

# Sociability Observation Scale (SOS) Coding Manual

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## Purpose

This Sociability Observation Scale (SOS) coding manual will be used to code four red flags for autism spectrum disorder (ASD) using behavior samples from the Communication and Symbolic Behavior Scales Developmental Profile (CSBS DP).

## Development

Wetherby and Woods developed The Systematic Observation of Red Flags (SORF) for Autism Spectrum Disorders in Young Children (2002). The original version included 29 items designed to determine whether a child should be referred for an evaluation of ASD. Of the 29 original items, nine differentiated children with ASD from children with developmental delay (i.e., DD group) and typically developing children (i.e., TD group); four additional red flags differentiated children with ASD from the TD group, but not the DD group (Wetherby, Woods, Allen, Cleary, Dickinson & Lord, 2004). These discriminative red flags are listed below.

Differentiated ASD from TD and DD	Differentiated ASD from TD, not DD
Lack of appropriate gaze	Lack of response to contextual cues
Lack of warm, joyful expressions with gaze	Lack of pointing
Lack of sharing enjoyment or interest	Lack of vocalizations with consonants
Lack of response to name when called	Lack of playing with a variety of toys
Lack of coordination of gaze, facial expression, gesture, and sound	
Lack of showing (Note: some lump pointing with showing)	
Unusual prosody	
Repetitive movements or posturing of body, arms, hands, or fingers	
Repetitive movements with objects	

Several subsequent versions of the SORF have been presented in published peer-reviewed articles and doctoral dissertations that include different numbers of red flags. A SORF Manual was published on the Autism Navigator website for Primary Care Course under “Provider Tools” in February 2016. The SOS was developed using available information of the original and subsequent SORF coding systems.

The following four red flags were selected for the SOS from the SORF Manual.

1. Lack of warm, joyful expressions with directed eye gaze
2. Limited use of showing and pointing
3. Limited sharing interests
4. Lack of coordination of nonverbal communication (gaze, facial expression, gestures, and sounds)

These four red flags were selected for the following reasons.

- They relate to the core deficit in social communication, not restrictive, repetitive patterns of behavior, interests or activities.
- They have empirical evidence for differentiating children with ASD from typically developing children and those with developmental delay.
- They can be assessed via timed event sampling.
- They are not currently coded by another measure on the ImPACT study.

**Throughout this manual you will notice that words are not distinguished from non-word vocalizations, which is consistent with coding descriptions for the original SORF and other definitions of communication acts by Dr. Wetherby.** Dr. Wetherby requires that words and non-word vocalizations be paired with eye gaze to be coded as communication acts. Both words and non-words are acceptable as “sounds” for coordination of nonverbal communication in this SOS coding system.

## Getting Started

### Create a Folder for Files on Your Desktop

The first time you code files with the SOS coding system, create a new folder called “SOS Coding” on your desktop.

### Accessing and Downloading the Relevant Code File

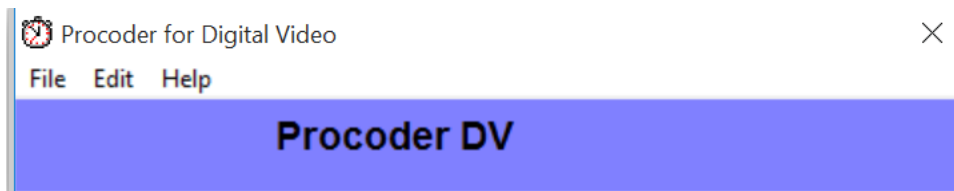
1. Locate the relevant code file on the secure text server (i.e., Krupa; [\\129.59.95.96\Yoder](http://129.59.95.96/Yoder)) at: 9-ImPACT Study, Assessment Team, Coding, SOS.
2. Download the code file to the SOS Coding folder on your desktop. Do NOT open it directly from the server to link them to your ProcoderDV file as this could corrupt the code file. This step should be done once for the project. You should not delete it from your computer following each coding session because you will need it to code future videos.

### Accessing and Downloading Video Recorded Media Files

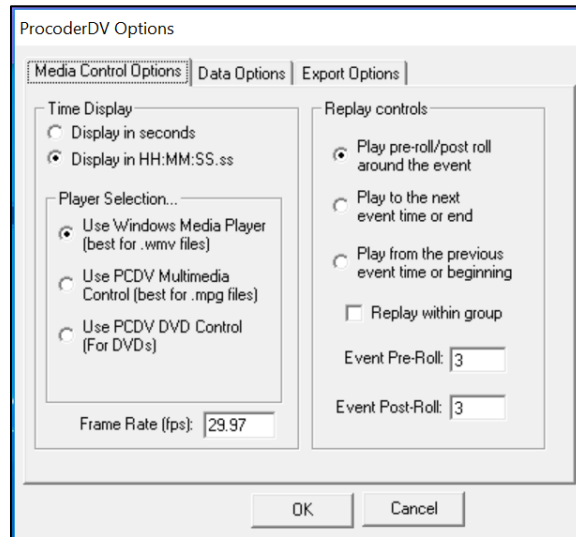
1. Locate the relevant video-recorded media file on the SPED\_Yoder server (smb://vu1file.it.vanderbilt.edu/YODER).
  - a. Open the 9-ImPACT Study folder.
  - b. Next select the appropriate site media folder (e.g., Vandy Media).
  - c. Within this folder, you will find all media collected for the participants across time points and procedures.
  - d. The files you need are labeled using the following coding convention: “Participant number-Time-CSBS”.
    - i. e.g., V105-T1-CSBS.mp4
2. Download the media file that you will code to the SOS Coding folder on your desktop. Do NOT open it directly from the server to link them to your ProcoderDV file as this could corrupt the media file.

### Setting Up ProcoderDV

1. If you need to download ProcoderDV software, contact Paul Yoder (assuming you are working in his lab) or download from <http://vkc.mc.vanderbilt.edu/tapp/pcdv.exe>
  - a. Note that additional software is required for ProcoderDV to work on Mac computers.
2. Double-click on the ProcoderDV icon (i.e., analogue clock icon) to open ProcoderDV. You should see the following window open.

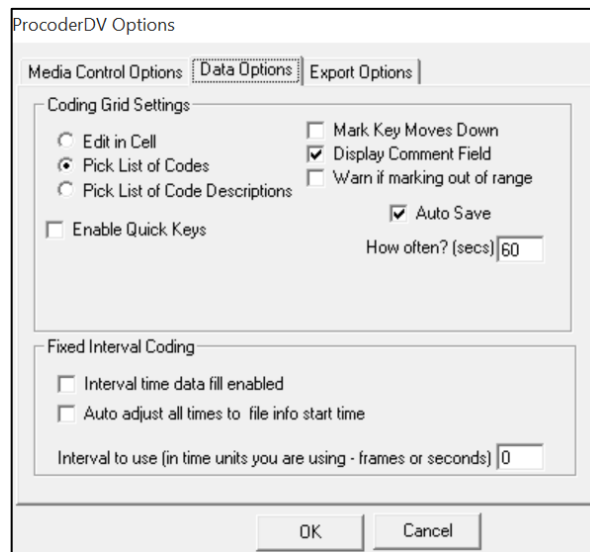


3. The first time that you use Procoder DV, you will need to activate it. Select “Help,” then “Activate this copy,” and enter your email and user number. The person who owns the license (e.g., Paul Yoder if you work in his lab) should provide you with the email and user number required.
4. Ensure that ProcoderDV Media Control Options match the following settings.
  - a. Media Control Options
    - i. Under “Time Display,” select “Display in HH:MM:SS.ss.”
    - ii. Under “Player Selection,” select “Use Windows Media Play (best for .wmv files).”
    - iii. Under “Replay controls,” select “Play pre-roll/post-roll around the event” and set the “Event Pre-Roll” and “Event Post-Roll” both to “3.” This setting will play 3 seconds of the video before the event and 3 seconds of the video after the event.



b. Data Options

- i. Under “Coding Grid Settings,” select the following:
  1. “Pick List of Codes”
  2. “Display Comment Field”
  3. “Auto Save”
- ii. Fill in “60” for “How often? (secs)”
- iii. All boxes under “Fixed Interval Coding” should be unchecked (i.e., empty). The box for “Interval to use” should be empty or display “0.” We are not using interval coding for this coding system.



- c. Select “OK” to end options set up.
- d. Once set, the options will remain set in this manner unless you edit them.

### Using ProcoderDV to Code

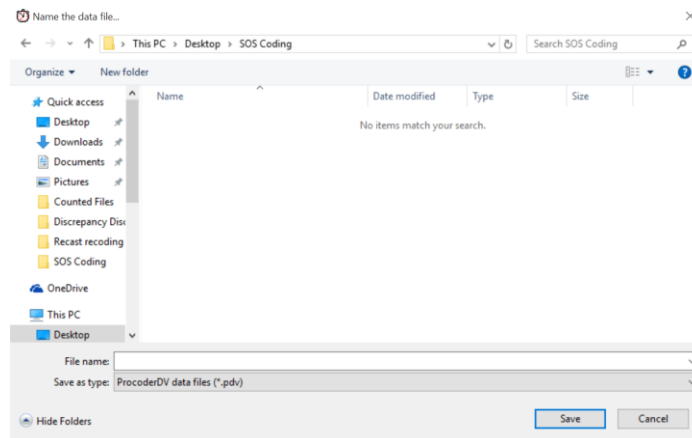
Once the ProcoderDV software options are set up, you will need to do the following 3 steps:

1. Open a new observation file (a file containing your record of the coding for each corresponding social act)
2. Open the media file (a digital record of the participant’s CSBS DP Behavior Sample)
3. Open the code file (a list of codes for each corresponding social act)

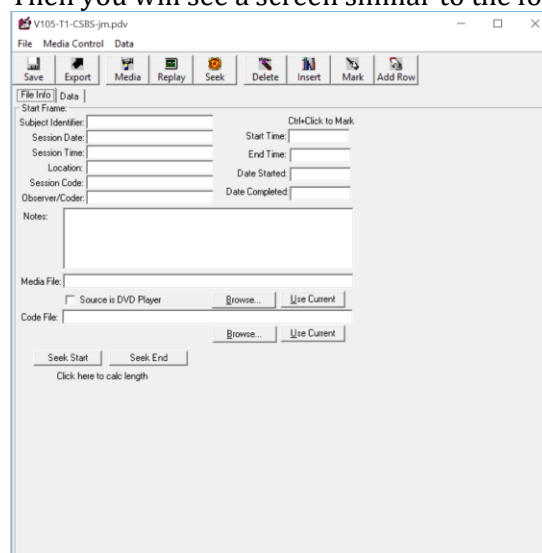
1. Open a new observation file

- a. On the ProcoderDV welcome bar, select “File,” then “New,” then “Observation Data File.”
- b. You will only create an observation file for a given participant for a specific time once (e.g., one for Time 1, one for Time 2, etc.). If you need to reopen the observation file later (e.g., to finish coding

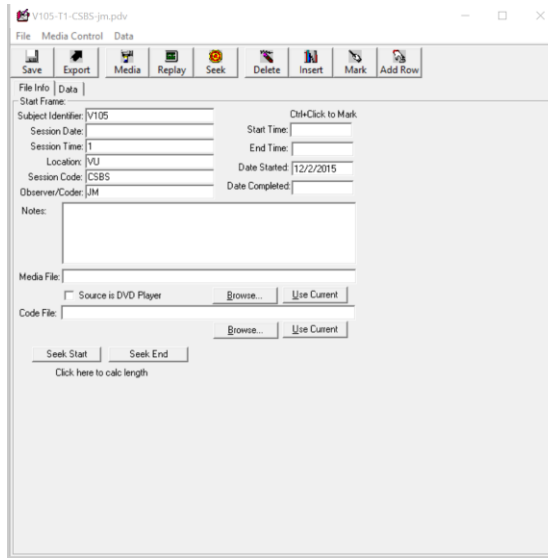
- the video because you stopped before it was completed or to edit it), you will select “File,” then “Open,” then “Open a Data File...” or you may double click the file name in your SOS coding folder.
- c. You will see a window similar to the one below to create an observation file. Navigate to the SOS Coding folder on your desktop.



- d. In the “file name:” box, label the file using the following convention: “Site initial-Research ID#-Period number-Procedure initials-Coder’s initials” (e.g., “V105-T1-CSBS-SOS-jm” for Vanderbilt participant 105 CSBS procedure at Time 1 coded by Jena McDaniel). Note that CSBS and SOS are included for the procedure initials.
- If you are the secondary coder for a reliability check, end the file name with “-reliability” (e.g., V105-T1-CSBS-SOS-jm-reliability).
  - File names are not case sensitive.
  - No extension is needed because ProcoderDV will attach “.pdv”.
  - Click “Save.” Then you will see a screen similar to the following.

