SERA

SPECIAL EDUCATION RESEARCH ACCELERATOR

DATA COLLECTION PROTOCOL

SERA Pilot:

Science Instruction for Students with Disabilities

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Introduction

The purpose of this protocol is to describe data collection procedures for conceptually replicating Scruggs, Mastropieri, and Sullivan (1994) with students with high-incidence disabilities (i.e., learning disabilities, emotional and behavioral disabilities, ADHD, mild intellectual disabilities, and autism spectrum disorder without comorbid intellectual disabilities). The goal of the study is to examine the effectiveness of elaborative interrogation as a means of promoting relational thinking. Student outcomes are compared across two experimental conditions: student-generated explanation and a control.

Important: Please review the *entire* data collection protocol before beginning Module 1.

⚠️	Using This Protocol: Throughout this protocol, icons are used to signal attention – most commonly to refer to study resources and/or materials that are directly linked in the corresponding modules of the SERA Pilot Study Dashboard on the SERA website. To access these resources and materials, research partners* must be logged into the SERA website and have the appropriate permissions as set by the SERA Team. Research partners may find it easier to navigate the website by printing out a copy of this protocol to use side-by-side while accessing resources and materials online. If you experience any challenges accessing resources and materials, please contact the SERA Project Manager, Christina Taylor, at spedaccelerator@virginia.edu. *This protocol uses the term **research partners** to refer to the Site Investigator, as well as any research personnel that may be working with the Site Investigator to implement the study. Research partners may include Co-Site Investigators, postdocs, and/or graduate students. **All research partners must be listed on the UVA IRB protocol as non-UVA Sub-Investigators.**
📹	**SERA Video Supports** provide research partners additional support for study implementation. This icon indicates that there is a supplemental video for this section that can be found on the SERA website in the *Research Partner Trainings* section of the SERA Pilot Study Dashboard.

Module 1: Understanding Our Partners and Partner Sites

After securing Institutional Review Board (IRB) permissions, either by being listed on the University of Virginia's IRB protocol or by obtaining a reliance agreement between UVA and the partner site IRB, research partners will be prompted to begin this module. This module includes obtaining study site permissions, completing two short questionnaires, and introduces the Partner Site Tracker. If you have any questions or concerns, please contact the SERA Project Manager, Christina Taylor, at spedaccelerator@virginia.edu.

SERA Pilot: Science Instruction for Students with Disabilities
SERA DATA COLLECTION PROTOCOL

Resources and materials needed:
☐ Laptop/tablet with internet connection
☐ SERA Letter of Support Request Email (.docx)
☐ SERA Study Site Letter of Support (.docx)
☐ SERA Study Site Letters of Support Form (Qualtrics)
☐ SERA Research Partner Questionnaire (Qualtrics)
☐ SERA Replication Study Protocol Questionnaire (Qualtrics)
☐ Partner Site Tracker

1.1: Obtain Study Site Letter of Support

	Document templates can be edited to meet specific needs or circumstances, though the SERA Team urges research partners to maintain the substantive details within each template. Research partners should modify templates to include relevant contact information and appropriate deadlines.
	Qualtrics is an online survey tool used by the SERA Team to collect study site letters of support, as well as data on study settings, participants, student outcomes, the SERA infrastructure, and deviations from the protocol.

While research partners may have initial communication with a potential study site, it is ultimately required by the UVA IRB that research partners obtain a signed letter of support for the study site prior to recruiting participants. If planning to recruit participants from a public school, it is required that research partners obtain a letter of support at the district-level; if planning to recruit participants from a private school, it is required that research partners obtain a letter of support at the school-level. As part of this process, research partners are responsible for sending the appropriate contact person(s) the ***SERA Letter of Support Request Email*** 📄 template with the ***SERA Study Site Letter of Support*** 📄 template attached. The *SERA Letter of Support Email* template provides an explanation of the study and a description of what is asked of teachers, parents, and students. If agreed upon, it is asked that the *SERA Study Site Letter of Support* be signed and returned as soon as possible. Upon receiving a signed letter of support, research partners are responsible for uploading it to the ***SERA Study Site Letters of Support Form*** 📄 so that it can then be submitted to the UVA IRB by the SERA Team. If research partners have not yet obtained a signed letter of support for their study site, the SERA Team recommends that this be done as soon as possible.

