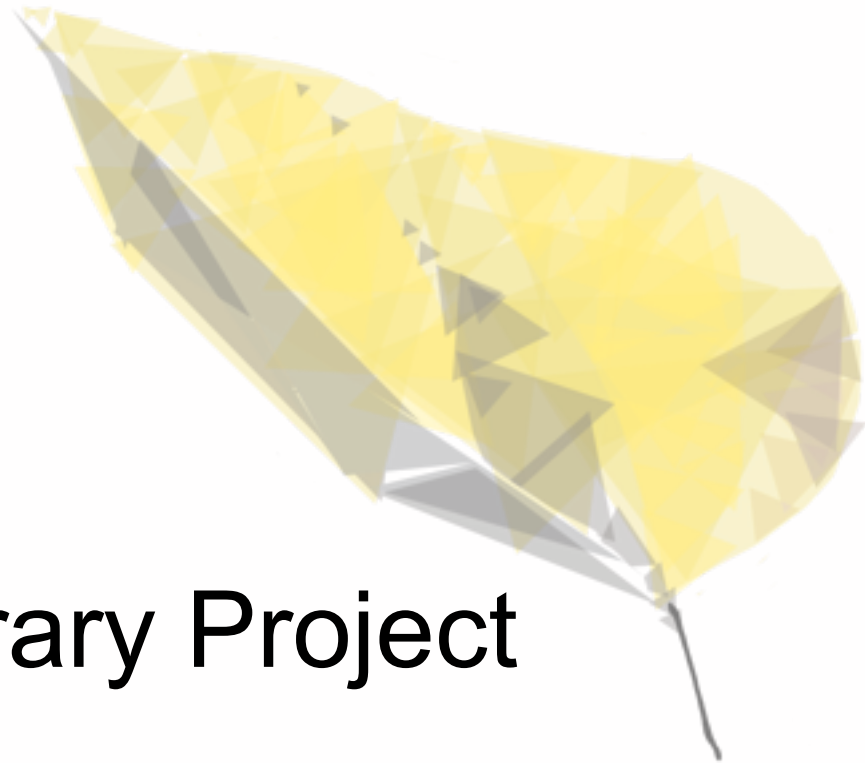
Video Coding



The Databrary Project

Agenda

12:00-1:00	Introduction to Databrary: Video reuse & sharing
1:00-2:00	Policies & best practices for sharing & managing video data
2:00-2:15	Break
2:15-3:00	**Video Coding**
3:00-4:00	Questions & hands-on help

Best practices in behavioral video coding

datavyu.org/user-guide/best-practices.html

User Guide ▸

BEST PRACTICES FOR CODING BEHAVIORAL DATA FROM VIDEO

Overview of Coding Process

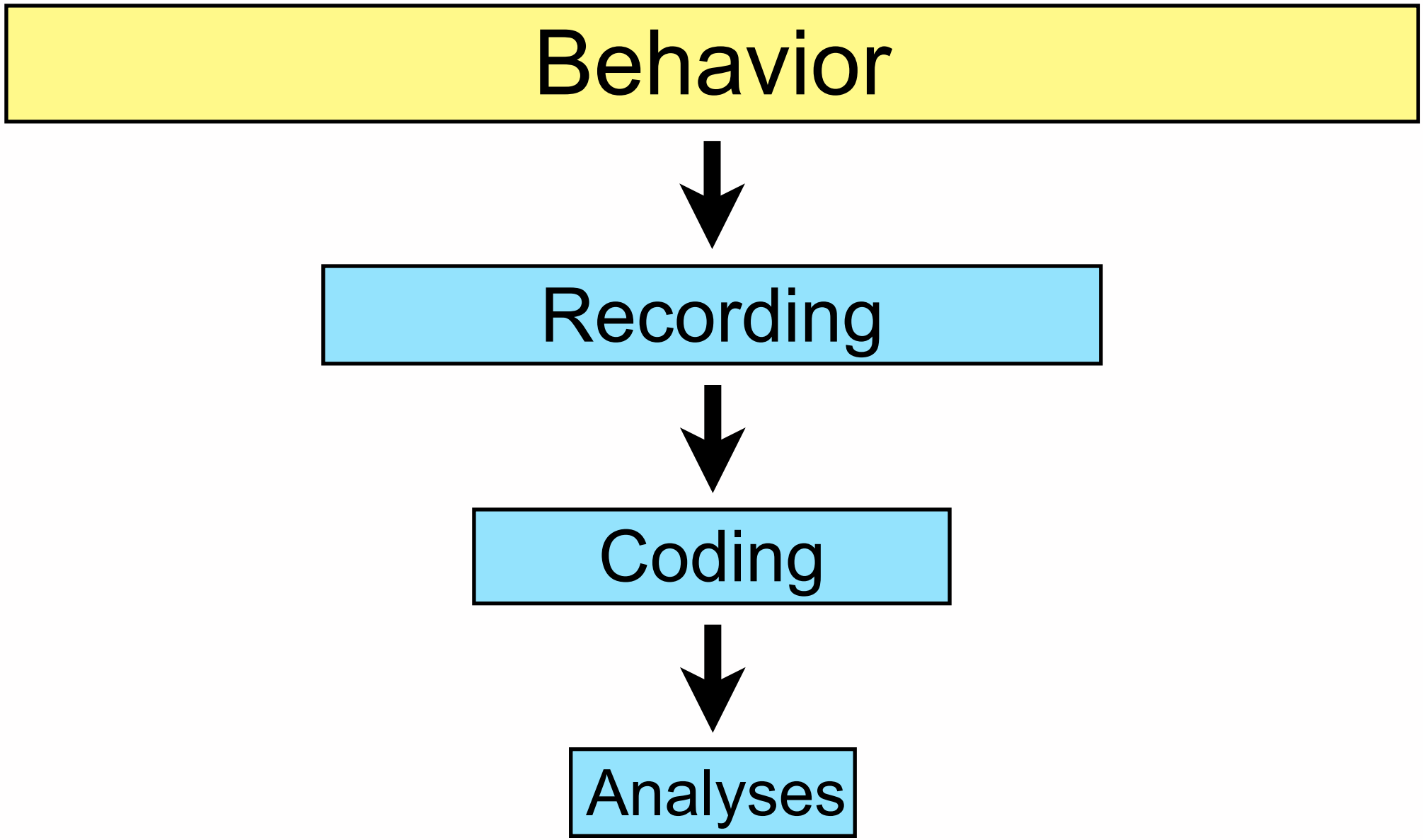
Welcome to the Best Practices Guide. These guidelines are intended as general suggestions for how to code behavioral data from video. The guidelines will help you to make the most of Datavyu, but the general principles are applicable for coding with any software tool or even for coding with paper and pencil.

