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Data Management Plan (DMP)

1. Data and materials

This study, conducted collaboratively by the University of Connecticut (UConn) and University of South Florida (USF), will produce quantitative (surveys) and qualitative (semi-structured interviews) instruments and data. In year 1, we will conduct semi-structured interviews. In year 2, an online survey will be administered to SGM undergraduates majoring in STEM.

2. Standards to be used for data

Survey data will be collected using Qualtrics, an online survey platform available through UConn. These data will be downloaded to UConn's secure password-protected computer servers. After the data is de-identified and entered in Microsoft Excel, it will be shared securely with the USF team and Consultant who will store these data on USF's secure password-protected computer servers. Consultant Wao will be appointed as an UConn affiliate so he will have access to both UConn and USF secured password-protected computer servers. He will perform ego network analysis and multilevel logistic regression to analyze the quantitative data. Data will be categorized by type, participant identifiers, sexuality/gender identity, and ethnicity. SAS 9.4 will be used to analyze the survey data.

All participants will be assigned an identifier. The qualitative interviews will be conducted by UConn PI Smith, UConn Other Personnel Campbell, USF PI Hughes Miller, and USF co-PI Mayberry using Skype or another online video communication program. Interviews will be digitally audio-recorded and the files stored on both UConn and USF secured password-protected computer servers. PI Smith has a courtesy faculty appointment at USF and has access to both UConn and USF secured password-protected computer servers. The assigned identifiers will be used to name the recording files and then securely sent to the transcriptionist where they will be transcribed into Microsoft Word files. Thematic analysis of the qualitative data will be performed in NVivo, a qualitative data analysis software program.

As the lead university, UConn will store all transcripts on its secured password-protected computer servers. UConn has a NVivo 11 license. USF will use grant funds to purchase a NVivo 11 license. UConn will use grant funds to purchase NVivo for Teams which will allow the created project to be hosted on a secure NVivo server. This will allow UConn and USF team members to share data and collaborate in real time. We will be able to work on the same project at the same time and view each other's updates.

3. Policies for access and sharing data

All information and documents (i.e., informed consent forms, surveys, interview recordings) completed by participants will be used for research purposes only and will be kept in strict confidence. Any contact information that participants voluntarily provide will only be used with their permission to compensate them with incentives or to conduct research activities such as participating in the interviews or responding to the survey. Confidentiality will be maintained by assigning participants' numerical identifiers. Documents linking these identifiers to their contact information will be stored on UConn's secured password-protected computer servers.

Participants will be informed that their responses will not be used for any other purposes than conducting statistical analyses and obtaining results for eventual publication. This information will be stored on UConn's secured password-protected computer servers. For qualitative data, pseudonyms will be used in all transcribed materials. There will be no identifying information associated with any data after it is collected. All data will be recorded under the identification

number and/or pseudonym. Data will be de-identified and aggregated as necessary to ensure anonymity of participants.

To facilitate coordination of all data collection, all physical materials will be secured off-site (e.g., locked cabinets and locked offices) in UConn PI Smith's office at the University of Connecticut as Project Manager and PI. She will maintain these documents for the project. Informed consent documents, participants' contact information, and other identifying documents will be stored separately from the data in a locked filing cabinet and will only be available to the research staff involved in this project.

UConn and USF servers on which the research will be saved are part of computer networks that are backed up daily by information technology staff. The servers are protected by firewall technology to prevent unauthorized access or tampering. Up-to-date virus protection software protects each computer and server. Identifying information will not be reported in the dissemination of research results.

All research team members have received training in human subject issues required of all investigators at their respective universities' Institutional Research Boards (IRB). Their Collaborative Institutional Training Initiative (CITI) certificates are current. As part of the regular ethical research review protocol, all research instruments and activities along with the external evaluation will be submitted and approved by the UConn IRB. USF IRB will sign an IRB Authorization Agreement agreeing to rely on UConn's IRB approval.

4. Policies and provisions for re-distribution and production of derivatives

As requested, we will collaborate with representatives of participating universities to analyze datasets and produce publications. This study will produce the following:

- Annual written reports to NSF.
- Presentations of our findings and methodologies at annual professional conferences such as the American Society of Engineering Education, the American Anthropological Association, the American Sociological Association as well as the annual conferences of STEM-specific disciplines (e.g., American Chemical Society).
- Publications in peer-review journals such as the *Journal of Educational and Behavioral Statistics*, *Journal of STEM Education*, *Project Muse*, *Journal of Homosexuality*, *Journal of College Student Development*, *Journal of Research on Science Teaching*, and *Anthropology and Education Quarterly*.
- Partnership with the Society of Women Engineers (SWE) to disseminate our findings to its 35,000 members electronically and promote our findings at its annual meetings
- Publications in STEM practitioner sources and on Web sites.

5. Plans for Archiving Data

According to UConn IRB policy as per federal regulations (45 CFR 46.115(b) and 21 CFR 56.115(b)), "investigators must maintain research records for three years beyond the completion/termination of the study." At the conclusion of the project, hard copies of all project documents will continued to be stored off-site (e.g., locked cabinets and locked offices) in PI Smith's office at the University of Connecticut. All PIs and co-Pis will have access to these files. All study documents such as scholarly articles, white papers, and presented papers will be uploaded to the assigned UConn server so they will be available to other STEM researchers, the national and local media, and the general public.