⚠️	It is required by the UVA IRB that for each partner site, the SERA Team has secured UVA IRB permissions and a signed *SERA Study Site Letter of Support* authorizing the partner site to recruit from their desired study site. **Research partners cannot proceed beyond here until both permissions have been obtained and submitted to the UVA IRB by the SERA Team.**

1.2: Complete SERA Research Partner Questionnaires

The questionnaires in this module provide important descriptive information to help the SERA Team understand the backgrounds and experiences of our collaborators, and any challenges that they may anticipate in implementing the protocol.

1. SERA Research Partner Questionnaire

   Time requirement: 10-minutes

   Who: All research partners at the partner site

   The ***SERA Researcher Partner Questionnaire*** 📋 ascertains research partners' demographic characteristics, as well as their experience implementing and developing interventions, collecting data, and conducting independent research projects. It also inquires about partner site resources and supports available for conducting research. *Please note that Site Investigators are asked to complete this survey upon joining SERA. As part of this Module, Site Investigators are asked to review and update their responses, if needed, and provide additional study-specific information.*

2. SERA Replication Study Protocol Questionnaire

   Time requirement: 15-minutes

   Who: Only one research partner at the partner site

   The ***SERA Replication Study Protocol Questionnaire*** 📋 serves as a pre-registration of each partner site's treatment and study procedures, and methods for collecting data. It also asks research partners to document the settings, conditions, and timing under which they expect data collection to occur, and to assess their confidence that replication design assumptions will be met.

1.3: Confirm Researcher and Site Tabs in the Partner Site Tracker

	Located within each partner site's SharePoint folder is a **Partner Site Tracker**. The SERA Team is responsible for updating this spreadsheet as data are checked throughout the study. This icon is used to signal tasks that require research partners to <u>reference</u> specific tabs of their *Partner Site Tracker*. If any information on your *Partner Site Tracker* appears to be missing or incorrect, please contact the SERA Project Manager, Christina Taylor at <u>spedaccelerator@virginia.edu</u>. **Research partners should not make any changes to their *Partner Site Tracker* without notifying the SERA Team.** *For additional support, see the SERA Video Support: Partner Site Tracker* 🎥.

> ⚠️ To access the *Partner Site Tracker*, research partners should locate their partner site's SharePoint folder and click on the three vertical dots beside the spreadsheet link to select *Open > Open in app.* By selecting this option, the spreadsheet will open in the Microsoft Excel desktop application and allow for a complete view of the spreadsheet data. *If the spreadsheet has already been opened in the browser, research partners can select Open in Desktop App in the top menu bar of the spreadsheet to open in the Microsoft Excel desktop application.* **Once the spreadsheet is open in the desktop application, research partners should select *Data* from the top menu bar and click *Refresh All* before referencing any of the columns.** *For additional support, see the SERA Video Support: Partner Site Tracker* 📹 .

Partner Site Tracker: Researcher Tab

The Researcher tab of the *Partner Site Tracker* contains information related to the research partners at the partner site. Once a research partner completes the *SERA Research Partner Questionnaire,* the SERA Team will mark their questionnaire as complete on the Researcher tab. Research partners are responsible for verifying that the *SERA Research Partner Questionnaire* is marked as complete for each research partner and that all research partners are included on the Researcher tab of their ***Partner Site Tracker*** 📄 If anything appears to be missing or inaccurate, please contact the SERA Project Manager, Christina Taylor, at spedaccelerator@virginia.edu.

Partner Site Tracker: Site Tab

The Site tab of the *Partner Site Tracker* contains information related to the study site(s) from which participants will be recruited. After a partner site completes the *SERA Study Site Letter of Support Form*, the SERA team will add the study site name(s) and assigned ID(s) to the Site tab. Research partners are responsible for verifying that all study sites are included on the Site tab of their ***Partner Site Tracker*** 📄 If specific study site names are unknown (e.g., the district makes direct contact with local schools), research partners will be asked to report study sites following participant recruitment in *Module 2.5: Provide Study Site Recruitment Details*. If anything appears to be missing or inaccurate, please contact the SERA Project Manager, Christina Taylor, at spedaccelerator@virginia.edu.

1.4: Submit Module 1 Partner Site Acknowledgement

> ⚠️ **Partner Site Acknowledgements** are found at the end of each module. Once the partner site has completed a module, research partners are asked to verify module completion by checking off a list of items and submitting an acknowledgment. *Only one Partner Site Acknowledgement should be completed per partner site. If multiple research partners are working together at a partner site, the Site Investigator should assign one research partner to be responsible for completing the Partner Site Acknowledgment. For additional support, see the SERA Video Support: Data Collection Protocol Overview* 📹

After completing all steps in this module, partner sites are required to submit the **Module 1 Partner Site Acknowledgement** towards the bottom of Module 1 of the SERA Pilot Study Dashboard. By submitting the acknowledgment for this module, research partners are confirming that the following items have been completed for their partner site:

- ☐ The *SERA Research Partner Questionnaire* has been completed by all research partners.
- ☐ The *SERA Replication Study Protocol Questionnaire* has been completed by one research partner.
- ☐ The Researcher tab of the *Partner Site Tracker* is accurate and complete.
- ☐ The Site tab of the *Partner Site Tracker* is accurate and complete.