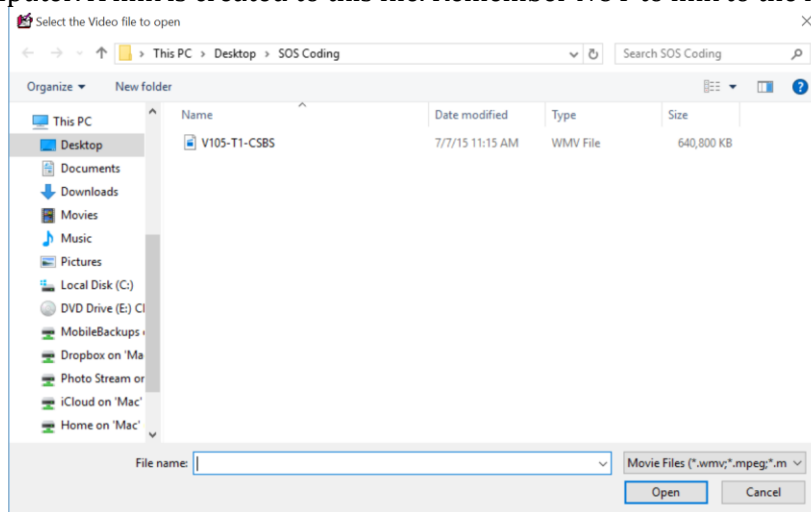


- e. Click on “File Info Tab” if it is not already selected, and fill in the following information on the Start Frame.
- Subject Identifier: e.g., V105 (Subject ID#)
  - Session Time: e.g., 1 (assessment time period)
  - Location: e.g., VU or UW (site at which procedure occurred)
  - Session Code: “SOS” for this coding scheme
  - Observer/Coder: e.g., jm (your first and last initials)
  - Date Started: e.g., 12/2/2015 (date you begin coding the video)



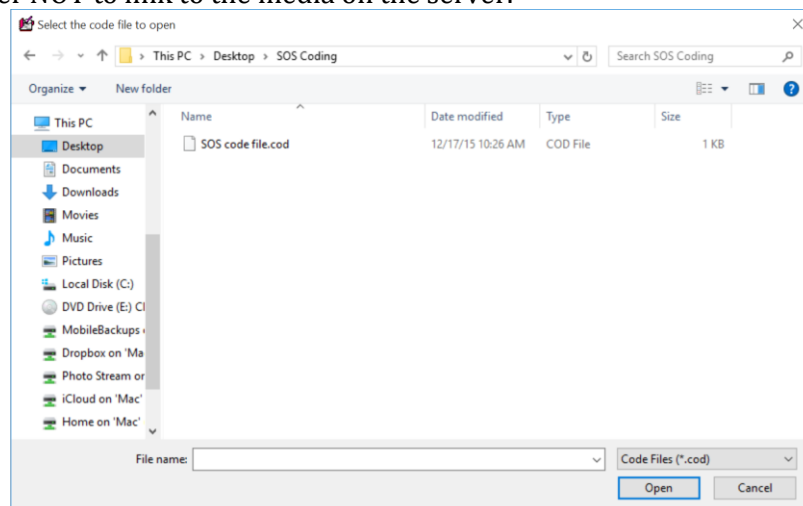
2. Open the media file

- a. Click “Browse...” under the “Media File” box to locate the media file that you have downloaded onto your computer. A link is created to this file. Remember NOT to link to the media on the server.

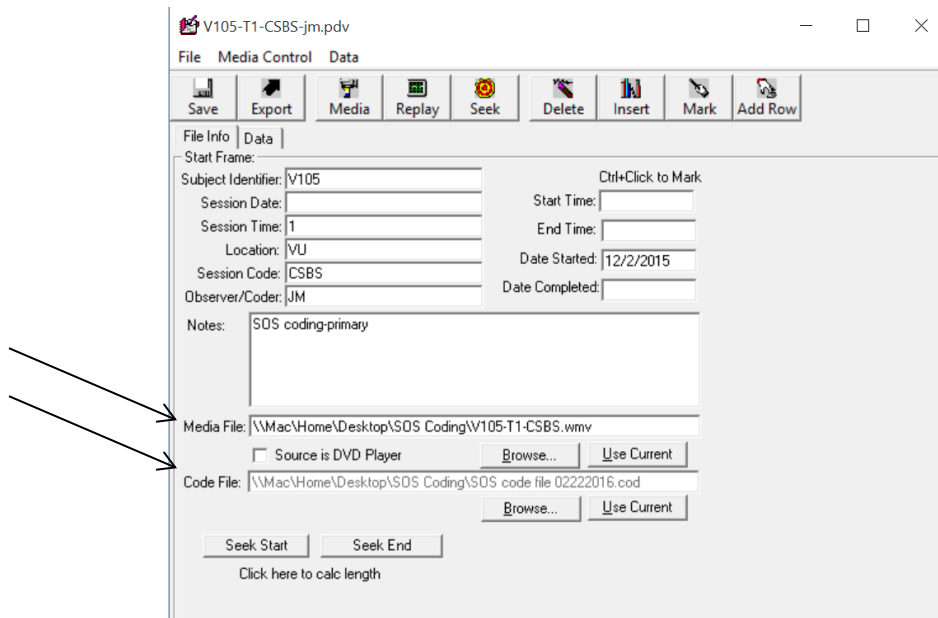


3. Open the code file

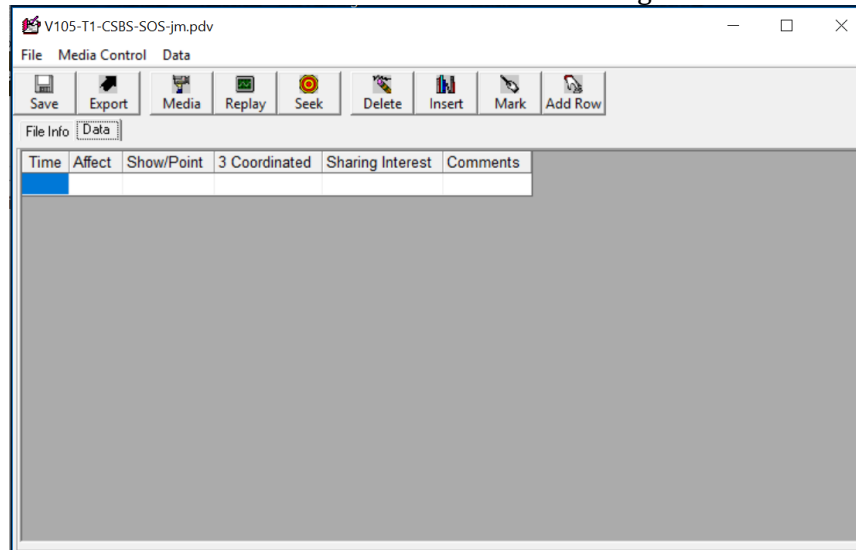
- a. Click “Browse...” under the “Code File” box to locate the SOS code file (i.e., SOS code file 10172017.cod) that you have downloaded onto your computer. A link is created to this file. Remember NOT to link to the media on the server.



- b. The links should now be displayed in the “Media File” and “Code File” boxes.



- c. Click “Save.” By saving at this point, ProcoderDV will be able to “recall” the media and code file that you have linked. Otherwise the files will not remain linked for the next time you open the data file.  
 d. Select the “Data” tab to see a screen similar to the following.



### Setting Up Data Page for Coding

1. Each column displays different information
  - a. Time: Shows the time of event you mark while coding
  - b. Affect, Show/Point, Coordinated, Name/Social Bid: Marks if the event includes each of those corresponding social acts
    - i. When you click within these columns, a drop down menu will appear with the list of codes for each column.
    - ii. Note that only two options will appear in each column: the corresponding social act code and a blank option.
    - iii. For example, when you click on a cell in the “Affect” column, [pas] and a blank option appear.
    - iv. Comments: For typing additional comments related the event

2. You may adjust the column widths by placing the cursor on the margins of the cells and hold down the left mouse button while you stretch the margin of the cells. For example, you may choose to widen the Time column for it to display to complete time rather than being cut off.

#### Opening Media File for Coding

1. Select the “Media” button. The media file will open on your screen.
  - a. If you are using two monitors, in the media window, select “Options,” then “Size,” then “Fit to Window” (not stretch to window).
  - b. If you are using one monitor, use the cursor in the corner of the media file window to resize it to retain its width-to-height ratio while filling half the width of the monitor. The data file should fill the other half of the monitor.
2. Now you are set up to begin viewing the video. How to mark events in ProCoderDV is described below (page 23) after these behaviors are explained.



## Coding Corresponding Social Acts

### Code Observed Behaviors

Red flags for ASD relate to significantly limited use or lack of certain behaviors (i.e., sharing positive affect, showing, pointing, and coordination of communicative behaviors). Because the CSBS DP Behavior Sample does not provide specific contexts in which most of these behaviors are required, we code positive instances of social acts that contrast with red flags. For example, rather than coding a lack of warm, joyful expressions, we code observed acts of positive affect sharing.

<b>Red Flags for ASD</b>	<b>Corresponding Social Acts to Code</b>
Lack of warm, joyful expressions with directed eye gaze	Acts of positive affect sharing [pas]
Limited use of showing and pointing	Showing or pointing acts [spa]
Lack of coordination of nonverbal communication (gaze, facial expression, gestures, and sounds)	Acts with 3 or more cues coordinated to communicate [ccc]
Limited sharing interests	Sharing interest [si]

1. Lack of warm, joyful expressions with directed eye gaze
2. Limited use of showing and pointing
3. Lack of coordination of nonverbal communication (gaze, facial expression, gestures, and sounds)
4. Limited sharing interests

### Overlapping Codes

A given act may be scored as more than one corresponding social act. Some corresponding social acts overlap with each other. However, they do not have one-to-one relationships. Therefore, it is essential that an independent decision be made regarding whether a behavior is or is not a corresponding social act for each of the four categories.

### Behaviors that Indicate to Stop Video to Consider Presence of a Corresponding Social Act

As you watch the videotaped behavior sample, vigilantly look for any of the following “key actions” performed by the child that signal the need to stop the video. These key actions signal possible corresponding social acts and are listed in the table below. Although the following list is long, you will eventually learn what we consider “gestures.” Once learned, your task of watching for cues to stop the video will be simplified.

<b><u>Classes of Key Actions</u></b>	<b><u>Key Actions</u></b>
<b>Child smiles</b>	Child smiles
<b>Child produces a sound</b>	Child says a word
	Child produces a nonword vocalization
<b>Child gestures</b>	Pointing
	Showing object
	Giving object
	Upturned palm
	Using another person’s hand as a tool
	Clapping
	Shoulder shrug
	Reaching with one arm
	Waving
	Head nodding / shaking
	Pantomime-like actions and depictive gestures
“Shh” gesture	

See “Acts with Three or More Cues Coordinated to Communicate [ccc]” below for full descriptions of gestures.

## Descriptions and Decision Trees for Corresponding Social Acts

After identifying key actions and pausing the video, decide whether each possible corresponding social act is or is not a corresponding social act for each of the four red flags. Make decisions based on the following descriptions and decision trees. Keep in mind that an act may meet criteria for more than one corresponding social act.

At times the child's gestures and/or facial expressions may be off the screen or blocked from view due to body positioning or other people or objects. When gestures or facial expressions are visible just prior to the time during which they need to be present with other components of a social act, assume that gesture or facial expression continues to occur when it is no longer visible UNLESS there is contradictory evidence.

- Contradictory evidence for smiling includes hearing the child cry.
- Contradictory evidence for gestures may include hearing the child manipulating an object or producing another action with his or her hands (e.g., hearing clapping would signal that the child is no longer pointing).
- For example, if a child points toward a picture, then moves his hand out of view prior to looking at the adult and vocalizing, consider the point present if it is feasible that the child is still pointing. For instance, you may be able to see part of the child's arm, which shows that the child's arm is still positioned towards the image even though the end is not visible. If you hear the child squeezing a toy (e.g., squeaky dinosaur toy), for instance, while his other hand is visible, you have contradictory evidence that the child is no longer pointing.
- If the child appears to be repeating an action that was just completed and fully visible, your confidence that the same action is continuing to occur despite limited visibility should be relatively high.