Datavyu is agnostic about what researchers code and how they code it. This makes the software very powerful and flexible, but it puts the responsibility of designing the spreadsheet and coding criteria on the user. For a beginner setting out to code behavioral data for the first time, or a more experienced coder who is new to Datavyu, figuring out where to start can be daunting. This guide will help you to get started and will provide a framework for thinking about coding behavioral data from video.

If you have questions or comments about behavioral coding, please go to the Datavyu Support Forum. Other researchers may have run into the same problems, posted similar requests, or have offered similar suggestions for improving the coding process. Similarly, other researchers may benefit from hearing your questions and comments.

Download the docs for offline viewing.

Video coding: A series of filters



Coding is iterative

- Multiple steps
- Each step: Planning, testing, revising

Coding is iterative

- Multiple steps
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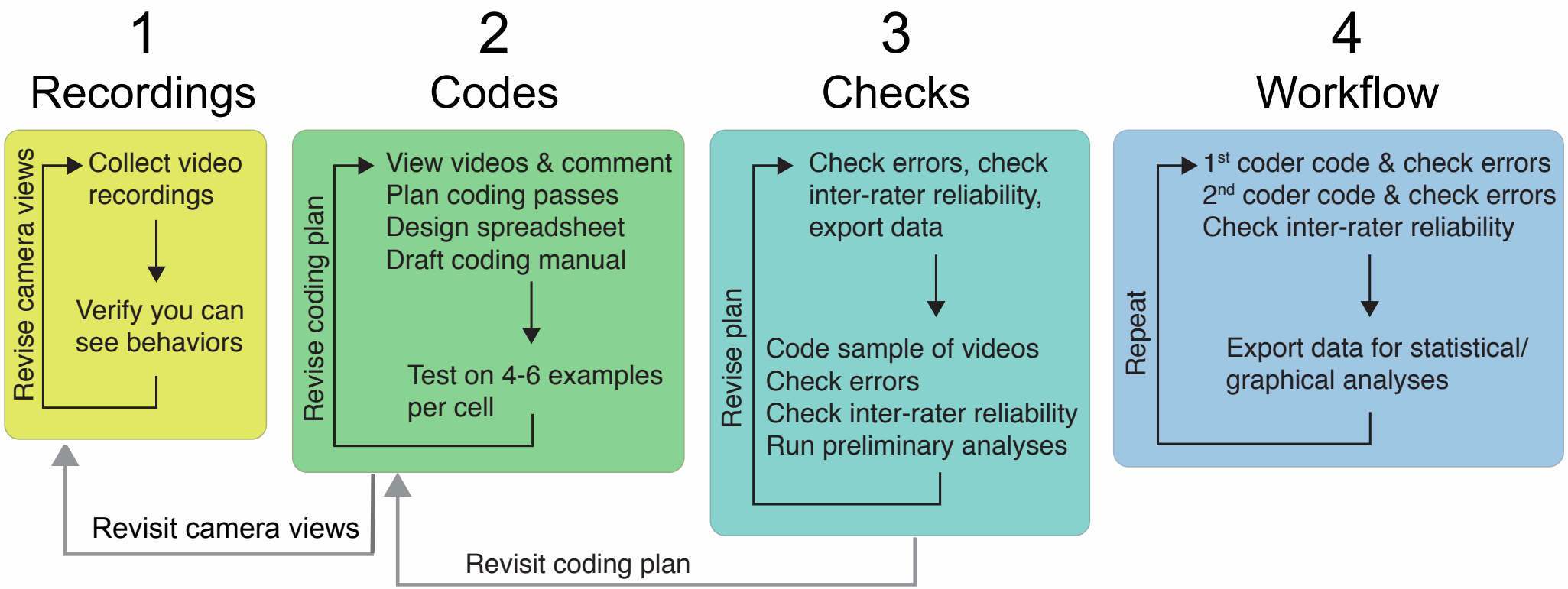
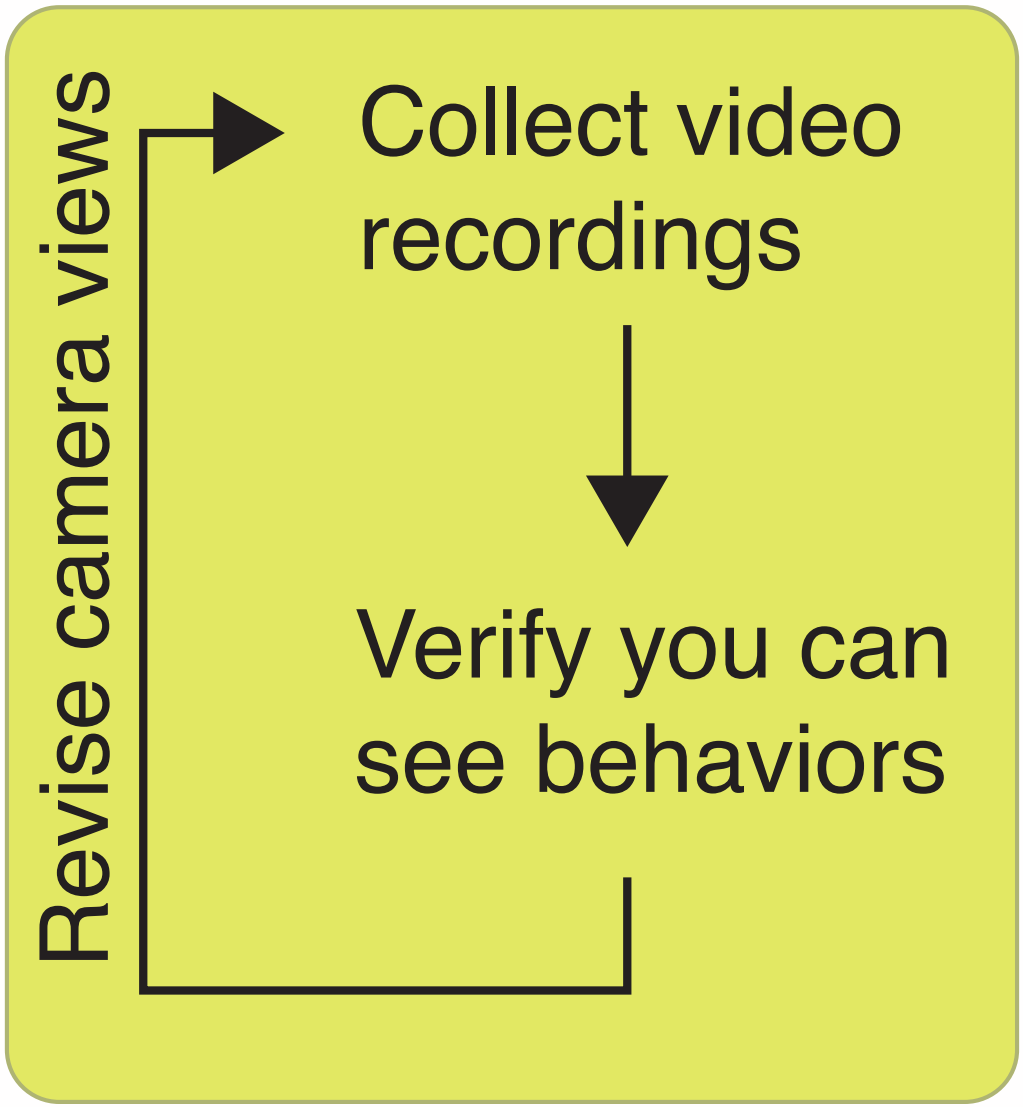
- **Expect to revise! It's a good thing!**