Module 2: Establishing a Participant Group

Research partners should begin this module after confirming that the Researcher and Site tabs of their *Partner Site Tracker* are accurate and complete. This module focuses on recruitment strategies and includes details on obtaining consent agreements, assent agreements, child demographics, and student demographics. **Please note that your partner site's recruitment deadline must be shared with the SERA Team; participants will be randomized by the SERA Team on the Monday after this deadline. Intervention setting information and study demographics provided by teachers may be submitted after this date.** If you need to deviate from the protocol, please contact the SERA Project Manager, Christina Taylor, at spedaccelerator@virginia.edu.

Resources and materials needed:
☐ Laptop/tablet with internet connection
☐ SERA Public School Admin Email template (.docx)
☐ SERA Private School Admin Email template (.docx)
☐ Partner Site Tracker
☐ SERA Study Site Recruitment Questionnaire (Qualtrics)

2.1: Recruit Student Participants

⬆	**Upload tasks** require research partners to upload a document or file onto their partner site's SharePoint folder.

Inclusion Criteria
Students are eligible to participate based on the following criteria: (1) currently enrolled in third or fourth grade; (2) a clinical or educational diagnosis of a high-incidence disability (i.e., learning disability, emotional or behavioral disability, ADHD, mild intellectual disability, or autism spectrum disorder without comorbid intellectual disabilities); (3) in a general education classroom for at least half of the school day; (4) communicates verbally using conversational language (as opposed to 1-2-word responses); (5) does not engage in severe problem behavior (i.e., behavior that puts themselves or others at risk of physical harm) or severe non-compliance; and (6) has access to technology and Wi-Fi sufficient to access online intervention and testing.

Exclusion criteria for students include the following: (1) communicating primarily non-verbally (i.e., alternative or augmentative communication devices, sign language); (2) recent history of severe problem behavior or severe non-compliance; (3) no clinical or educational diagnosis of a high-incidence disability (i.e., learning disability, emotional or behavioral disability, ADHD, mild intellectual disability, or autism spectrum disorder without comorbid intellectual disabilities); (4) diagnosis of autism spectrum disorder with comorbid intellectual disabilities; or (5) does not have access to technology and Wi-Fi sufficient to access online intervention and testing.

Participant Recruitment

Research partners can begin recruitment at a study site once the site is listed on the Site tab of their *Partner Site Tracker*. If recruiting from a public school, research partners should contact the appropriate school administrator by sending the **SERA Public School Admin Email** 🗎 template with an obtained district-level letter of support attached; if recruiting from a private school, research partners should reply to the appropriate school administrator by sending the **SERA Private School Admin Email** 🗎 template. Both email templates ask the school administrator to use provided language to contact any teachers that may have students eligible to participate in the study; this language includes an explanation of the study and provides teachers with a link to complete an online *SERA Teacher Recruitment Form*. Teachers are instructed to complete this form if they have <u>two or more students</u> in their class that meet inclusion criteria; this form includes a teacher consent agreement and asks teachers to forward a provided study invitation to parents/guardians of eligible students. After forwarding study invitations, teachers are asked to provide general recruitment information, which includes the number of study invitations forwarded, enabling us to obtain response rates across sites. *Teachers will receive a $10 Amazon eGift card for forwarding study invitations; this will be sent by the SERA Team after participant recruitment is finalized.*

⚠	As mentioned above, the *SERA Public School Admin Email* and the *SERA Private School Email* templates ask the school administrator to forward language to teachers—this email language is provided towards the end of each template. School administrators (or districts) may find it easier to forward teachers a poster that highlights their involvement in the study. In this case, the SERA Team has created a **SERA Teacher Recruitment Flyer** 🗎 that can be modified to include a QR code that can be scanned to access the teacher email language. *Please note that research partners must modify, upload, and host (e.g., Google Docs) the teacher email language to create a QR code that can be used on the flyer.* This flyer can then be sent to administrators (or districts) as an attachment.