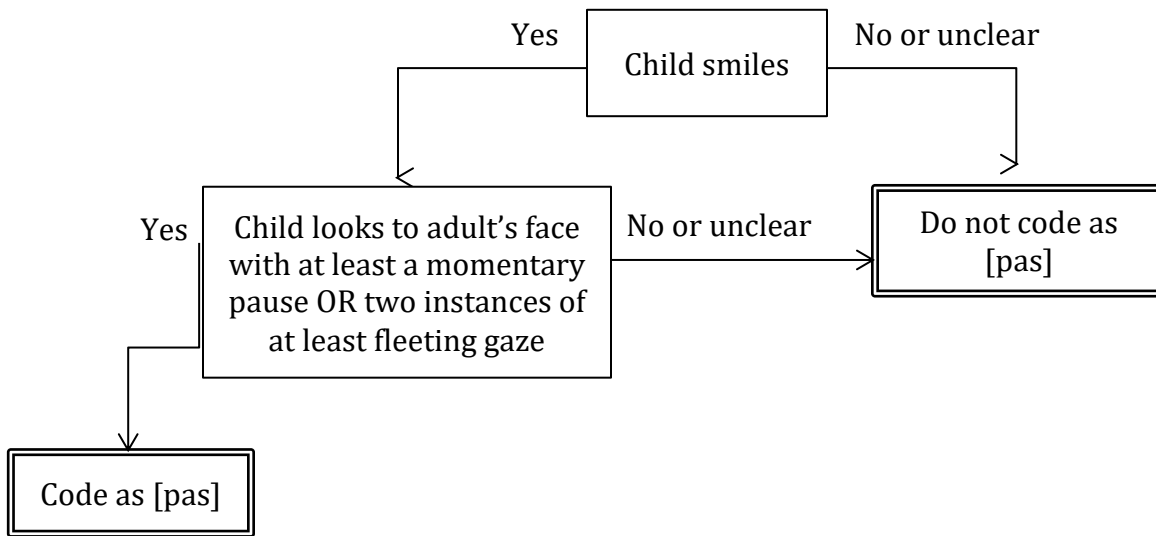
### Acts of Positive Affect Sharing [pas]

Code [pas] when the child directs smiles toward another person by looking at that person.

1. Smiling: 1/3 of the child's mouth must be seen in order for it to qualify as a smile.
  - a. If the child smiles unambiguously, the smile should be considered positive affect.
  - b. If the child's expression resembles a smile but the coder is unsure as to whether it is truly a smile, it should be coded as positive affect if ALL four of the following criteria are met.
    - i. It appears to the coder that the expression accompanies positive feelings in the child.
    - ii. The "smile" is held for a count of at least 1/2 second. If you are unsure whether the smile is held for at least 1/2 second, use the clock on Procoder to measure its duration.
    - iii. The "smile" can be distinguished from the child's overall expressions surrounding the act in question.
    - iv. The "smile" is not transitory with something in the child's mouth (e.g., food).
2. Use the orientation of the child's nose to determine whether he or she is looking at the adult's face. If the child's nose is pointing toward the adult's face, looking toward the adult's face should be considered present. If there is a question as to whether the child is looking at the adult, then do not code as [pas]. Code conservatively.
3. Eye gaze must meet at least ONE of the following criteria:
  - i. One instance for a momentary pause that is a count of at least 1/2 second. If you are unsure whether the eye gaze is held for at least 1/2 second, use the clock on Procoder to measure its duration.
  - ii. Two occurrences of eye gaze that are at least fleeting within a single act (refer to segmenting rules for guidelines on determining whether the instances are part of the same act).
4. The adult may often hold an object near his or her own face that makes it difficult to determine whether the child is looking toward the object or adult. In this instance, the coder must be able to see clear and distinct evidence of attention to adult rather than only attention to the object. Code conservatively. Refer to the section on "Segmenting when Adult Actions are Present," as needed.

5. In contrast, when the child is holding an object that makes it difficult to determine whether the child is looking toward the object or adult, the coder should code gaze as present UNLESS there is clear and distinct evidence that the child is looking at the object and NOT at the adult.

Decision Tree for Positive Affect Sharing [pas]



### Showing or Pointing Acts [spa]

Code [spa] when the child shows an object or points. The following behaviors are coded as [spa].

#### 1. *Showing*:

- a. Child holds an object out toward another person **without giving the object** to reference that person's attention to the object.
- b. The child must extend or raise the object (particularly for small objects, raise up) toward the adult with momentary pause.
- c. The intention of the act must be solely to "show" the object. The adult is not expected to take or do anything with or to the object except to look and perhaps to comment upon it.
- d. If the child extends an object toward an adult in a possible request for the adult to take it, but the adult does not take the item, do NOT code the behavior as a show or another gesture.
  - i. If the child extends an object that **is operable or openable** (e.g., bubble container, closed snack container, closed container with object in it, or balloon) toward the adult and the adult does not take the object, this gesture should be coded as a give, *not* as a show.
  - ii. If the object is inoperable and the adult does not take it, and it is not clear if the child is showing or giving, do NOT code the behavior as a show or another gesture.
- e. If the child extends an object towards the adult and the adult takes the object, do not code as a show.
- f. Note that eye gaze is not required for a show gesture due to intrinsic attention to the adult and object.

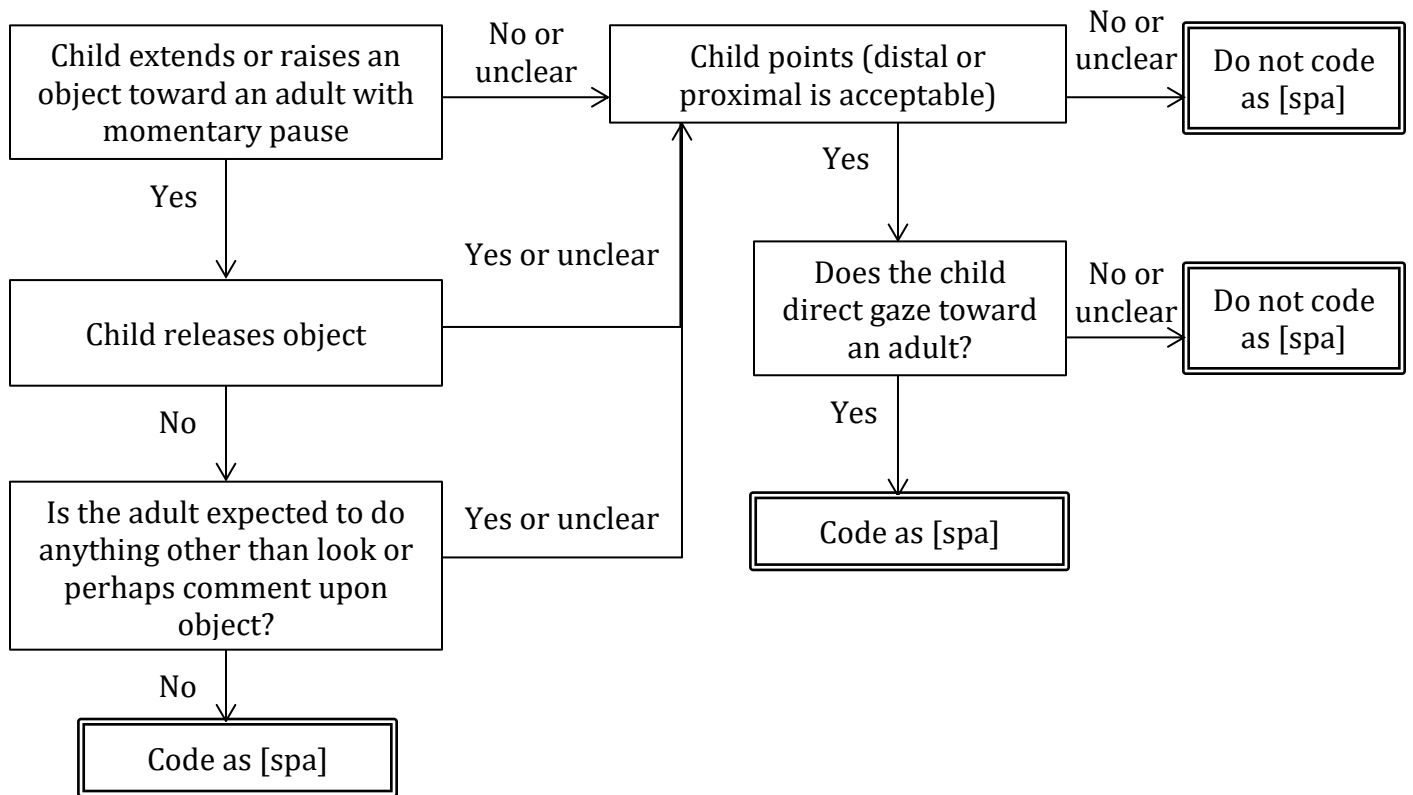
#### 2. *Pointing*:

- a. Distal pointing:
  - i. The index finger is extended towards the object or person of interest, or a group of unspecified objects of interest.
  - ii. The other fingers should be clearly separated from the fully extended index finger making the point obvious.
- b. Proximal pointing:
  - i. The child refers to object by touching it with his or her index finger.
  - ii. It is not necessary to actually see the finger make contact with the object if it is clear that the object has been touched (e.g., object moves or spins).
  - iii. The index finger must be fully extended, touch the referent, and be separated from the adjacent fingers.
  - iv. At least two of the adjacent fingers should be curled under.
- c. Pointing, either distal or proximal, must be paired with eye gaze that meets at least ONE of the following criteria to be coded as [spa] (but not for [ccc]):
  - a. One instance for a momentary pause that is a count of at least 1/2 second. If you are unsure whether the eye gaze is held for at least 1/2 second, use the clock on ProCoder to measure its duration.
  - b. Two occurrences of eye gaze that are at least fleeting within a single act (refer to segmenting rules for guidelines on determining whether the instances are part of the same act)
- d. Eye gaze may occur either while the child is pointing or 3 seconds before or after the child's point.
  - i. Use the orientation of the child's nose to determine if the child is looking at the adult's face. If the child's nose is pointing toward the adult's face, looking toward the adult's face should be considered present. If there is a question as to whether the child is looking at the adult, then do not consider eye gaze present. Code conservatively.
  - ii. The adult may often hold an object near his or her own face that makes it difficult to determine whether the child is looking toward the object or adult. In this instance, the coder must be able to see clear and distinct evidence of attention to adult rather than only attention to the object. Code conservatively. Refer to the section on "Segmenting when Adult Actions are Present," as needed.
  - iii. In contrast, when the child is holding an object that makes it difficult to determine whether the child is looking toward the object or adult, the coder should code gaze as present

UNLESS there is clear and distinct evidence that the child is looking at the object and NOT at the adult.

- e. Pointing following a prompt (e.g., a question or model) may be coded as [spa] if it meets other criteria above.

Decision Tree for Showing or Pointing Acts [spa]



### Acts with Three or More Cues Coordinated to Communicate [ccc]

Code [ccc] when the child uses at least three of the following behaviors within a single communication act: gaze, facial expression, gesture, and sound.

I. *Gaze*: Child looks at the adult's face without the adult doing anything to attract the child's attention.

1. Use the orientation of the child's nose to determine whether he or she is looking at the adult's face. If the child's nose is pointing toward the adult's face, looking toward the adult's face should be considered present. If there is a question as to whether the child is looking at the adult, then do not code gaze as present. Code conservatively.
2. Eye gaze must meet at least ONE of the following criteria:
  - i. One instance for a momentary pause that is a count of at least 1/2 second. If you are unsure whether the eye gaze is held for at least 1/2 second, use the clock on Procoder to measure its duration.
  - ii. Two occurrences of eye gaze that are at least fleeting within a single act (refer to segmenting rules for guidelines on determining whether the instances are part of the same act)
3. The adult may often hold an object near his or her own face that makes it difficult to determine whether the child is looking toward the object or adult. In this instance, the coder must be able to see clear and distinct evidence of attention to adult rather than only attention to the object. Code conservatively. Refer to the section on "Segmenting when Adult Actions are Present," as needed.
4. In contrast, when the child is holding an object that makes it difficult to determine whether the child is looking toward the object or adult, the coder should code gaze as present UNLESS there is clear and distinct evidence that the child is looking at the object and NOT at the adult.

