project needs to be approved or declared exempt by a committee that oversees research on human subjects, e.g. a local IRB or Ethics Committee. Depending on the existing ethical approval and the level of data sharing required by the project, sites may need to obtain additional approval for sharing anonymized data with the project leader. The project leader of an approved analysis plan is required to keep track of ethical approval of each participating cohort when raw data or individual data needs to be shared for the project and will be able to provide this list when asked for, and include relevant information in the subsequent publication.

The project leader of an approved analysis plan is not allowed to share the data of participating cohorts to third parties inside or outside the ENIGMA consortium. Individuals who will have access to the data during the project shall all be named in the Analysis Plan. In case of sharing raw or individual data, the project leader keeps a document stating who has access to these data. In case of a project using a mega-analytical approach, the location of data storage, the people who will have access to the data, and a timeline for finishing the project shall be stated in the analysis plan. At the end of the proposed timeline the project leader can continue to store individual level data at their local site for archival purposes, but *cannot conduct any additional statistical analyses on the data from participating ENIGMA WG members beyond the scope of the approved analysis (i.e., analyses that have not been explicitly described in the approved analysis plan)*. If a site/cohort PI decides to withdraw from a project they had previously enrolled in and committed data towards, the project leader will comply and remove the dataset in question from all future analyses. Prior to this, all efforts would be made by ENIGMA WG chairs to address any concerns the withdrawing PI may have and to determine if the project has deviated from proposed plans.

**Authorships**

Specific authorship policies for:

Manuscript:

1. We request that manuscripts resulting from approved analysis plans will be submitted to the ENIGMA WG chairs (see Working Group Specifics section) prior to circulating it to all co-authors and prior to submitting to a journal. This review is intended to ensure that provisions described in the analysis plan are correctly implemented and to avoid overlap with other ENIGMA WG proposals/manuscripts. The ENIGMA WG chairs will maintain confidentiality of the manuscript and will complete their reviews within 2 weeks.

2. Authorship credit should be based on substantial contribution to: (1) the measurement of structural or functional Magnetic Resonance Imaging (MRI) phenotypes or genotypic data for a ENIGMA WG analysis; (2) contributions or generation of data for replication of results obtained in the analysis; (3) contributions to the conception, design, analysis and/or interpretation of the data; (4) drafting the manuscript or revising it critically for important intellectual content, and (5) final approval of the manuscript version to be published. These requirements are in line with authorship guidelines at leading journals (e.g., *JAMA Psychiatry*), such as the ICJME authorship criteria (<http://www.icmje.org/recommendations/browse/roles-and-responsibilities/defining-the-role-of-authors-and-contributors.html>).

3. People involved in the primary design, analysis and writing parts of the project will be listed as first (or joint first - denoted with an asterisk) and senior (last or joint last) authors. In addition, the ENIGMA WG chairs and all members of the ENIGMA Working Group who contribute data for this project and edit the manuscript will be listed as co-authors.

4. The phrase "for the ENIGMA Antisocial Behavior Working Group" (see Working Group Specifics Section) can be included on the author line of the manuscript if there is a restriction on the total number of co-authors. The ENIGMA Working Group website (see Working Group Specifics Section) can be used as the affiliation, which will include a list of all people involved in the Working Group.

5. Funding by NIH will be acknowledged in the support acknowledgement section of the manuscript using language similar to the following:

The *ENIGMA Working Group* gratefully acknowledges support from the NIH Big Data to Knowledge (BD2K) award (U54 EB020403 to Paul Thompson).

6. All authors will have the opportunity to review the article before it is submitted to a journal (although this must be done in a timely fashion – within 2 weeks).

7. Active approval of all authors on the article’s content and their co-authorship is required before it is submitted to a journal.

8. It is the responsibility of the first author that the guidelines relating to authorship are followed, that the sample and the research-methodology are described correctly and that references to former relevant ENIGMA Working Group publications where appropriate are made.

Conference poster and talk abstracts:

1. If the conference allows listing all contributing authors, please include all contributing authors on the author line. For most conferences additional names may need to be submitted to the conference separately.

2. If the conference has a hard limit on contributing authors (many do), include the project leaders / major contributors and, as co-authors, the ENIGMA Working Group chairs, overall ENIGMA PI, and the statement "for the ENIGMA Working Group" (see Working Group Specifics Section). For this ENIGMA Working Group, include at least FIRST AUTHOR (Presenter), the Working Group Chairs, the overall ENIGMA PI, LAST AUTHOR, and “for the ENIGMA Working Group” (see Working Group Specifics Section). Of course other important contributors can be included as well.

3. If not all authors can be listed, consider putting in the abstract "Contributing Authors are listed on the ENIGMA Antisocial Behavior Working Group Website”.

4. Regardless of the names listed on the abstract, it is best to list all contributors on the conference poster and/or the conference acknowledgement slide. PDF copies of the conference abstracts can be used by all Working Group members to list abstracts on CVs.

Symposium submissions:

1. List the presenting author, and if possible, on behalf of the ENIGMA Antisocial Behavior Working Group. Again, if possible consider putting in the abstract "Contributing Authors are listed at ENIGMA Antisocial Behavior Working Group Website”.

2. Regardless of the abstract, all contributors should be listed on the symposium talk acknowledgement slide.

**Participation in the ENIGMA Antisocial Behavior Working group**

*Admitting new sites as members to the Working group*

New Working Group members will sign the Memorandum of Understanding indicating that they agree with the policies listed here and that they have obtained the required ethical clearances to participate or send data.

*Expulsion or withdrawal from the Working Group*

Expulsion from the Working Group will be considered when a site fails to uphold this Memorandum of Understanding, or does not contribute significantly to the work of the Working Group either in data collection, data analyses, or its goals. It is the responsibility of the Working Group chairs to assemble evidence and present the reasons for possible expulsion to the PIs. Expulsion from the Working Group will require a majority vote of the PIs.

A site may request to withdraw from the Working Group. Requests for withdrawal will be reviewed by the Working Group chairs. The withdrawing site will need to agree in writing to a moratorium on publication of any data that were obtained in the context of the Working Group work, or where the interpretation of the data relies in any part on unpublished Working Group work.

**Membership of the ENIGMA Antisocial Behavior Working Group is contingent upon signing the following statement:**

I AGREE:

1. To consider participation in primary and secondary analyses proposed by the ENIGMA Working Group, subject to constraints or limitations that I may wish to impose in each case.
2. To abide by the ICMJE guidelines for authorship and publication, and other guidelines described in this document.
3. Not to distribute or communicate any privileged information to individuals who are not members without consent of the entire Working Group. This includes any other existing collaborators who are not members of the Working Group. Privileged information includes results of any unpublished analyses completed by members of the Working Group.
4. Not to distribute or copy any data collected by the Working Group without prior written consent of all Working Group members
5. That the Working Group chairs will review and evaluate future scientific opportunities, and will make recommendations regarding the needed expertise and research program to maximize those opportunities in the best possible way.
6. That failure to uphold this agreement may result in my expulsion from the Working Group (but I will still be bound by publication moratorium on this Working Group’s work, as described above).

Signature Date

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