2.2: Obtain Consent, Assent, and Child Demographics

As detailed in the previous section, if teachers have two or more students in their class that meet inclusion criteria, they are asked to forward study invitations the parents/guardians of those students. This study invitation contains a link for parents/guardians to complete an online *SERA Parent/Guardian Recruitment Form*; this form includes a parent/guardian consent agreement, a student assent agreement, and child demographic questions. Once submitted, all the contents are automatically

uploaded to the SERA Team's Qualtrics account. *Please note that all parent/guardian consent agreements and student assent agreements will be saved on the SERA Team's secure server, which meets the UVA IRB's requirements for storing evidence of consent and assent.*

2.3: Obtain Intervention Setting Information and Student Demographics

Following the participant recruitment end date (indicated above), teachers with two or more students participating in the study will receive an email to complete a *SERA Student Demographics Form* for each of those students; this form includes school setting questions and student demographic questions. *Teachers will receive a $20 Amazon eGift card for completing these forms; this will be sent by the SERA Team after participant recruitment is finalized.* Once submitted, all the contents are automatically uploaded to the SERA Team's Qualtrics account. *Please note that all teacher consent agreements will be saved on the SERA Team's secure server, which meets the UVA IRB's requirements for storing evidence of consent and assent.*

2.4: Confirm Participant Tab in the Partner Site Tracker

The Participant tab of the *Partner Site Tracker* contains information related to each participant recruited by a partner site. Upon receiving a *SERA Parent/Guardian Recruitment Form*, the SERA Team will add the participant's name to the Participant tab, along with their associated study site, and parent/guardian contact information*.* For each participant, research partners are responsible for verifying that this information has been included in the Participant tab of their **Partner Site Tracker** . All participants should be listed on the Participant tab within 48 hours following the recruitment end date, as specified by the research partner in the *SERA Replication Study Protocol Questionnaire* and indicated on the Site tab. If anything appears to be missing or inaccurate, or if any changes need to be made, please contact the SERA Project Manager, Christina Taylor at spedaccelerator@virginia.edu.

2.5: Provide Study Site Recruitment Details

This questionnaire will provide important descriptive information to help the SERA Team understand the how study sites connections were made across our partner sites.

1. SERA Study Site Recruitment Strategy Questionnaire
   Time requirement: 5-minutes
   Who: Only one research partner at the partner site
   The **SERA Study Site Recruitment Strategy Questionnaire** asks research partners to identify various points of contact and provide details of their recruitment route for each of their study sites.

2.6: Submit Module 2 Partner Site Acknowledgement

After completing all steps in this module, partner sites are required to submit the **Module 2 Partner Site Acknowledgement** towards the bottom of Module 2 of the SERA Pilot Study Dashboard. By submitting the acknowledgment for this module, research partners are confirming that the following items have been completed for their partner site:

- ☐ The Participant tab of the *Partner Site Tracker* appears accurate and complete.
- ☐ The *SERA Study Site Recruitment Strategy Questionnaire* has been completed by one research partner.

⚠	Following submission of the Module 2 Partner Site Acknowledgement, the SERA Team is notified that your partner site is ready for participants to be randomized; participants are randomized by study site to one of two conditions after the recruitment deadline. Site Investigators will receive an email from the SERA Team once this randomization is completed. *If there are circumstances that require participants at your partner site to be randomized in batches (e.g., you are collecting data from a large sample), please contact the SERA Project Manager, Christina Taylor, at spedaccelerator@virginia.edu. For additional support, see the SERA Video Support: Pilot Experimental Design & Randomization* 🎥.

Module 3: Preparing for Sessions

Research partners should begin this module after finalizing recruitment and submitting the *SERA Study Site Recruitment Strategy Questionnaire*. This module provides instructions for preparing to meet with participants and includes recommendations for scheduling sessions, recording session audio, and screen sharing PowerPoints. If you need to deviate from the protocol, please contact the SERA Project Manager, Christina Taylor, at spedaccelerator@virginia.edu. *It is highly recommended that research partners are familiar with their chosen video conferencing application prior to their first session, particularly features which enable recording and downloading audio-only files and sharing PowerPoint slides during a session.*

Resources and materials needed:
☐ Laptop/tablet with internet connection
☐ Partner Site Tracker
☐ SERA SignUpGenius Quick Guide (optional)
☐ Video conferencing application with audio-only recording and screen sharing features
☐ Zoom: Cloud Recording (optional)
☐ Zoom: Using Audio Transcription for Cloud Recordings (optional)
☐ Zoom: Screen Sharing a PowerPoint Presentation (optional)
☐ SERA Data Collection Practice Questionnaire (Qualtrics)