II. *Facial expression*: Smiling is the only facial expression accepted.

1. 1/3 of the child's mouth must be seen in order for it to qualify as a smile.
2. If the child smiles unambiguously, the smile should be considered positive affect.
3. If the child's expression resembles a smile but the coder is unsure as to whether it is actually a smile, it should be coded as positive affect if ALL four of the following criteria are met.
  - a. It appears to the coder that the expression accompanies positive feelings in the child.
  - b. The "smile" is held for a count of at least 1/2 second. If you are unsure whether the smile is held for at least 1/2 second, use the clock on Procoder to measure its duration.
  - c. The "smile" can be distinguished from the child's overall expressions surrounding the act in question.
  - d. The "smile" is not transitory with something in the child's mouth (e.g., food).

III. *Gesture*: Children only receive credit for the following list of gestures.

1. Clapping
2. Giving object to adult
  - a. The coder can see or CLEARLY infer from the context that the child has a grasp on the object AND moves object in the direction of the adult.
  - b. Adults may respond to give gestures by accepting the object or declining to take the object. A give gesture must meet criteria for either an accepted give or an unaccepted give.
  - c. Accepted give
    - i. There must be at least a brief moment when they are both touching the object OR child drops item into adult's upturned hand in an intentional and controlled way.
    - ii. An object must be deliberately transferred to an adult by the child rather than just placed on the floor in close proximity (it should pass the mid line of the table) of an adult; setting an object on the floor by an adult does not constitute a "give" gesture.
  - d. Unaccepted give

- i. A child's gesture may still be coded as a give if the adult does not accept the object. However, when the object is not transferred to the adult, one must carefully determine whether the gesture meets criteria for a give gesture, a show gesture, or neither.
  - ii. To be marked as a give gesture, the act must meet the following criteria.
    - 1. The object's trajectory **is NOT towards the adult's mouth**
      - a. For example, the child extending a spoon towards the adult's face in an apparent attempt to pretend to feed the adult would not be coded as a give because this action is a play act. (Note: It also does not meet criteria for a show gesture because it is considered a play act.)
      - b. Be careful to differentiate from an object being directed towards the adult's mouth versus being placed in the adult's line of sight. Objects moved into the adult's line of sight could be coded as gives if they meet the other criteria.
    - 2. The object **is operable or openable** (e.g., bubble container, closed snack container, closed container with object in it, or balloon),
      - a. For example, if the child extends the closed container of bubbles towards the examiner's torso and the adult does not take the item, the gesture may be coded as a give.
      - b. Objects that are not operable or openable (e.g., dinosaur, bunny, plastic foot and other toys from the bag in the CSBS) cannot be coded as gives if the adult does not accept them and take possession of them.
- 3. Head nod or head shake
- 4. Pantomime-like actions and depictive gestures
  - a. Pantomime is the use of a part of the body or face to imitate an object or the use of an object or to act out a meaning to the adult.
- 5. Pointing (distal or proximal)
  - a. Distal pointing:
    - i. The index finger is extended towards the object or person of interest, or a group of unspecified objects of interest.
    - ii. The other fingers should be clearly separated from the fully extended index finger making the point obvious.
  - b. Proximal pointing:
    - i. The child refers to object by touching it with his or her index finger.
    - ii. It is not necessary to actually see the finger make contact with the object if it is clear that the object has been touched (e.g., object moves or spins).
    - iii. The index finger must be fully extended, touch the referent, and be separated from the adjacent fingers.
    - iv. At least two of the adjacent fingers should be curled under.
- 6. Reaching with one arm
  - a. A reach must be open-handed involving an extended arm and a momentary, expectant pause by the child.
  - b. A reach must be towards an object not person.
  - c. The child's hand may open and close as part of the reach.
  - d. The intention of the act may be imperative or declarative.
  - e. A reach is NOT scored if either of the following occur:
    - i. The child touches the desired object without the adult's assistance.
    - ii. An object is in the "reaching" hand.
- 7. Shh gesture
- 8. Shoulder shrug
- 9. Showing object to adult
  - a. The child must extend the object toward the adult with momentary pause.
  - b. The intention of the act must be solely to "show" the object.
  - c. The adult is not expected to take or do anything with or to the object except to look and perhaps to comment upon it.

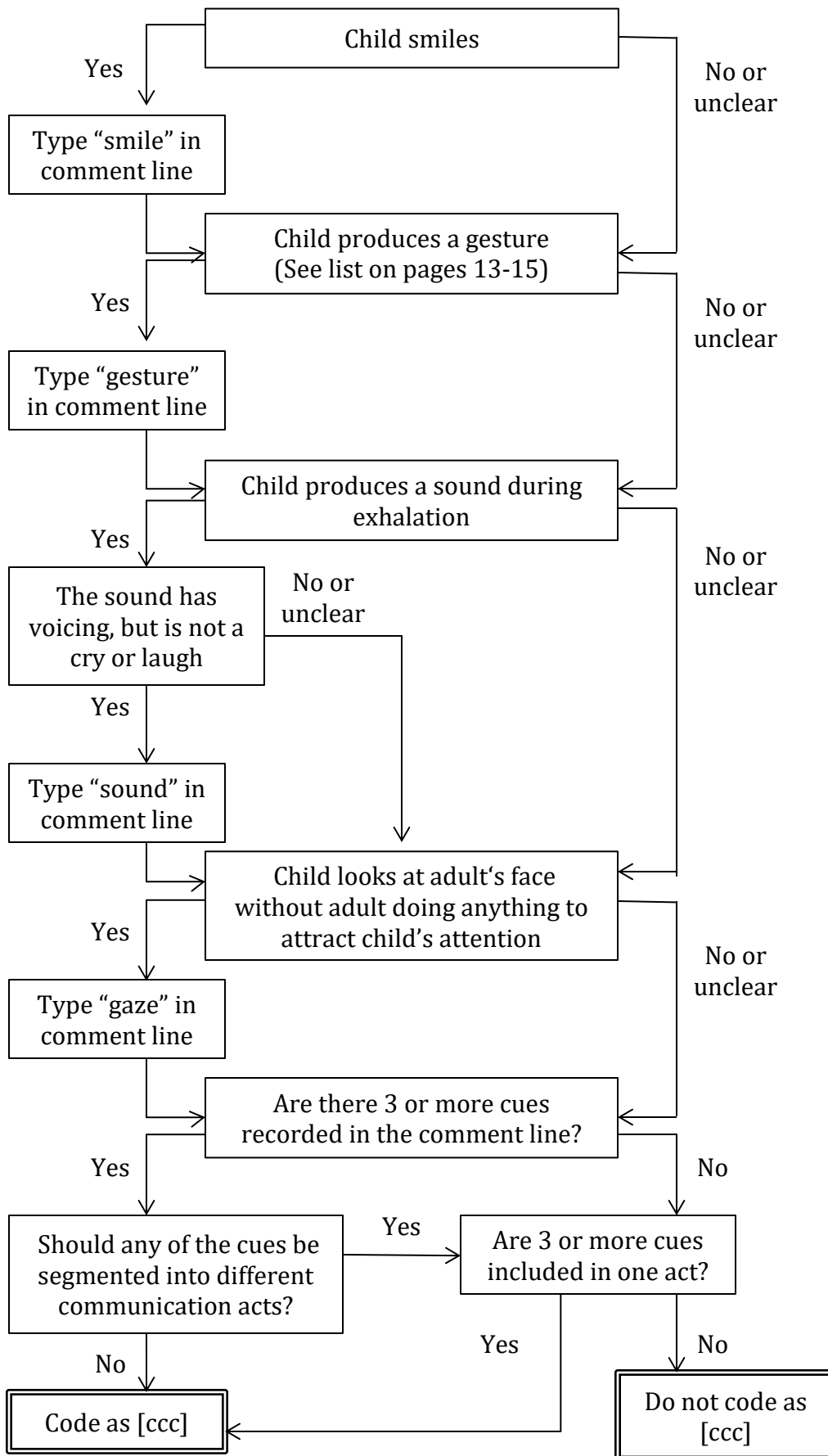


- i. Determining whether the child is requesting that the adult do something with the object other than take it and look at it can be difficult. Considering whether or not the object is operable or openable may be helpful.
  - ii. If the child extends an inoperable or nonopenable object, such as the plastic dinosaur, towards the adult and does NOT transfer the object to the adult, it is less likely that the child is requesting an action other than the adult taking the object and looking at it. Thus, the act is likely to be coded as a show. However, there are instances in which a child may be requesting that the adult do something with an inoperable object.
    - 1. For example, the child may want the adult to take the item and put it away, particularly if these actions occur during a clean up routine.
  - iii. If the child extends an operable or openable object (e.g., bubble container) toward the adult and the adult does not take the object, this gesture should be coded as a give not a show because it could be a request for the adult to open or operate the object (e.g., blow the bubbles).
  - d. If the child extends an object towards the adult's mouth (e.g., pretending to feed the adult), the act should not be coded as a show gesture because it is considered a play action.
10. Upturned palm
- a. The palm should be upturned as if to say, "Give that to me."
  - b. There should be an expectant pause in which the child waits for the adult to react.
  - c. The upturned palm must not be part of an act designed to retrieve an object independently.
11. Using another person's hand as a tool
- a. Child grasps or leads the adult's hand to touch or toward the object the child apparently wants opened, operated, or retrieved.
12. Wave

IV. *Sound*: The child receives credit if there is evidence of voicing (i.e., vocal folds vibrate to give voice to a sound) produced during exhalation.

- 1. Words and non-word vocalizations, including babbling, jargon, and cooing, are included (e.g. whining, screaming are accepted) .
- 2. Excluded sounds:
  - i. Voiced laughs, voiced sighs, and voiced cries
  - ii. The sounds /p/, /f/, /t/, /k/ and /h/ have no voicing and are excluded because they are difficult to code reliably if the child only produces one of these sounds.
  - iii. Whispered sounds
  - iv. Reflexive, vegetative sounds resulting from burps, hiccups, coughs, sneezes and throat clearings
  - v. Trills, raspberries, and clicks with tongue
  - vi. Audible, ingressive phonation (vocalization made while inhaling)

Decision Tree for Acts with Three or More Cues Coordinated to Communicate [ccc]



### Sharing Interest [si]

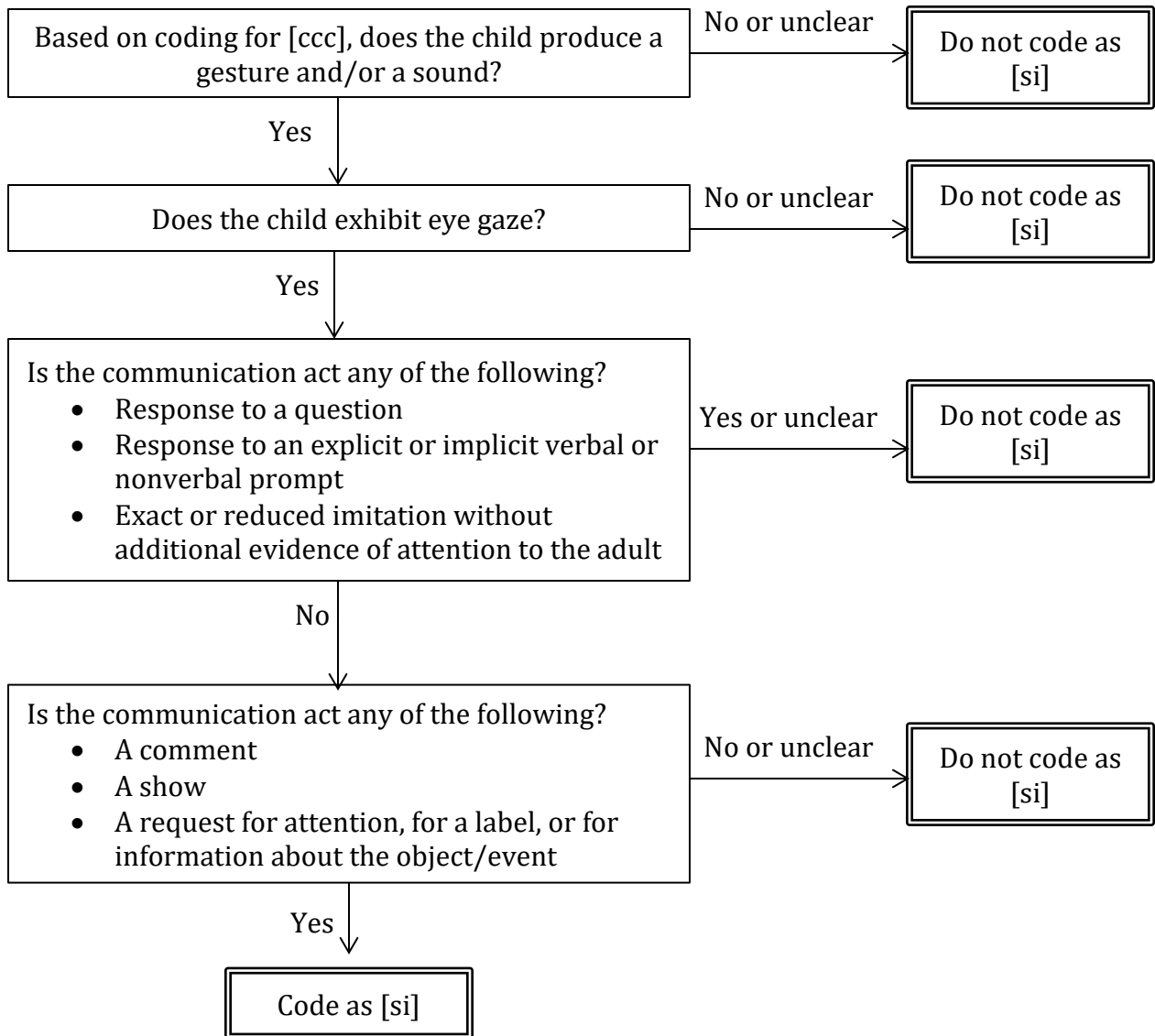
Code [si] when the child uses communicative signals to direct a person's attention to objects, actions, or events of interest (also referred to as initiating joint attention). The child must pair eye gaze with a gesture or sound to show, bring attention to, or point out something interesting to another person. These communication acts are declarative communication acts.