4 steps of behavioral video coding



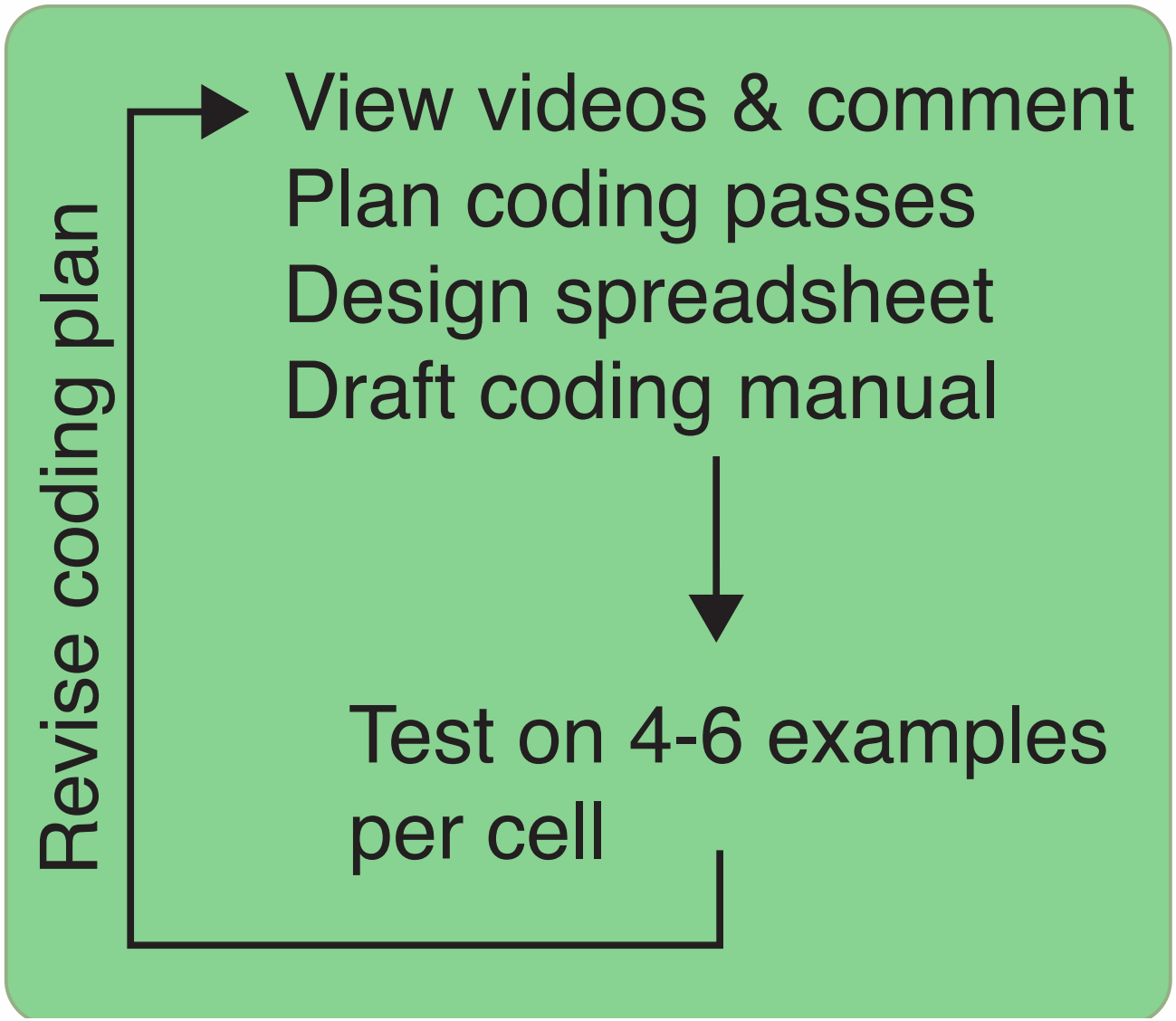
Step 1: Recordings



What it means to “see” behaviors

- If not on camera...never happened
  - Verify that you can see behaviors of interest at various viewing speeds
  - High contrast for small body parts
- Use visual cues (e.g., turn room lights on & off) to separate sections of video
  - Don’t use sound!