3.1: Schedule Remote Sessions with Participants

📄	**Implementation Supports** should be used when implementing the study. These supports provide partners with direction to implement the study with high fidelity and ensure alignment across partner sites.
⚠️	Research partners can begin communicating and coordinating with parents/guardians to schedule sessions as soon as the Module 2 Partner Site Acknowledgement has been submitted. **Please note that first sessions cannot be scheduled <u>before</u> the Monday following your partner site's recruitment deadline, at which time the SERA Team will finalize randomization.**

Research partners can locate the parent/guardian contact information for scheduling remote sessions on the Participant tab of their **Partner Site Tracker** 📊. Depending on the total number of participants and the number of research partners collecting data at the partner site, it may be helpful to use a scheduling application; the SERA Team recommends SignUpGenius to schedule sessions. Research partners can reference the **SERA SignUpGenius Quick Guide** 📄 located in the *Research Partner Trainings* section of the SERA Pilot Study Dashboard for more details. When scheduling sessions, research partners should schedule both sessions (Session 1 and Session 2) at the same time. Session 1 should be scheduled for 30-minutes; session 2 should be scheduled for 10-minutes and should be scheduled as close as possible to one week after the first session. *For additional support, see the SERA Video Support: Pilot Experimental Design & Randomization* 🎥 .

3.2: Configure Setup for Recording Session Audio and Transcription

Prior to beginning each session, research partners are responsible for ensuring the session is properly configured to record audio and, if applicable, transcribe sessions. The SERA Team recommends that research partners use Zoom to conduct remote sessions, record session audio, and transcribe the sessions; the SERA Team does <u>not</u> require video recordings. Research partners using Zoom should reference the **Zoom: Cloud Recording** 📄 for instructions on recording session audio and the **Zoom: Using Audio Transcription for Cloud Recordings** 📄 for instructions on setting up and downloading session transcriptions; both supports are located in the *Research Partner Trainings* section of the SERA Pilot Study Dashboard. In the case that a different conferencing application is preferred, the SERA Team only requires that all audio files are saved as .mp3, .aac, .wav, .m4a, or .wm; session transcriptions are only required if using Zoom to conduct sessions. Any audio files and transcriptions from each session should be downloaded and saved as separate files, then uploaded to SharePoint. All audio files and transcriptions should be deleted off any devices immediately following each session. *For additional support, see the SERA Video Support: General Procedures for Online Administration* 🎥 .

3.3: Configure Setup for Presenting PowerPoint During Session

Prior to beginning each session, research partners are also responsible for ensuring their video conferencing platform is properly configured in a way that allows them to present the PowerPoint during the session. If using Zoom to conduct remote sessions, research partners can reference the **Zoom: Screen Sharing a PowerPoint Presentation** 📄 located in the *Research Partner Trainings* section

of the SERA Pilot Study Dashboard. *For additional support, see the SERA Video Support: General Procedures for Online Administration* 🎥 .

3.4: Practice Data Collection

Once research partners feel comfortable using their video conferencing platform to meet and present a PowerPoint simultaneously, the SERA Team recommends that research partners incorporate the **SERA Data Collection Practice Questionnaire** 📋 to their configuration. The *SERA Data Collection Practice Questionnaire* is a practice version of the actual questionnaire that will be used to collect intervention data online during each session. *Please note that there is some variation between the practice and actual version of the questionnaire. For instance, research partners will not be required to log in to use the practice questionnaire but will be required to do so as part of the actual questionnaire; research partners should make themselves aware of the troubleshooting techniques found in Module 4.2 Administer Pre-Test Questions that can be used to resolve login issues.* By using the *SERA Data Collection Practice Questionnaire*, research partners can get comfortable with the layout of the data collection questionnaire, while also ensuring that they feel comfortable toggling between multiple windows or screens. *The SERA Team recommends using either multiple monitors or multiple screens, if possible. For example, research partners may find it easiest to electronically collect data using a tablet, while administering the intervention on their computer. For additional support, see the SERA Video Support: General Procedures for Online Administration* 🎥 .