The child is NOT using these communicative signals as imperative communication acts that (a) direct an adult to action, (b) request an action or object (not requesting information), or (c) protest an action or object.

Coding for [si] builds upon coding for [ccc]. The decisions made regarding the presence of gaze, gesture, and sound for determining the presence of coordination of cues to communicate are used.

If eye gaze and a gesture and/or a sound, determine whether the child is communicating for the purpose of sharing interest, which can be referred to as a declarative function or a declarative communication act. If the communication act is not a declarative **or it is unclear** whether it is a declarative, do not code it as [si].

#### Decision Tree for Sharing Interest [si]



## Segmenting Behaviors

Segmenting means 'separating.' We group clusters of child behaviors for consideration as a single act or as two or more separate acts. It is important to know when a child's communication act ends and when another begins because it influences the frequency of communication acts. Segmenting is particularly important in this coding scheme for "Acts with Three or More Cues Coordinated to Communicate [ccc]". Often it is difficult to determine whether an act is one continuous act or two or more acts that occur in rapid succession.

### General Rules for Segmenting

1. Acts should be segmented if they meet any of the following three criteria.
  - a. There is a 2-second pause in the child's vocalizations, gestures, and talking.
    - i. Rationale: 2-second pauses are often taken as a signal in the conversation for the other person to take a turn.
    - ii. Example: The child says, "Dat" while pointing to a picture in a book. Then, 5 seconds later the child looks toward his or her mother and smiles. Pointing to the picture in the book and saying, "Dat" would be considered one act. Looking toward his or her mother and smiling would be considered a second act. Both would be coded separately for each corresponding social act due to the 5-second gap.
  - b. There is a change in focus of attention to another object.
    - i. Rationale: A change in the child's focus of attention is an indication of a change of interest or thought.
    - ii. Example: The child looks at a puzzle and says "That," and then looks to an adult. Next, the child turns his or her head, looks at a car says, "That," and then looks to an adult. This cluster of behaviors would be segmented into two communication acts because the child demonstrates a shift in attention from one item to another (i.e., from the puzzle to the car).
  - c. There is a change in pragmatic function.
    - i. Rationale: A communication act serves a single pragmatic function. A change in pragmatic function signals a new message.
    - ii. If the pragmatic function does not change (e.g., the child produces two different gestures, both having the same pragmatic function) code both gestures as one act.
    - iii. Example: When an adult presents one toy, the child says, "No," and then reaches for another in an apparent request. These acts would be segmented because the pragmatic function of "No" is protesting and the pragmatic function of reaching is requesting.
    - iv. Close non-example: The child looks toward a wind-up toy, then looks toward the examiner and vocalizes. He or she then reaches toward the wind-up toy. All of these behaviors appear to serve the pragmatic function of requesting. Therefore, this cluster of behaviors would be coded as one communication act; it would not be segmented.
  - d. There is a change in the intended message recipient.
    - i. Rationale: A change in the intended message recipient is an indication of a change of interest, thought, or message.
    - ii. Example: The child looks at his mother while smiling, and then looks to the examiner and smiles. This cluster of behaviors would be segmented into two instances of sharing positive affect.
    - iii. Example: The child looks at his mother while smiling, and then looks to the examiner and vocalizes. This cluster of behaviors would be segmented and coded as one instance of sharing positive affect. Because the child shifted his attention from his mother to the examiner before vocalizing, he does not demonstrate all the necessary components for [ccc] toward either his mother or the examiner.

### Segmenting when Adult Actions are Present

1. At times, adult behaviors may interrupt and potentially influence child behaviors that would otherwise be coded as a corresponding social act. These intervening and potentially influencing adult behaviors are of particular concern for the types of child acts that involve two or more key behavioral components (e.g., [ccc]).
2. When an adult behavior does both intervene/interrupt and appear to potentially influence the child behaviors of interest, possible corresponding social acts should not be coded. These are particularly important to attend to when attention to the adult is needed and when an upturned palm prompt for a give are used.
3. The following is an exhaustive list of adult behaviors that may intervene/interrupt and potentially influence one or more key behavioral components of an otherwise codeable acts:
  - a. Gross movements in head/body (e.g., getting up out of seat, raising arms, and moving head, shoulders, trunk to examine or get something on another surface).
  - b. Vocal or verbal communication acts.
  - c. Moving an object of interest, especially into the child's line of sight or into the square near the adult's face (i.e., an imaginary box delineated by the adult's chin and top of the adult's head). If there is an object near the adult's face it may be unclear whether the child is looking at the object or at the adult's face. If an object is within this imaginary box, we cannot determine whether the child is looking at the object or the face. Therefore, no credit is given in these instances for either attention to adult or attention to object.
4. The following guidelines should be applied in evaluating intervening and potentially influencing adult behavior:
  - a. Intervening Adult Behavior:
    - i. In general, we do not consider child vocalizations as a behavior that can be influenced by adult behavior in the CSBS.
    - ii. In general, only give gestures can be influenced by adult behavior in the CSBS (i.e., an upturned palm prompt for a give). In general, we do not consider other gestures as behaviors that can be influenced by adult behavior in the CSBS.
    - iii. An adult communication act or other potentially influential adult behavior is considered to intervene or interrupt if it occurs AFTER some key behavioral components of the child's possible corresponding social act (e.g., a point) and BEFORE others (e.g., before a gaze shift to examiner's face). In this instance, the child behaviors separated by the adult's actions must separately meet criteria for corresponding social acts. The child's sequence of behaviors should be coded as a whole if all key components of a possible child communication act are displayed BEFORE or AFTER the potentially-influencing adult behavior.
    - iv. Example of an intervening adult action: The child is pointing an object, but then shifts his attention to the adult's face only after the adult has displayed some behavior that would likely influence a gaze shift to her face (e.g., vocalizing/verbalizing or moving the object up near her face). The adult's potentially influencing behavior would be considered intervening. Therefore, the child's behavior before and after the adult's behavior would be coded separately.
    - v. Close non-example of an intervening adult action: The child is looking at an object, and then shifts his attention to the adult's face and vocalizes BEFORE the adult displays some behavior that would likely influence a gaze shift to her face (e.g., vocalizing/verbalizing or moving the object up near her face).
  - b. Potentially Influential Adult Behavior
    - i. An adult communication act or other behavior included in the exhaustive list above is considered "potentially influential" if it may have brought about some "missing" or "additional" component(s) of the child's possible corresponding social act.

- ii. It should be noted that it is possible for an adult to demonstrate some behavior from the exhaustive list above that does not seem likely to have led to the “missing” behavioral component of the child’s possible corresponding social act.
- iii. Example of an influential adult behavior: The child produces a point and non-word vocalization, then looks to an adult’s face ONLY AFTER the examiner begins to move the object (e.g., shake the object). This combination of behaviors should not be coded as a single act. Do not code the portion after the influential adult behavior (i.e., shifting gaze to examiner).
- iv. Close non-example of influential adult behavior: The child produces a conventional gesture, such as a head shake, then looks to the examiner’s face and vocalizes after the examiner begins to move an object well below her shoulders. It is unlikely that this adult behavior influenced the key behavioral components that were needed to code this cluster of behaviors as [ccc]. Thus, the same adult behavior may be considered potentially influential in one instance, but not in another.

### Segmenting Communication Acts when Child Words are Present

1. Segment the utterances if any of the following are observed. Begin with the first guideline (i.e., turn-taking) and proceed down the list until a segmenting decision can be made.
  - a. *Turn-taking rule*: If the adult communicates between potentially two separate child utterances, segment them.
  - b. *Topic shift*: If there is a shift in the topic from one utterance to another, segment.
  - c. *Pause*: If there is a pause of 2 seconds or more between utterances, segment them.
  - d. *Adult grammar*: Use adult grammar to parse (i.e. separate) the utterances. For example, even if each utterance has the same pragmatic function (e.g., “Me try that you help me,”), code as separate utterances using the grammar to separate (e.g., Me try that/You help me.)
  - e. *Prosody*: Use the prosodic (i.e., intonation) information (i.e., falling intonation occurs the end of a declarative utterance and rising intonation occurs at the end of some interrogative sentences).
  - f. In the absence of the above, the occurrence of two distinct messages about the same topic is coded as two separate utterances.
    - i. For example, when there are two distinct messages or topic shifts in sentence-like form that could or should be separated by a conjunction (“and,” “but,” or “or”) code as two utterances. No pause is necessary to segment.
    - ii. For example, if the speech segment in question expresses two messages wherein one is a response to the previous question and the next is meant to elicit a response, code as two utterances. No pause is necessary to segment these as two utterances.
      - a. A (adult) Do you want the red one?
      - b. C (child) Yes.
      - c. C Do you?
2. Code the following as one utterance UNLESS divided by a 2-second pause.
  - a. *Vocatives*: Nouns used to get the listener's attention to oneself, such as calling a person’s name and then delivering a message. For example: “Mom, Help,” meaning “Mom, come and help me” uses “Mom” as a vocative. In “Mom help,” meaning “Mom helped me,” or “Mom helps me,” “Mom” is not a vocative.
  - b. *Single-word Directives*: Words used to direct the listener’s attention, such as “Look” in “Look, broken.”
  - c. *Attentional devices*: Words used to call attention, such as “Hey” in “Hey, stop.”
  - d. *Tag-questions*: Segment tag-questions with their declarative utterance, such as “This is a ball, isn’t it?” and “You lost, right?”
  - e. *Acknowledging words*: When the group of words begins with an acknowledging word *plus* an utterance containing words, code as one utterance. For example, after an adult says, “It’s blue, I think,” the child responds, “Yeah, that’s right,” or “Oh, I see,” each of these responses is coded as one communication act.