Step 2: Codes


View videos & comment
Plan coding passes
Design spreadsheet
Draft coding manual
Test on 4-6 examples per cell
Revise coding plan

Before designing your coding scheme

- Watch segments of videos
- Write comments about what you see

Planning your codes

- Start simple
- Code in passes
  - Enable coders to move through the video file as fast as possible while focusing on **one** set of behaviors per coding pass

Planning your codes

- Use a coding pass to separate important sections of the session
  - Tasks, conditions
- First real pass: Your most important DV
  - If you could code only 1 thing, this is it!

“Coding manual”

- Documents what coders did & what new coders should do
  - Formalizes coders’ decisions
  - Useful when revisiting data
  - Useful for sharing & repurposing data

<bang>

At any point during the trial, did S ever try to bang the container on the tabletop?

Banging the container means that S is holding the container in 1 or 2 hands and container makes contact with the surface at least 2x in short burst, constantly in motion. 2 contacts must be completed w/in 1 second.

y = yes

n = no

Drafting your coding manual

- Write the manual for a stranger
  - Avoid shorthand, acronyms, lab-specific terms
- More detailed documentation is better
  - o = object touch (bad)
  - o = object touch, must be detached object child can hold in hands, hand contact > 0.5s (better)
  - Include photos, video clips in manual

Test your coding scheme

- Code representative segments of videos
- Verify that codes work for all of your conditions, tasks, & age groups
- Verify that codes are not too grueling

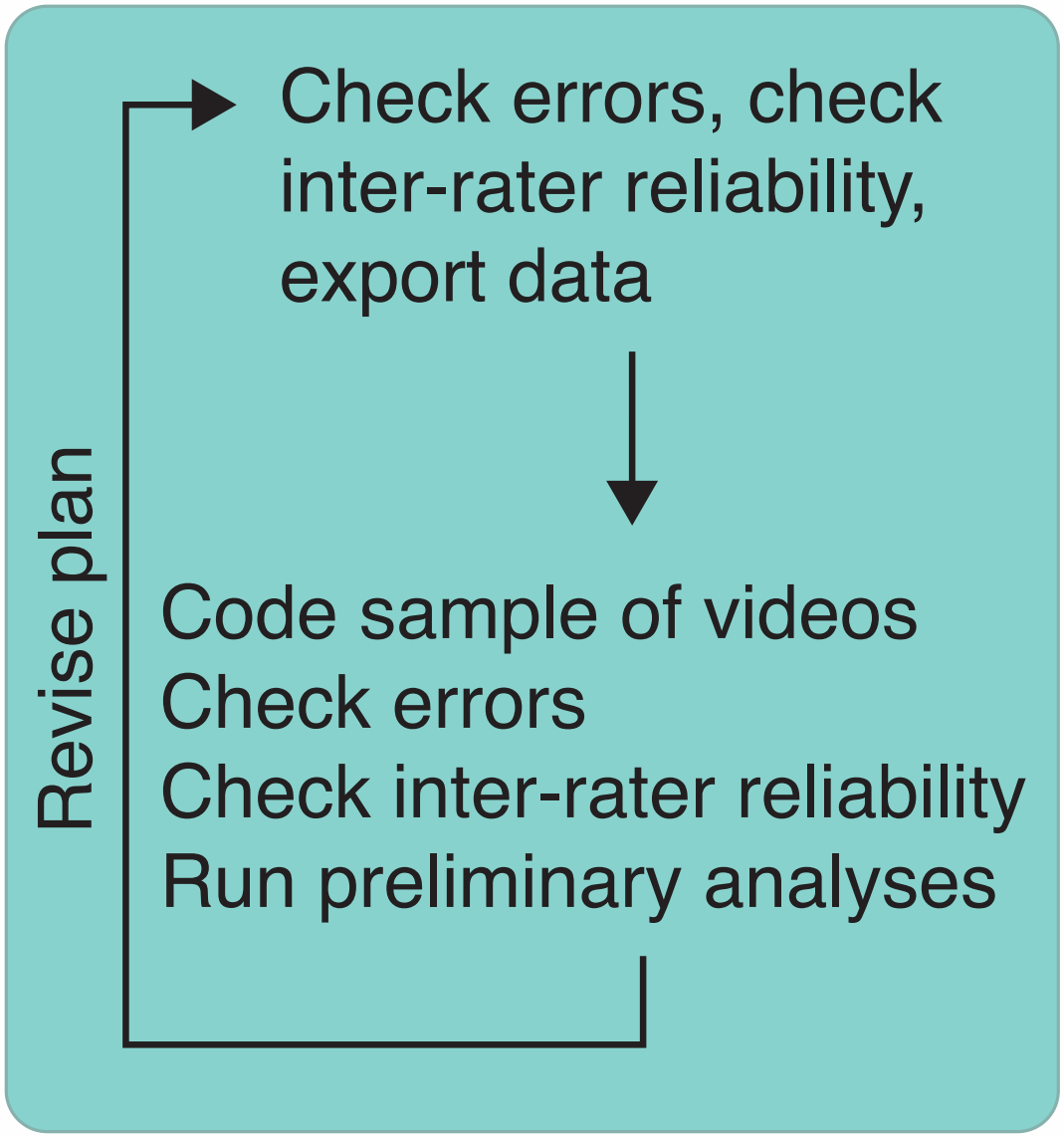
Maximize gain, minimize pain

- Minimize demands on coder's attention
  - Don't divide coder's attention
  - Attend to one thing in one place
- Reduce memory load
  - No remembering letters (prompt instead)
  - No using 0-1 codes (letters instead)

Maximize gain, minimize pain

- Manual coding requires motor actions!
  - Minimize movements of hands & eyes
  - Minimize mousing
  - Use single-letter codes

Step 3: Checks



Careless errors

- All coders make careless errors
- Check for careless errors
  - Ensure no typos, all letters are legal
  - All durations within acceptable limits
  - No out of range values
  - All codes are logically compatible
  - No impossible relations