3.5: Submit Module 3 Partner Site Acknowledgement

After reviewing all steps in this module, partner sites are required to submit the **Module 3 Partner Site Acknowledgement** towards the bottom of Module 3 of the SERA Pilot Study Dashboard. By submitting the acknowledgment for this module, research partners are confirming that the following items have been completed for their partner site *for all research partners collecting data*:

- ☐ All parents/guardians have been sent instructions for scheduling sessions.
- ☐ Session setup has been configured and confirmed:
  - ☐ If using Zoom to video conference, research partners have confirmed the proper settings are configured to audio record, screen share a PowerPoint, and transcribe.
  - ☐ If using a video conferencing application other than Zoom, research partners have confirmed that their selected application records audio-only files in a required format (i.e., .mp3, .aac, .wav, .m4a, or .wm) and includes a function to screen share a PowerPoint during a session.
- ☐ The *SERA Data Collection Practice Questionnaire* has been previewed and incorporated into the session configuration in a way that feels accessible for the research partner (i.e., by enabling split screen, adding an additional monitor, or incorporating a separate device).

Module 4: Administering the Intervention (Session 1)

Research partners should proceed with this module as they are preparing to meet with participants. This module provides instructions for collecting and sharing Session 1 participant outcome data. If you need to deviate from the protocol, please contact the SERA Project Manager, Christina Taylor at spedaccelerator@virginia.edu.

Resources and materials needed:
☐ Laptop/tablet with internet connection
☐ Video conferencing application with audio-only recording and screen sharing features
☐ SERA Intervention PowerPoint (.pptx)
☐ SERA Intervention Data Collection Questionnaire (Qualtrics)
☐ Partner Site Tracker

If data are collected using a SERA Data Collection Sheet (see Module 4.2), the following items are needed in addition to those listed above:
☐ Pen or pencil
☐ Silent timer
☐ Hardcopy of the SERA Data Collection Sheet: Session 1 (.pdf)

4.1: Ensure Proper Setup

Research partners should review *Module 3.2: Configure Setup for Recording Session Audio and Transcription*, *Module 3.3: Configure Setup for Presenting PowerPoint During Session*, and *Module 3.4: Practice Data Collection* to aid in ensuring that they are properly set up for recording session audio, transcribing the session, if applicable, presenting the PowerPoint during the session, and collecting session data.

4.2: Administer Pre-test Questions

Research partners will begin Session 1 by administering a brief (approximately 2-minute) pre-test at the start of the ***SERA Intervention PowerPoint*** 📄 in which they will ask the participant seven science-related questions. While research partners are provided the option to score most of Session 1 manually, the SERA Team requests that research partners score this section of the session electronically using the ***SERA Intervention Data Collection Questionnaire*** 📋. Once launched, the questionnaire will prompt the research partner to select their partner site name, their name, the study site name, and the participant ID, which can be found in the ***Partner Site Tracker*** 📑 *For additional support, see the SERA Video Support: Pilot Pre-Test* 🎬.

If research partners experience trouble logging into the *SERA Intervention Data Collection Questionnaire*, they should try the following troubleshooting techniques:

→ "Unable to log in with the information provided."
  o This may happen if the Partner Site ID and/or the Participant ID have been entered incorrectly. Research partners should verify that the Partner Site ID and Participant ID have been entered correctly and include any capitalizations, spaces, and/or leading zeros.

→ "Not authorized to resume this session."
  o This may happen if the research partner had previously logged into a session for a participant and exited the session without completing data entry for that session. Research partners should close and reopen the browser. If this doesn't correct the issue, research partners may need to clear their browser cookies.

After the pre-test answers are submitted, the participant's randomized condition will display in the *SERA Intervention Data Collection Questionnaire*. The participant will be randomized to one of two conditions: control or student-generated explanation.

Randomization Conditions
  a) <u>Control condition</u>: The research partner will state an animal fact, repeat the fact, and then ask the participant to repeat the fact.
  b) <u>Student-generated explanation condition</u>: The research partner will present the animal facts as in the control condition. The research partner will then ask the participant to provide the explanation to support the fact. If the participant cannot provide the explanation, the research partner will use structured questioning to lead the participant to the correct response.

4.3: Administer the Randomized Condition

After the participant's randomized condition is displayed, research partners should select the appropriate condition as hyperlinked in the *SERA Intervention PowerPoint*; procedures will vary depending on the assigned condition. From here, research partners can choose to continue collecting intervention data electronically (preferred method) or they can finish collecting data manually using a hardcopy of the **SERA Data Collection Sheet: Session 1** 📄. *For additional support, see the SERA Video Support: Pilot Intervention: Control Condition and the SERA Video Support: Pilot Intervention: Student-Generated Condition* 🎥.

4.4: Collect Evaluation Data

After all animal facts have been presented in the PowerPoint, research partners will engage the participant in a two-minute filler activity in which they are asked some simple questions (e.g., what is your name, what is your teacher's name). The research partner will then assess the participant's

acquired knowledge by asking them to provide the newly learned fact for each animal. *For additional support, see the SERA Video Support: Pilot Intervention: Assessment* 🎦.