- f. *Response words*: When the group of words begins with a response word that follows an adult request and adds to the topic, the utterance is coded as a single utterance. For example, the adult asks, “Do you want a snack?” and the child responds, “Yeah, I want a snack.” The child’s utterance would be coded as a single utterance.
3. If the speech segment in question expresses two messages then code them as two utterances regardless of whether or not they are grammatical.
    - a. A You want the red one?
    - b. C No.
    - c. C I want the blue one.
  4. If there are two messages and one refers to what has just occurred and the other is meant to elicit a response, code as two utterances. No pause is necessary to segment these as two utterances.
    - a. A Do you want the red one?
    - b. C Yes.
    - c. C Do you?
  5. *Repeated words*: When repeated words compose the sentence, segment as one utterance unless the words are separated by 2 seconds. One set of the repeated words should be coded and considered when coding.
    - a. Example: The child says, “Open, open” and the examiner then reaches her hand out to request the cheerios. The child then says, “Open” again. This would be coded as two acts. The first “Open, open” is considered a single word because it is repeated. The second act is segmented from the first act by the examiner’s outstretched hand. Therefore, the third production of the word “open” is coded a second time.
    - b. Code repeated words or sentences as separate utterances only when one of the following applies.
      - i. Separated by a 2-second pause or longer
      - ii. Topic referent has shifted
        1. C I want that {pointing to teddy bear}.
        2. C I want that {pointing to fire truck}.
      - iii. Adult utterance intervenes
        1. C Gimme, gimme.
        2. A Give you what?
        3. C Gimme, gimme.
  6. *Lists/Counting*: Lists or counting are coded as one utterance by coding the first word, but not the others in the list (rote counting). If there are clear prosodic transitions (the pauses, rhythm, stress and intonation of speech) indicating the end of an utterance, code each number separately. The prosodic transition and intonation have to do with if it’s rising or dropping at the end of the utterance. Falling intonation yields the end of an utterance. When making decisions about segmenting and transcribing numbers, intonation is the key piece of information needed, except for the two cases below.
    - a. Exceptions:
      - i. Segment one to one counting into individual lines if they are separated by a 2-second or more pause *regardless of intonation*.
      - ii. “One cow, two cows, AND three cows” are coded all as one utterance because of the ‘and,’ *regardless of intonation*.
    - b. The way we typically hear children count (with deflection at the end) will be segmented as such:
      - i. One cow
      - ii. Two cows
      - iii. Three cows
    - c. If the noun (e.g., cow) is not included, it would be coded as described above as long as there is one to one correspondence between counting words and the referent being counted:
      - i. One
      - ii. Two
      - iii. Three

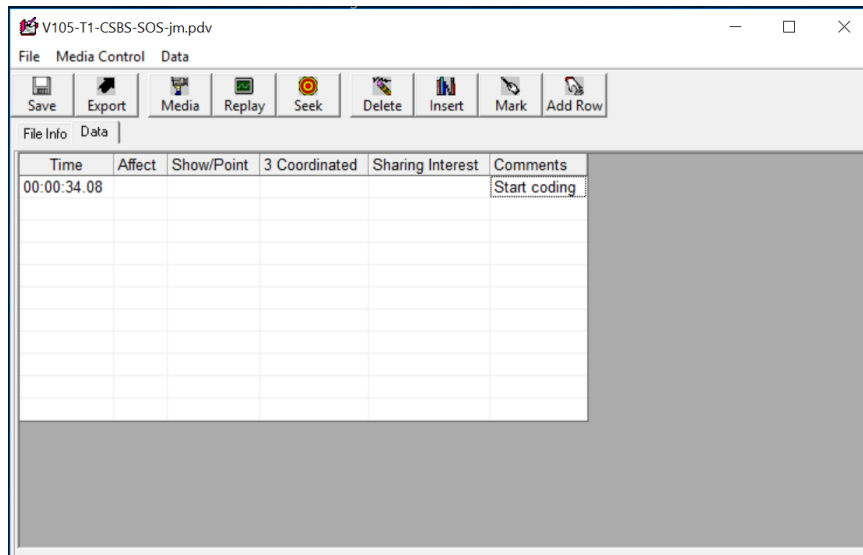
- d. Note for these examples, there is not quite a 2-second pause between each phrase, but the intonation goes down at the end of each phrase (or end of each number). As explained above, falling intonation at the end of an utterance (i.e., deflection) yields the end of the utterance/phrase/line. Therefore, we code them as separate utterances.
- e. If the child is counting and each number ends with rising intonation then it is coded all in one line (often sounds like quick counting):
  - i. One, two, three
- f. If you have a mixture of these elements so that the child is counting cows with varying tones of intonation, segment each number if there is a momentary pause (not even a second) and downward deflection in pitch. Do not segment numbers if after each number there is an upward inflection with virtually no pause. Segment each number as separate acts if monotone.
  - i. "One cow (rising inflection)
  - ii. Two cow (rising inflection)
  - iii. Three cows (deflection)
  - iv. Four cows (deflection)"



## Marking Events in ProcoderDV

### Marking Start Time

After briefly explaining the CSBS DP Behavior Sample procedure to the parent, the examiner will say, “Start coding here.” At that time, mark the first timed event (using **Ctrl+e** keystroke) and type, “Start coding” in the comments column. Do not mark any corresponding social acts in the “Start coding” row.

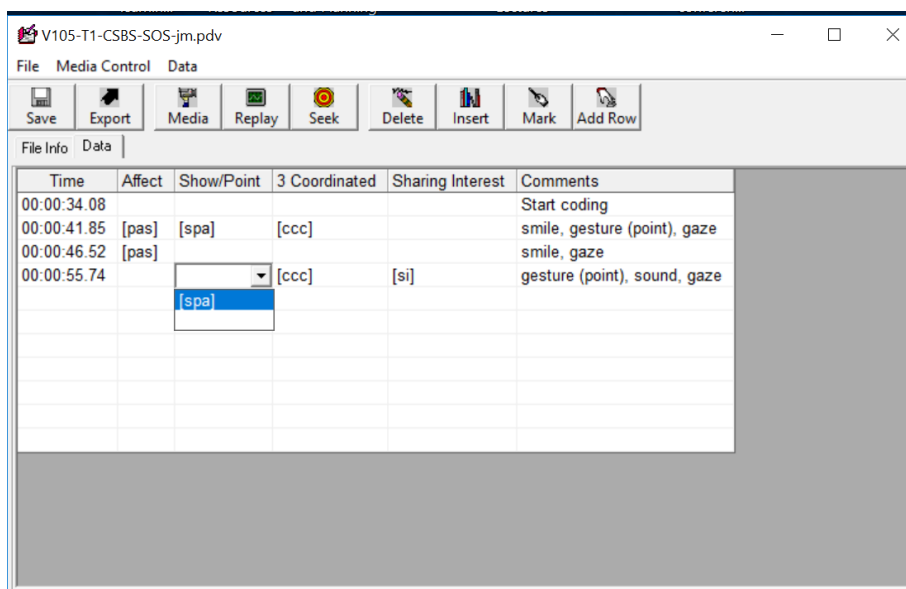


### Marking Identified Corresponding Social Acts

Throughout the video, pause it each time you identify a “key action” using **Ctrl+x**. Then make a decision regarding whether each act is or is not a corresponding social act for each of the four red flags. Make decisions based on the descriptions and decision trees above.

Other helpful ProcoderDV media controls can be found under Media Control at the top of your coding window.

Once corresponding social acts are identified, mark them in ProcoderDV by clicking in the appropriate column of the timed event’s row and selecting the code in the drop-down menu. You may also use a “hot key” function to select the appropriate code for the column. The hot key corresponds to the first letter of the variable. For example, pressing the “p” for “positive affect sharing”, listed below as “affect” [pas] will place the code in the box. See page 9 for the corresponding variable names.



If a given act includes multiple corresponding social acts, indicate all of the codes on the same line for that timed event.

Time	Affect	Show/Point	3 Coordinated	Name Opportunity	Name Response	Comments	
00:00:34.08						Start coding	
00:00:41.85	[pas]	[spa]	[ccc]		[mo]	[m]	smile, gesture (point), gaze
00:00:46.52		[spa]	[ccc]				gesture (point), sound, gaze

### Marking Stop Time

The examiner will say, “Stop coding here,” near the very end of the video. At that time, mark the last timed event and type, “Stop coding” in the comments column. Do not mark any corresponding social acts in the “Stop coding” row.

### Entering Date Completed

Enter the date in the “Date Completed” box. It may be the same as the “Date Started” date.

### Wrapping Up

#### Saving the ProCoderDV File

When you have completed coding, save the final file in your SOS Coding folder on your desktop AND on the secure text server (i.e., Krupa; [\\129.59.95.96\Yoder](http://129.59.95.96)) at: 9-ImpACT Study, 6-SOS Files Bahar & Jen

Open the SOS File folder on the server to confirm that the file you just coded was successfully saved to the correct location.

Also, keep a copy of your work in your SOS folder in order to run a MOOSES report once you have completed your entire coding set.

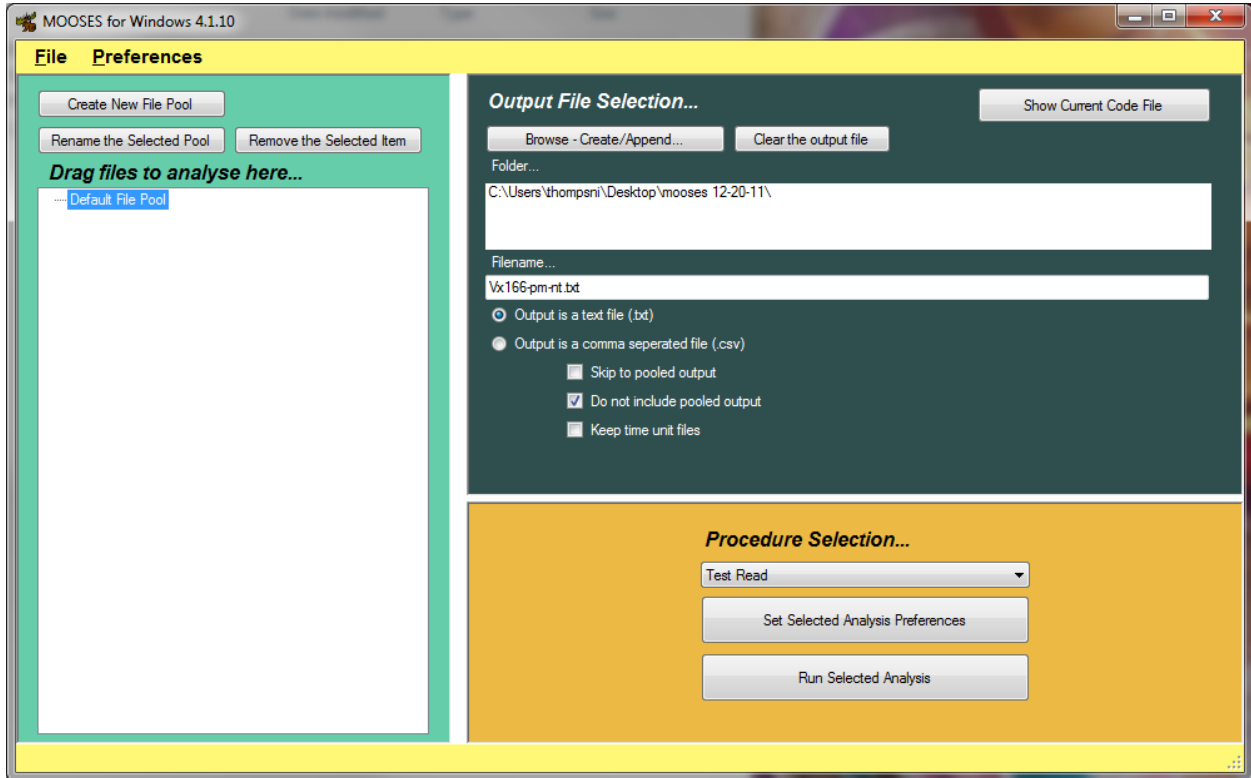
### Using MOOSES to Count Each Behavior Type

The coder is responsible for obtaining the counts for the files that they code (primary and reliability) For the Impact Project, coders work in tandem, so files are assigned in groups of six (5 Primary files and 1 Reliability file per coder) Each coder codes a reliability file for their coding partner. When a coder finishes a complete set of coding (5 Primary files and 1 Reliability file), they create a MOOSES file with a table of the counts for each sample. The Mooses report is saved on the server (6-SOS Files) and the coder notifies Catherine Bush that the set is complete.

#### 1. Set up MOOSES

- a. If you need to download MOOSES software, contact Paul Yoder (assuming you are working in his lab) or download from <http://vkc.mc.vanderbilt.edu/apps/mooses/>
- b. Note that like ProCoderDV, MOOSES requires additional software to work on Mac computers.
- c. The first time that you use MOOSES, you will need to activate it through the preferences menu. The person who owns the license (e.g., Paul Yoder if you work in his lab) should provide you with the email and user number required.