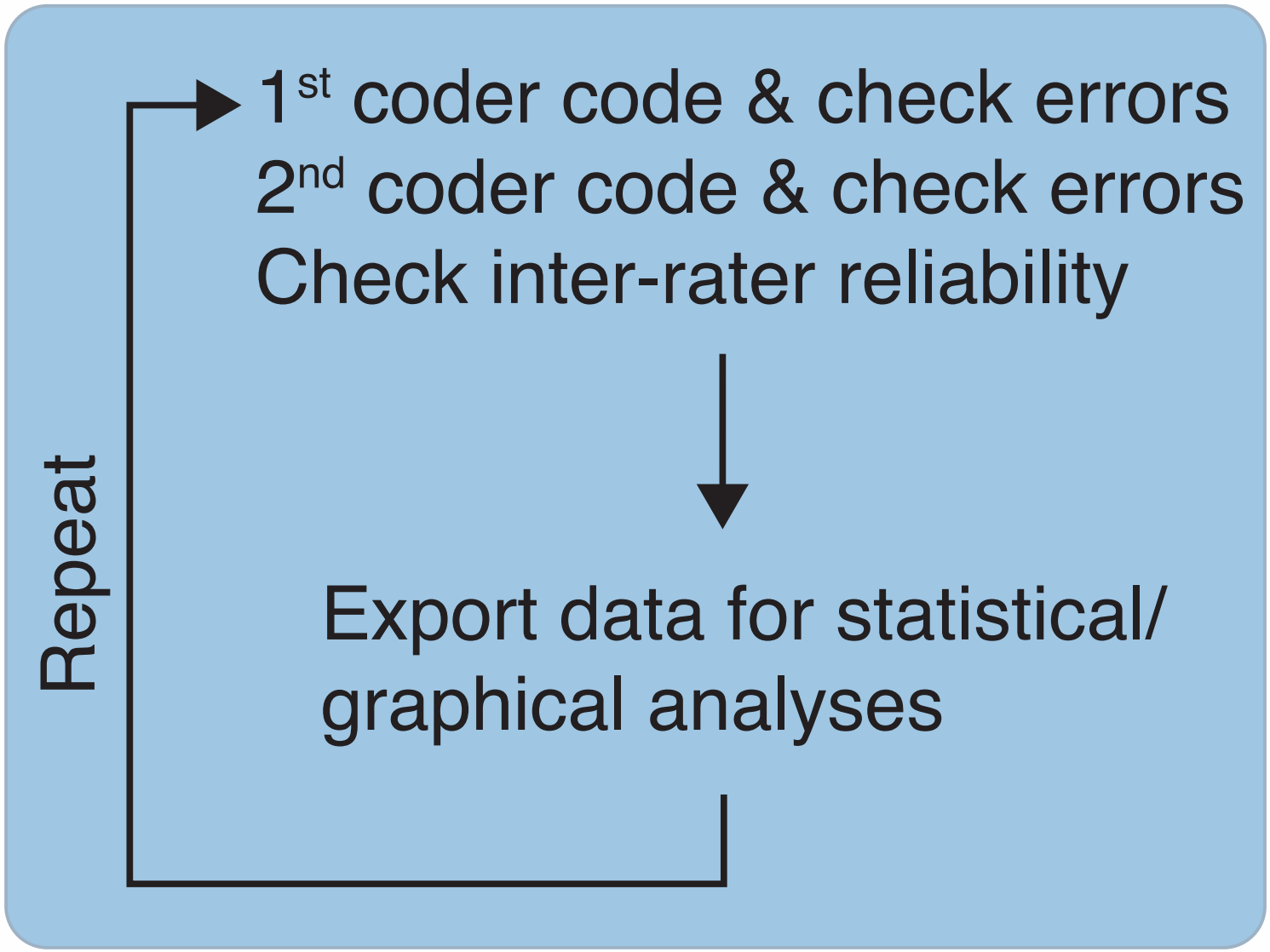
Errors in judgment

- Disagreement among coders
- Test inter-rater reliability
- How much video to check?
  - 25% of **each** participant
- “Best eyes” on entire dataset

Exporting data

- Be sure that you can export the data in the format you want for analyses
- Test it by exporting subset of data into your statistical spreadsheet