4.5: Upload Session 1 File(s)

Immediately following the session, research partners are responsible for uploading an audio recording of the session ⬆ and a transcription of the session ⬆ into the appropriate folder in the *Session data* folder of their partner site's SharePoint folder. *Session transcriptions are only required if using Zoom to conduct sessions.* All audio files and transcriptions produced from this session should be deleted off any devices immediately following each session. *For additional support, see the SERA Video Support: Uploading Intervention Session Data* 🎦 .

> **Naming Convention: Session 1 Files**
> → Audio files should be named using the following convention:
>   **0001_02_PartnerSiteID_StudySiteID_01_ParticipantID**
>
> → Transcription files should be named using the following convention:
>   **0001_02_PartnerSiteID_StudySiteID_01_ParticipantID_transcript**

4.6: Transfer Data into Qualtrics (if applicable)

Research partners that elected to collect data using a *SERA Data Collection Sheet* are responsible for transferring all coded responses into the **SERA Intervention Data Collection Questionnaire** 📋; this should be completed following each session no later than by the end of the day. Once data are transferred into the questionnaire, research partners will be prompted to upload a copy of the corresponding completed data collection sheet.

4.7: Submit Module 4 Partner Site Acknowledgement

After completing all steps in this module, partner sites are required to submit the **Module 4 Partner Site Acknowledgement** towards the bottom of Module 4 of the SERA Pilot Study Dashboard. By submitting the acknowledgment for this module, research partners are confirming that the following items have been completed *for each participant*:

☐ Session 1 of the *SERA Intervention Data Collection Questionnaire* is complete.
☐ Session 1 audio recording file is uploaded to SharePoint.
☐ Session 1 transcription file is uploaded to SharePoint, if applicable.

> ⚠ There may be overlap in the study timeline for Module 4 and Module 5 depending on the scheduling of sessions. For example, one participant may be scheduled to complete their second session during the same week that a different participant is scheduled to complete their first session. **Research partners can proceed with Module 5 without submitting a Module 4 Partner Site Acknowledgement but should complete the Module 4 Partner Site Acknowledgement once all Module 4 items have been completed for all participants.**

Module 5: Collecting Delayed Recall Data (Session 2)

Research partners should proceed with this module when preparing to meet with participants to collect delayed recall data, approximately <u>one week after</u> each participant's first session. This module provides instructions for collecting and sharing Session 2 student participant outcome data. If you need to deviate from the protocol, please contact the SERA Project Manager, Christina Taylor, at spedaccelerator@virginia.edu.

Resources and materials needed:

☐ Laptop/tablet with internet connection
☐ Video conferencing application with audio-only recording and screen sharing features
☐ SERA Pilot Delayed Recall PowerPoint (.pptx)
☐ SERA Intervention Data Collection Questionnaire (Qualtrics)
☐ Partner Site Tracker

If data are collected using a SERA Data Collection Sheet (see Module 5.2), the following items are needed in addition to those listed above:
☐ Pen or pencil
☐ Silent timer
☐ Hardcopy of the SERA Data Collection Sheet: Session 2 (.pdf)

5.1: Ensure Proper Setup

Research partners should review *Module 3.2: Configure Setup for Recording Session Audio and Transcription*, *Module 3.3: Configure Setup for Presenting PowerPoint During Session*, and *Module 3.4: Practice Data Collection* to aid in ensuring that they are properly set up for recording session audio and transcribing the session, if applicable, presenting the PowerPoint during the session, and collecting session data.

5.2: Collect Delayed Recall Data

Research partners should begin Session 2 the ***SERA Delayed Recall PowerPoint*** 📄, which will assist research partners in collecting delayed recall data. As with the first session, Session 2 data can be collected manually using a hardcopy of the ***SERA Data Collection Sheet: Session 2*** 📄 or electronically using the ***SERA Intervention Data Collection Questionnaire*** 📄 (preferred method). If collecting data electronically, once launched, the questionnaire will prompt the research partner to select their partner site name, their name, the study site name, and the participant ID, which can be found in the ***Partner Site Tracker*** 📄. *For additional support, see the SERA Video Support: Pilot Intervention: Assessment* 📹.

5.3: Upload Session 2 File(s)

Immediately following the session, research partners are responsible for uploading an audio recording of the session 🔼 and a transcription of the session 🔼 into the appropriate folder in the *Session data* folder of their partner site's SharePoint folder. *Session transcriptions are only required if using Zoom to*

conduct sessions. All audio files and transcriptions produced from this session should be deleted off any devices immediately following each session. *For additional support, see the SERA Video Support: Uploading Intervention Session Data* 📹.