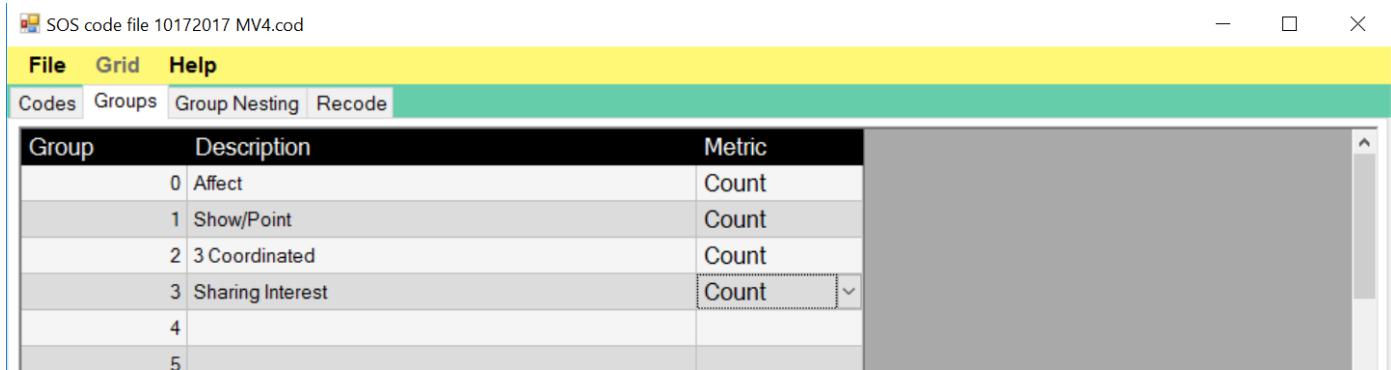
## 2. Open MOOSES



3. Link to corresponding code file to your ProcoderDV file in MOOSES.
  - a. Click on “File” in the upper yellow toolbar. Then select “View/Change Code File...”
  - b. In the window that appears, click on “File” and then “Open...”
  - c. Navigate to the corresponding code file (“SOS code file 10172017.cod”) in your SOS folder, on your desktop and click “Open.”
  - d. You should see the following window.
  - e. Make sure “Timed Event” is selected for each code in the “Sampling” column.

Code	Description	Group	Sampling	Collector Label	Row	Col
[pas]	positive affect sharing acts		0 Timed Event			
[spa]	showing and pointing acts		1 Timed Event			
[ccc]	3 or more cues coordinated to communicate		2 Timed Event			
[si]	sharing interest		3 Timed Event			

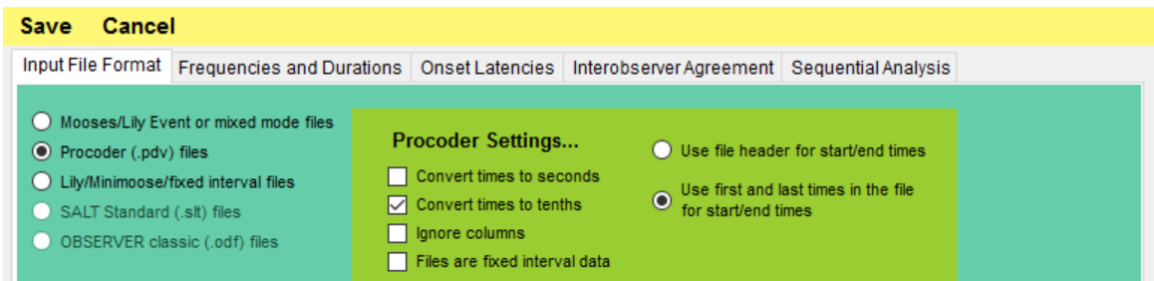
- f. Click on “Groups” and select “Count” for each code in the “Metric” column if it is not already selected, as shown below.



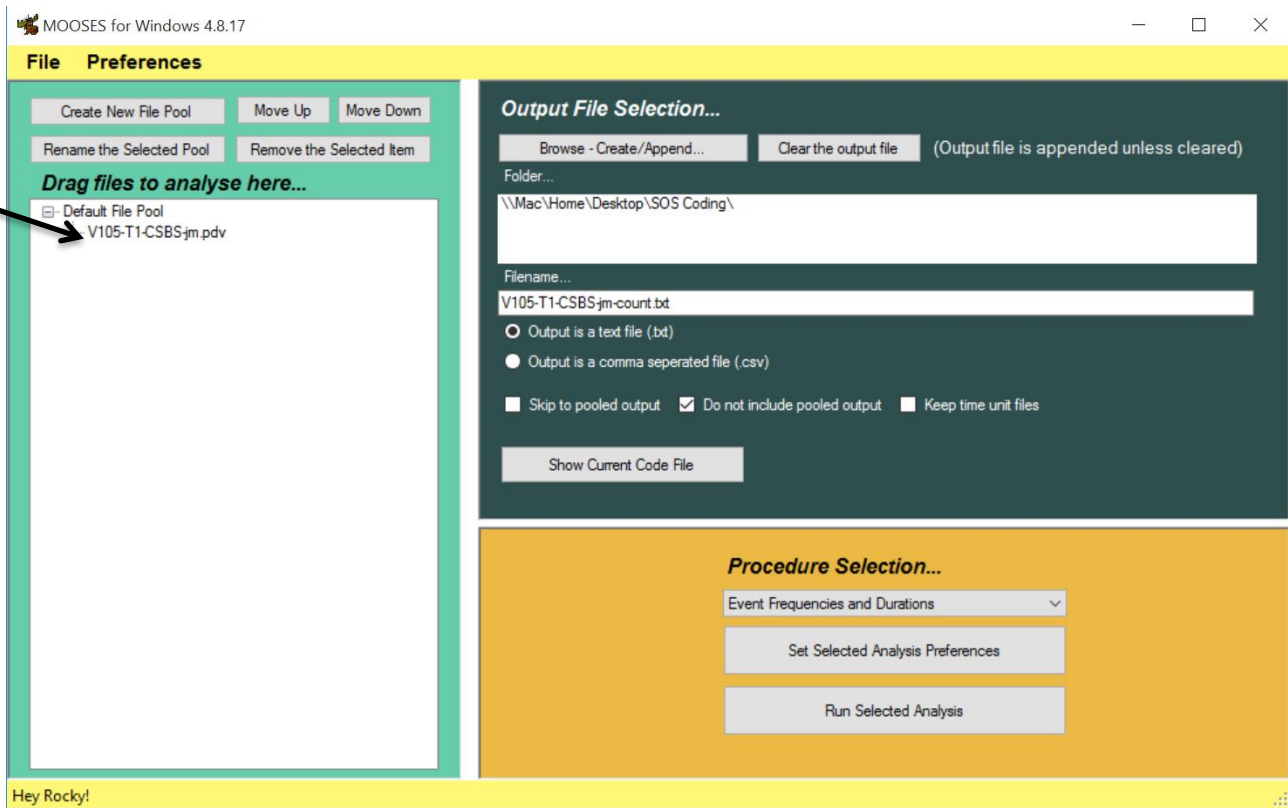
- g. Click on “File,” then “Exit Saving File” to close this window.

4. Select the preferences for the input files and analysis you are about to run. You only need to do this ONE time if you save your settings. Likewise, if you update your Mooses you will need to set your preferences again.
  - a. In the orange section of the MOOSES welcome window, under "Procedure Selection..." select the "set selected analysis preferences" button.
  - b. In the new window, labeled MOOSES Analysis Preferences window, select the "Input File Format" tab (under the yellow toolbar).
    - i. In the far left column, select "Procoder (.pdv) files".
    - ii. In the center column under "Procoder Settings", select, "Convert times to tenths."
    - iii. Because we are using *timed event sampling*, Deselect "Files are fixed interval data".
    - iv. In the far right column, select "Use first and last times in the file for start/end times".

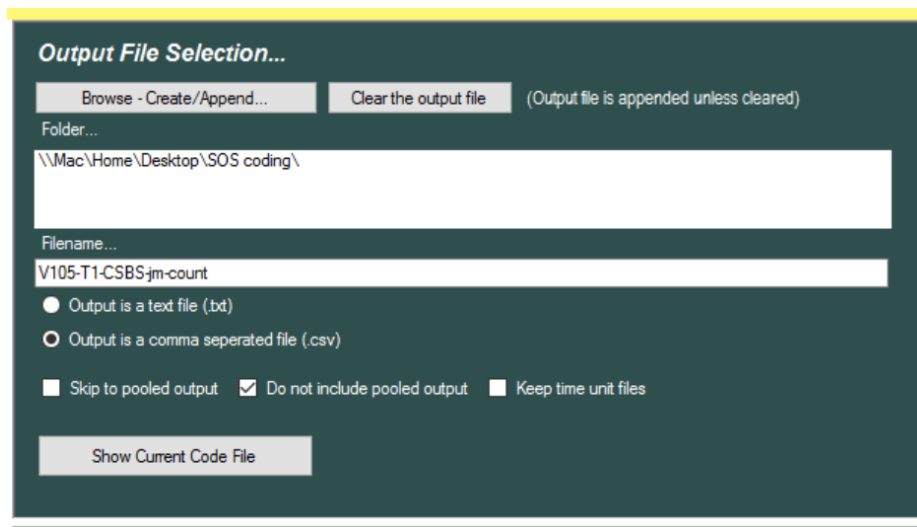
MOOSES Analysis Preferences



- c. Within this same window, select the Frequencies and Durations tab.
    - i. In the shaded teal area to the left, select "No Nested Counts."
  - d. Click “Save” in the yellow toolbar and the window will close.
5. Drag the ProcoderDV data files for the completed set from your SOS folder to below the “Drag files to Analyse here...” You should have all of your coded files in your SOS folder. In total you will have a list of 6 files listed under the “Drag files to analyse here ...” and one of those files should be a reliability file. The example below only shows one file.



6. In the MOOSES welcome window, set up the output file for the count.
  - a. Under “Output File Selection...”, select “Browse-Create/Append...” button.
  - b. In this new window titled "Pick or name and (yes, there’s a typo in the window label) output file..." select the SOS Coding folder on your desktop. The output file will be saved there.
  - c. Type the output filename using the following naming convention:
    - i. Date report created-Code name-coder’s initial
    - ii. For example, “10.27.17-SOS-jm”.
  - d. Click “Save”.
  
7. Select the type of output file.
  - a. Click on “Output is a comma separated file (.csv)”.
  - b. Check “Do not include pooled output”.



8. Run the analysis

- a. In the orange section of the MOOSES welcome window, under "Procedure Selection..." select "Test Read" from the drop down menu. If everything is correct with your ProCoderDV files and Mooses is set up correctly, your test read will run and you will get the following message in a new .csv file:  
Test read: file name
- b. If the Test Read runs correctly, you are ready proceed with an Event Frequencies and Durations report. If the Test Read fails, recheck your ProCoderDV files and codes and troubleshoot for errors in your Mooses set up.
- c. In the orange section of the MOOSES welcome window, under "Procedure Selection..." select "Event Frequencies and Durations" from the drop down menu.
- d. Below this, select the "Run Selected Analysis" button. You should get something like the following, except your report will have the Test Run information at the top and then 6 files listed below:

	A	B	C	D	E	F	G	H	I	J	K	L
1	File	Header	F-[pas]	D-[pas]	F-[spa]	D-[spa]	F-[ccc]	D-[ccc]	F-[sij]	D-[sij]		
2	V114-T4-CSB	V114 11/18/	6	0	2	0	7	0	3	0		
3												
4												
5												

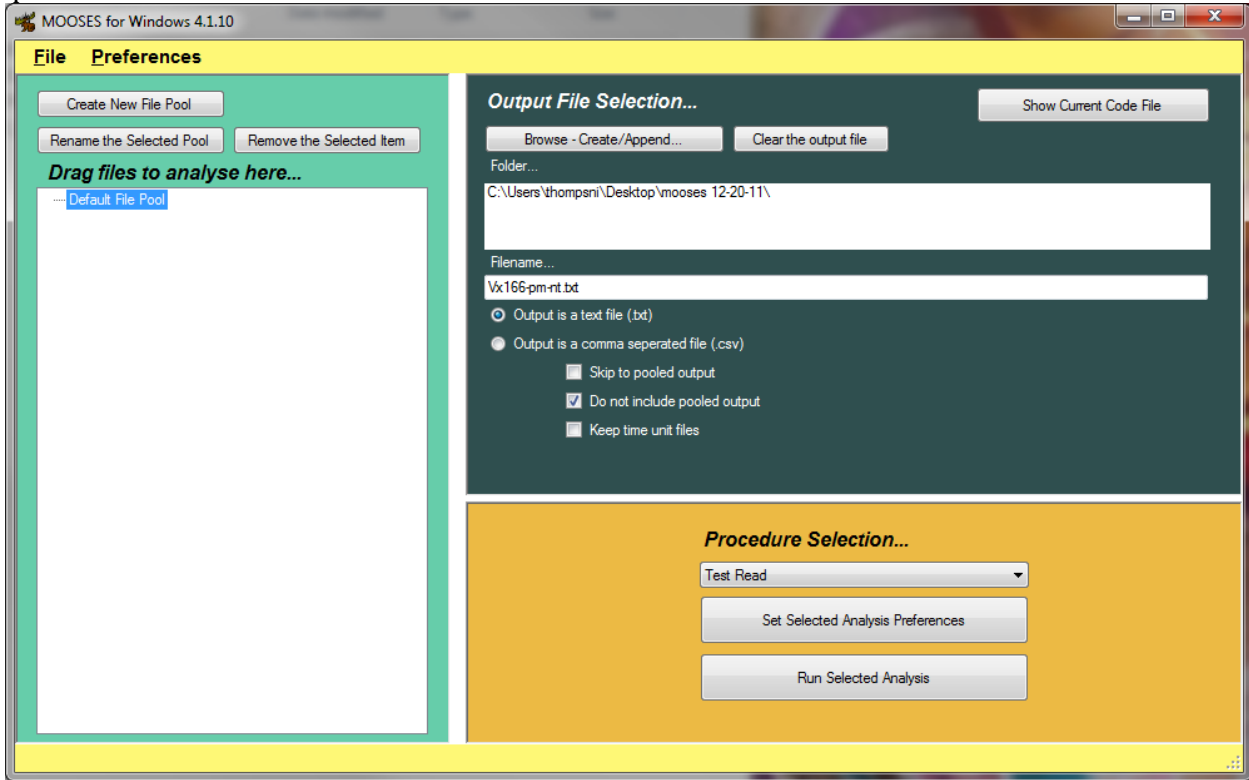
- e. Save the .csv file on the server at 9-IMPACT Study, 6-SOS Files Bahar & Jen.
- f. Email Catherine Bush at [catherine.t.bush@vanderbilt.edu](mailto:catherine.t.bush@vanderbilt.edu) that coding for the set is complete and ready for data entry.