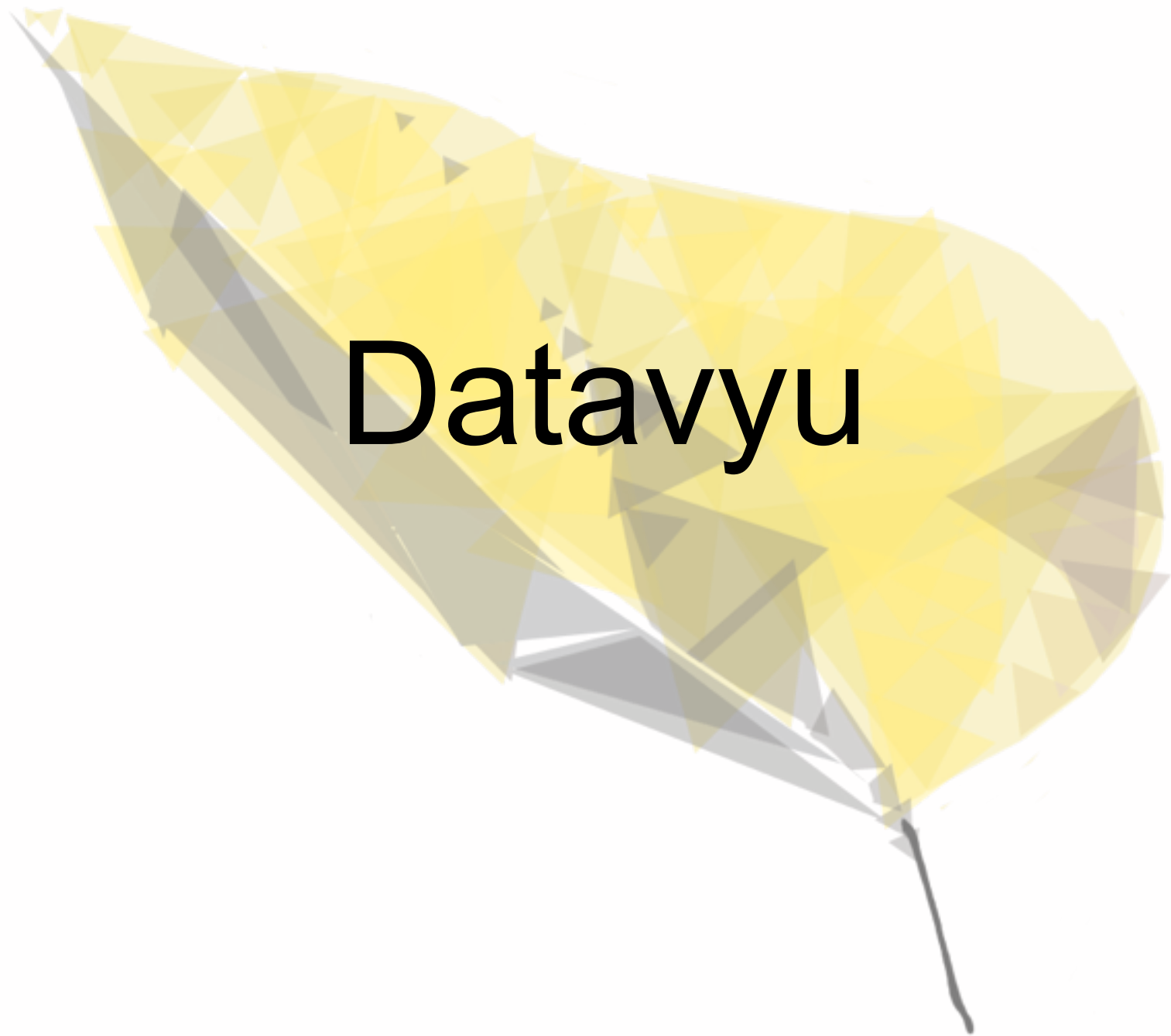
Step 4: Work flow



File organization

- Videos, spreadsheets, coding manual, exported data, etc.
- Establish naming convention for files
- Keep record of who coded what & when
- Keep record of reliability decisions
- Store videos on Databrary
  - When you're ready, share your videos!


Questions?
Comments?

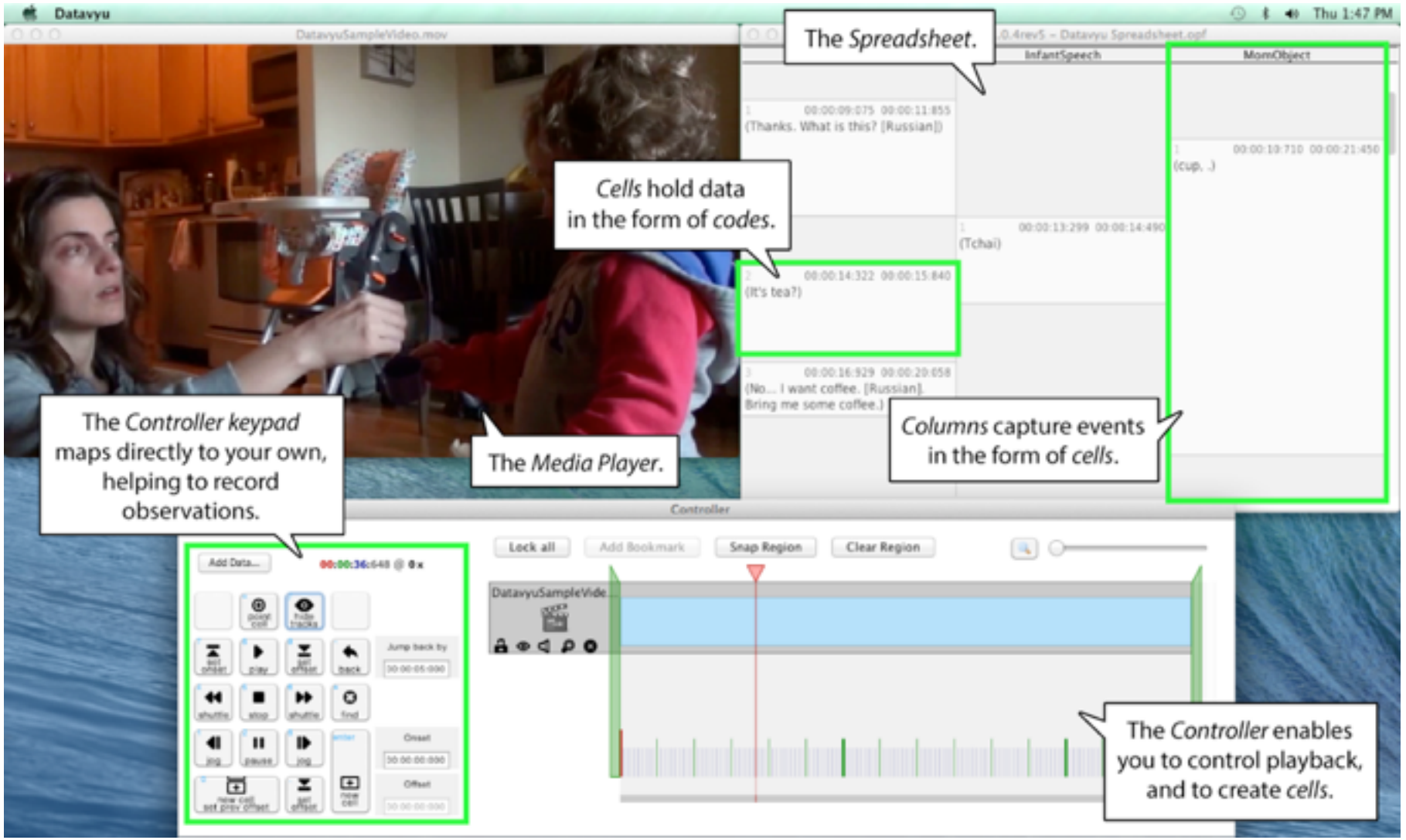

Datavyu

Datavyu

Features Download User Guide Support Contact

A video coding and data visualization tool

Datavyu is agnostic about how you code your data



Rule of thumb

- Coding is repetitive, but it should not be painful
- If it feels grueling to code or if it’s taking too long
  - Your codes are poorly planned
  - You are not taking advantage of Datavyu’s functionality
  - There is a better way