> **Naming Convention: Session 2 Files**
> $\rightarrow$ Audio files should be named using the following convention:
> **0001_02_PartnerSiteID_StudySiteID_02_ParticipantID**
>
> $\rightarrow$ Transcription files should be named using the following convention:
> **0001_02_PartnerSiteID_StudySiteID_02_ParticipantID_transcript**

5.4: Transfer Data to Qualtrics (if applicable)

Research partners that elected to collect data using a *SERA Data Collection Sheet* are responsible for transferring all coded responses into the **SERA Intervention Data Collection Questionnaire** 📋; this should be completed following each session no later than by the end of the day. Once data are transferred into the questionnaire, research partners will be prompted to upload a copy of the corresponding completed data collection sheet.

5.5: Submit Module 5 Partner Site Acknowledgement

After completing all steps in this module, partner sites are required to submit the **Module 5 Partner Site Acknowledgement** towards the bottom of Module 5 of the SERA Pilot Study Dashboard. By submitting the acknowledgment for this module, research partners are confirming that the following items have been completed *for each participant*:

☐ Session 2 of the *SERA Intervention Data Collection Questionnaire* is complete.
☐ Session 2 audio recording file is uploaded on SharePoint.
☐ Session 2 transcription file is uploaded to SharePoint, if applicable.

> ⚠️ By submitting a Module 5 Partner Site Acknowledgement, research partners are also confirming that a Module 4 Partner Site Acknowledgment has been submitted for their partner site.

Module 6: Providing Feedback on Protocol Implementation

Research partners should proceed with this module only once the partner site has completed data collection for all participants. In this final module, research partners will provide feedback for the SERA Team on the overall protocol and if there were deviations from the protocol. If you have any questions or concerns about these questionnaires, please contact the SERA Project Manager, Christina Taylor, at spedaccelerator@virginia.edu.

SERA Pilot: Science Instruction for Students with Disabilities

SERA DATA COLLECTION PROTOCOL

Resources and materials needed:
Material(s) needed: ☐ Laptop/tablet with internet connection ☐ SERA Post-Intervention Follow-Up Questionnaire (Qualtrics) ☐ SERA Deviations from the Study Protocol Questionnaire (Qualtrics)

6.1: Provide Feedback and Reflection on Protocol Implementation

These two short questionnaires ask research partners about their confidence that replication design assumptions were met, their experience with SERA, and any deviations from the study protocol.

1. SERA Post-Intervention Follow-Up Questionnaire
   Time requirement: 15-minutes
   Who: All research partners at partner site
   The ***SERA Post-Intervention Follow-Up Questionnaire*** 🗋 asks research partners to rate their confidence that replication design assumptions were met and their experience with SERA. It also provides an opportunity for research partners to provide feedback and make suggestions for improvements in SERA. Research partners are asked to complete the post-intervention questionnaire once they have completed data collection, and data have been checked to meet quality standards (minimal missing data, correct coding of variables and outcomes).

2. SERA Deviations from the Study Protocol Questionnaire
   Time requirement: 15-minutes
   Who: All research partners at partner site
   The ***SERA Deviations from the Study Protocol Questionnaire*** 🗋 provides opportunities for research partners to report deviations from the study protocol. This may include treatment non-compliance, reasons for missing data, or a disruption to the intervention/data collection session.

6.2: Submit Module 6 Partner Site Acknowledgement

After completing all steps in this module, partner sites are required to submit the **Module 6 Partner Site Acknowledgement** towards the bottom of Module 6 of the SERA Pilot Study Dashboard. By submitting the acknowledgment for this module, research partners are confirming that the following items have been completed for their partner site:

☐ The *SERA Post-Intervention Follow-Up Questionnaire* has been completed by all research partners.
☐ The *SERA Deviations from the Study Protocol Questionnaire* has been completed by all research partners.

Following submission of the Module 6 Partner Site Acknowledgement, the SERA Team will begin checking and analyzing each partner site's data. Once this process is complete, research partners will obtain access to any of their data that had not been previously uploaded on SharePoint (i.e., data collected by Qualtrics questionnaire), as well as summary statistics of their data as analyzed by the SERA Team. Research partners will not receive any data or summary statistics that include those of other partner sites until the study has ended. Once the study period is complete, the SERA Team will share de-identified data from the full study with research partners prior to sharing these data on the SERA website.