Deleting Files from your Desktop

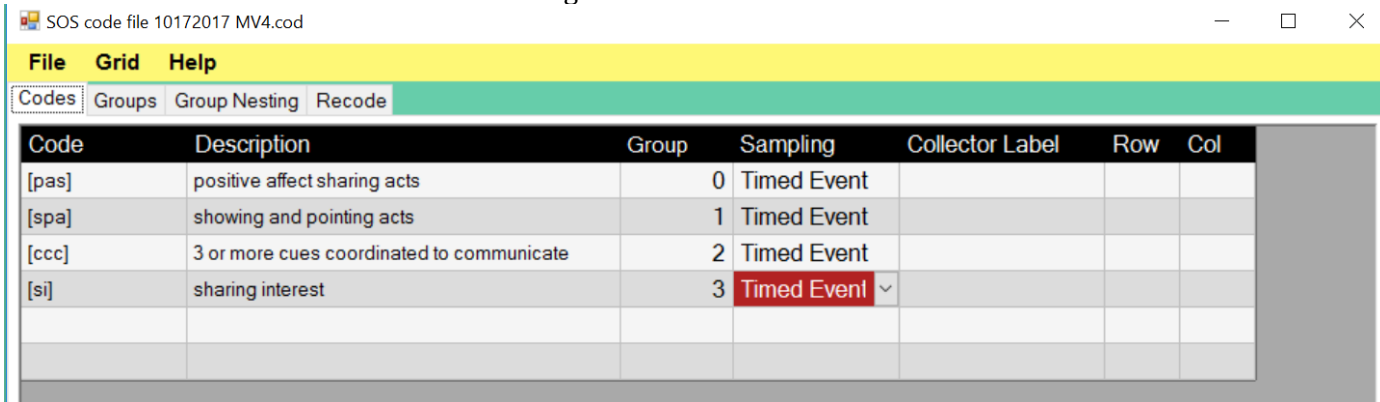
After you have completed coding AND confirmed that your Mooses file and your ProCoderDV files were successfully saved to the secure text server, delete the files (PDV and csv), and the media files from your SOS Coding folder on your desktop. Keep the Mooses code file in your SOS folder on your desktop for future reports. Mooses needs the MV4.cod.bak file it created each time you use the program.

## Preparing for Discrepancy Discussions

1. Copy the Procoder observation files you want to compare to your desktop.
2. Open MOOSES.



3. Drag the two ProcoderDV observation files from your desktop to below the “Drag files to Analyse here...”
4. Link to corresponding code file to your ProcoderDV file in MOOSES.
  - a. Click on “File” in the upper yellow toolbar. Then select “View/Change Code File...”
  - b. In the window that appears, click on “File” and then “Open...”
  - c. Navigate to the corresponding code file (“SOS code file 10172017.cod”) on your desktop and click “Open.”
  - d. You should see the following window.

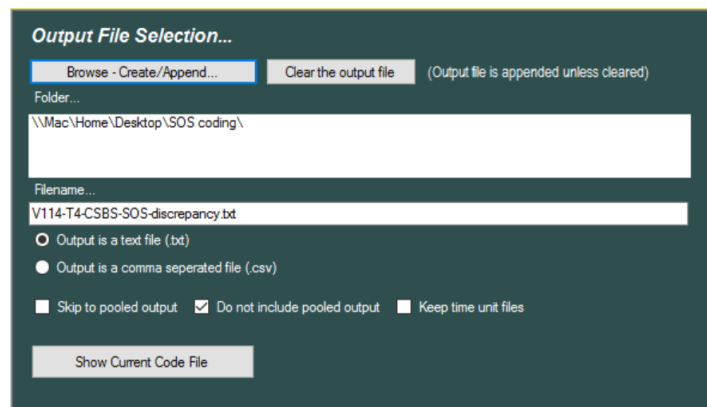


- e. Make sure “Timed Event” is selected for each code in the “Sampling” column.
- f. Click on “Groups” and select “Count” for each code in the “Metric” column if it is not already selected, as shown below.

SOS code file 10172017 MV4.cod

Group	Description	Metric
0	Affect	Count
1	Show/Point	Count
2	3 Coordinated	Count
3	Sharing Interest	Count
4		
5		

5. Click on "File," then "Exit Saving File" to close this window.
6. In the MOOSES welcome window, set up the output file for interobserver agreement analysis.
  - a. Under "Output File Selection...," select "Browse-Create/Append..." button.
  - b. In this new window titled "Pick or name and (yes, there's a typo in the window label) output file..." select the SOS Coding folder on your desktop. The output file will be saved there.
  - c. Type the output filename using the following naming convention, which essentially adds "-discrepancy" to the end of the ProcoderDV file name.
    - i. Site initial-Research ID#-Period number-Procedure initials-discrepancy
    - ii. For example, "V555-T1-CSBS-SOS-discrepancy".
  - d. Click "Save".
7. Select the type of output file.
  - a. Click on "Output as a text file (.txt)".
  - b. Check "Do not include pooled output".



8. Select the preferences for the input files and analysis you are about to run.
  - a. In the orange section of the MOOSES welcome window, under "Procedure Selection..." select the "set selected analysis preferences" button.
  - b. In the new window, labeled MOOSES Analysis Preferences window, select the "Input File Format" tab (under the yellow toolbar).
    - iii. In the far left column, select "Procoder (.pdv) files".
    - iv. In the center column under "Procoder Settings", select, "Convert times to tenths."
    - v. Because we are using *timed event sampling*, Deselect "Files are fixed interval data".
    - vi. In the far right column, select "Use first and last times in the file for start/end times".



MOOSE Analysis Preferences

**Save Cancel**

Input File Format | Frequencies and Durations | Onset Latencies | Interobserver Agreement | Sequential Analysis

Moores/Lily Event or mixed mode files  
 Procoder (.pdv) files  
 Lily/Minimoose/fixed interval files  
 SALT Standard (.slt) files  
 OBSERVER classic (.odf) files

**Procoder Settings...**

Convert times to seconds  
 Convert times to tenths  
 Ignore columns  
 Files are fixed interval data

Use file header for start/end times  
 Use first and last times in the file for start/end times

- c. Within this same window, select the Interobserver Agreement tab.
  - i. In the shaded teal area to the left, select "Output Disagreement Times" and "Output Agreement Matrix".
  - ii. For the "Agreement Window Size" enter 20, which is equal to 2 seconds.
  - iii. Under "IOA Method," select "Non-Exhaustive" for all 4 groups.

MOOSE Analysis Preferences

**Save Cancel**

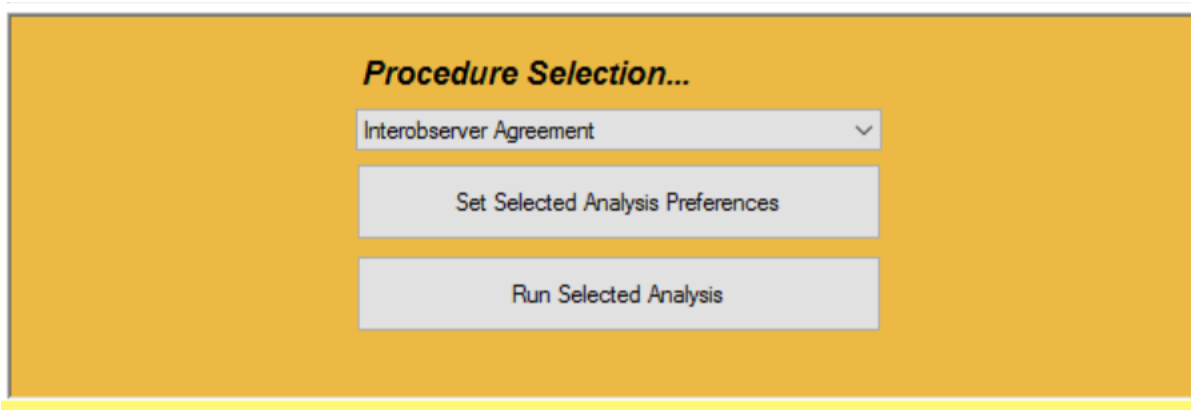
Input File Format | Frequencies and Durations | Onset Latencies | Interobserver Agreement | Sequential Analysis

Interval Percentage Count by Code Method  
 Output Disagreement Times  
 Output Agreement Matrix  
 20 Agreement Window Size  
 Note: Window Size is Not Used in Exhaustive Counting

Group	Description	IOA Method
0	Affect	Non-Exhaustive
1	Show/Point	Non-Exhaustive
2	3 Coordinated	Non-Exhaustive
3	Sharing Interest	Non-Exhaustive
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
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21		

- iv. Click "Save".

9. Run the Interobserver Agreement analyses.
  - a. In the orange box selected "Interobserver Agreement" from the dropdown menu that initially shows "Test read".
  - b. Click "Run Selected Analysis".



10. You should see a new window titled “Times of Disagreements”.
  - a. Disagreements are listed by time. The second and third columns indicate the coding for the first listed (primary) and second listed (reliability) files, respectively. Note that some rows have the same time (i.e., classifying errors) and others have different times (i.e., unitizing errors).
11. In the teal section on the right, click “Export to Procoder”.



12. Name the file using the following naming convention.
  - a. Site initial-Research ID#-Period number-Procedure initials-discrepancy Procoder
  - b. For example, “V555-T4-CSBS-SOS-discrepancy Procoder”
  - c. Click on “Save”.
13. A Procoder file should open that displays the discrepancies.
  - a. Link the media file to the Procoder file to view portions of the media file relevant to the discrepancies. You follow the same step to insert the media file as with an observation file (i.e., click “Browse” under the Media File bar and then locate and select the corresponding media file)
  - b. Then, select the data tab to show the scenes as you would when you were coding the file. You will return to this to conduct discrepancy discussions.
  - c. You can also export the discrepancy list as an excel file and use it to find the times using a media player.
14. In MOOSE, return to the “Times of Disagreement” window and select “Continue”. A text file will be generated.
  - a. The information in the text file can show for which categories there are the most differences.

15. You can use the ProCoder file to play the portions of the video for which there are disagreements.
  - a. You may want to adjust the pre-roll and/or post-roll through the Media Control Options.
  - b. You can select a time with a disagreement, play that portion of the video, and then discuss each coder's decisions.

## References

- Book, L. A. (2009). Early red flags for autism spectrum disorders in toddlers in the home environment (Doctoral Dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3399180)
- McCoy, D. (2013). Observation of social communication red flags in young children with autism spectrum disorder, developmental delay, and typical development using two observation methods. Electronic Theses, Treatises and Dissertations. (Paper 7499)
- Wetherby, A. M., Woods, J., Allen, L., Cleary, J., Dickinson, H., & Lord, C. (2004). Early indicators of autism spectrum disorders in the second year of life. *Journal of Autism and Developmental Disorders*, 34(5), 473–493.
- Wetherby, A., & Woods, J. (2002). Systematic observation of red flags for autism spectrum disorders in young children. Unpublished manual, Florida State University, Tallahassee, FL.