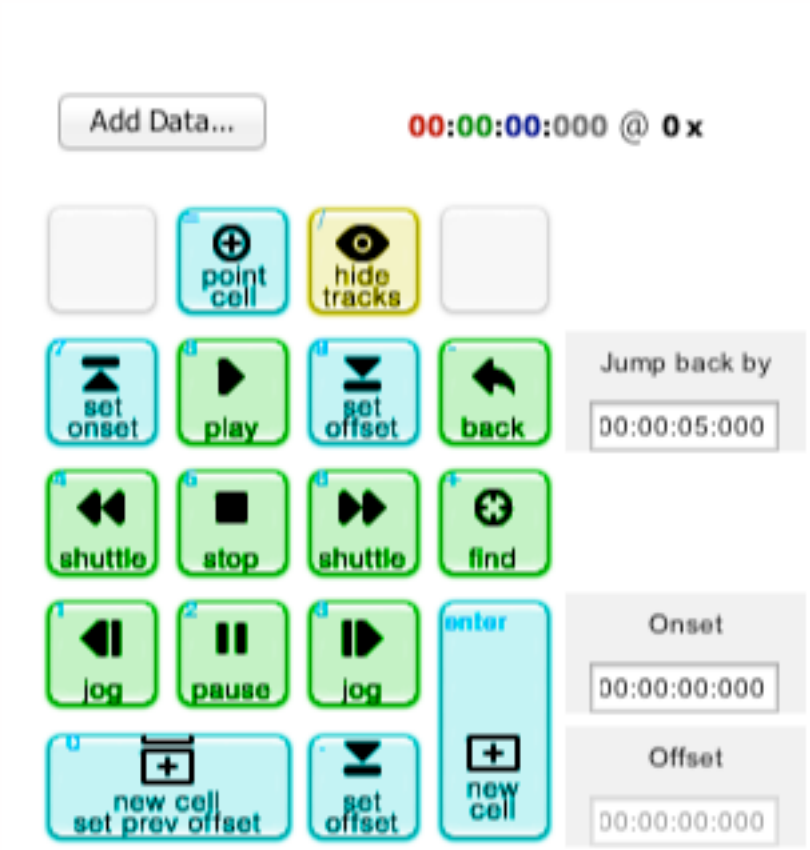
How do children learn to open containers?

How do children learn to open containers?


Playing the video

Easy video playback

- Flexible control with just your finger tips
- Save energy & time



Maximize gain, minimize pain:
Play at full speed

Maximize gain, minimize pain: Fast forward

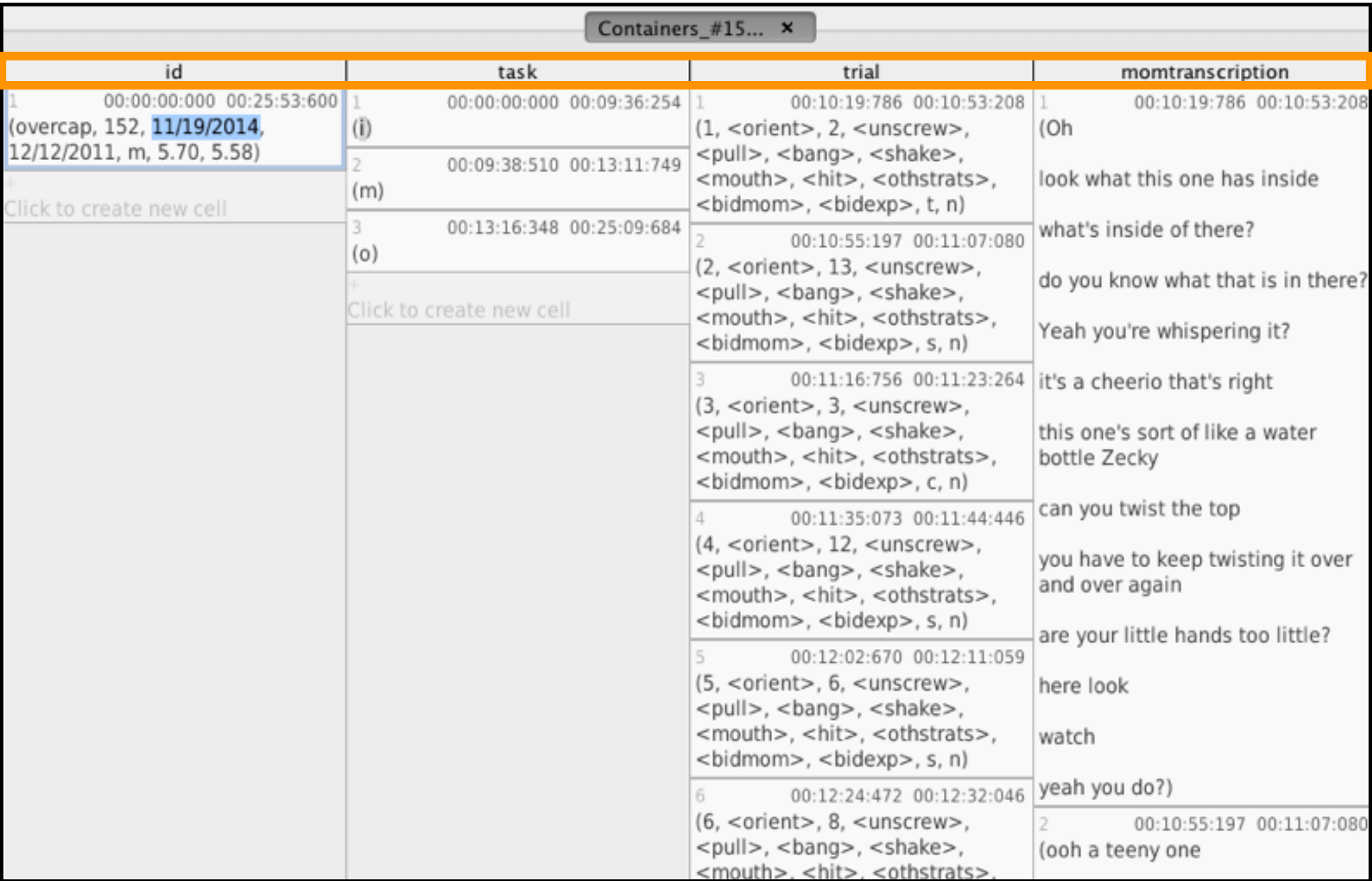
Maximize gain, minimize pain: Play slowly

Maximize gain, minimize pain: Jog frame by frame

Maximize gain, minimize pain:
Jump back if you missed it

Organizing the spreadsheet

Tabulated spreadsheet



Tabulated spreadsheet

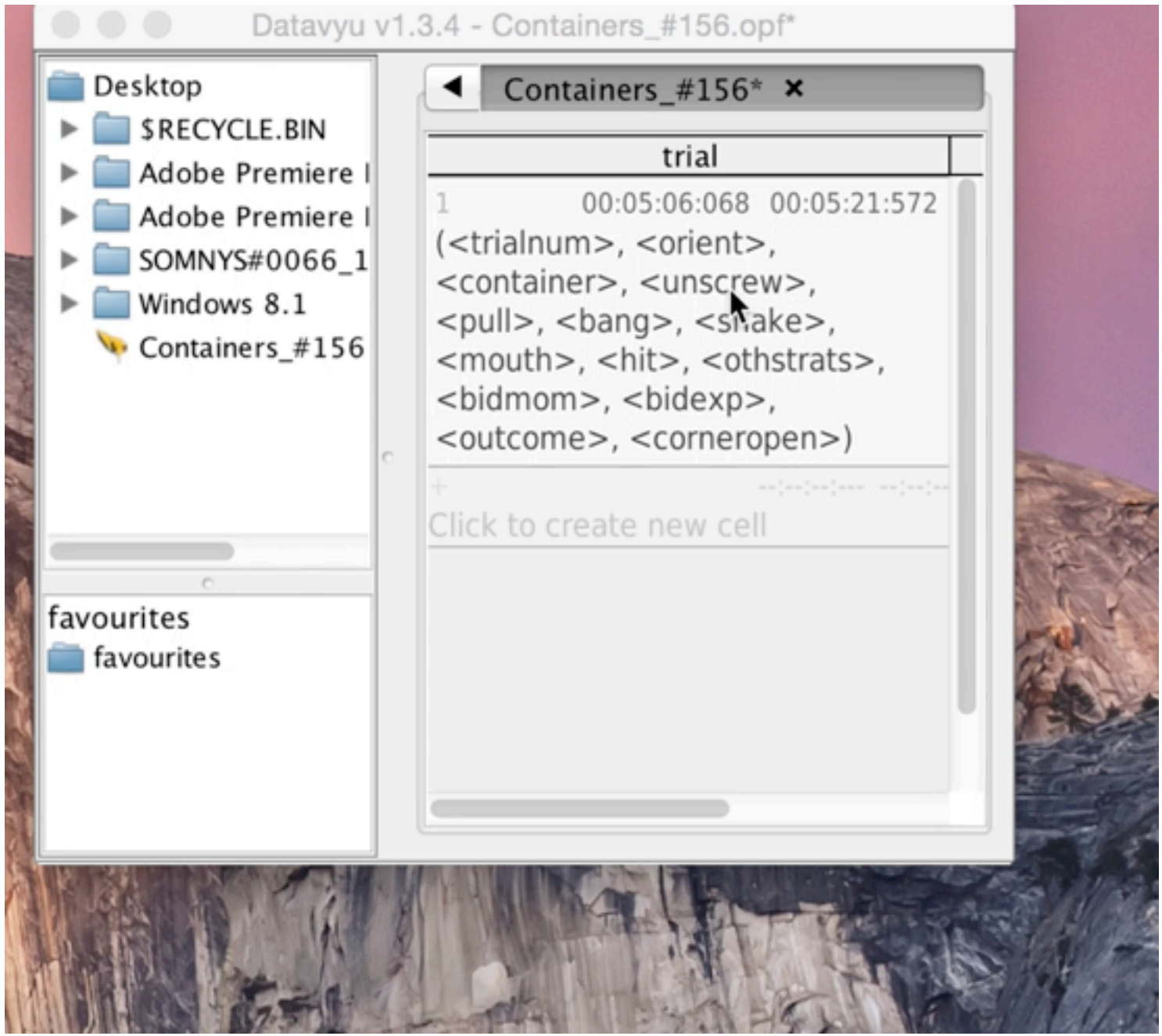
Containers_#15... ×

id	task	trial	momtranscription
1 00:00:00:000 00:25:53:600 (overcap, 152, 11/19/2014, 12/12/2011, m, 5.70, 5.58)	1 00:00:00:000 00:09:36:254 (i)	1 00:10:19:786 00:10:53:208 (1, <orient>, 2, <unscrew>, <pull>, <bang>, <shake>, <mouth>, <hit>, <othstrats>, <bidmom>, <bidexp>, t, n)	1 00:10:19:786 00:10:53:208 (Oh look what this one has inside what's inside of there? do you know what that is in there? Yeah you're whispering it? it's a cheerio that's right this one's sort of like a water bottle Zecky can you twist the top you have to keep twisting it over and over again are your little hands too little? here look watch yeah you do?)
+ Click to create new cell	2 00:09:38:510 00:13:11:749 (m)	2 00:10:55:197 00:11:07:080 (2, <orient>, 13, <unscrew>, <pull>, <bang>, <shake>, <mouth>, <hit>, <othstrats>, <bidmom>, <bidexp>, s, n)	2 00:10:55:197 00:11:07:080 (ooh a teeny one
	3 00:13:16:348 00:25:09:684 (o)	3 00:11:16:756 00:11:23:264 (3, <orient>, 3, <unscrew>, <pull>, <bang>, <shake>, <mouth>, <hit>, <othstrats>, <bidmom>, <bidexp>, c, n)	
	+ Click to create new cell	4 00:11:35:073 00:11:44:446 (4, <orient>, 12, <unscrew>, <pull>, <bang>, <shake>, <mouth>, <hit>, <othstrats>, <bidmom>, <bidexp>, s, n)	
		5 00:12:02:670 00:12:11:059 (5, <orient>, 6, <unscrew>, <pull>, <bang>, <shake>, <mouth>, <hit>, <othstrats>, <bidmom>, <bidexp>, s, n)	
		6 00:12:24:472 00:12:32:046 (6, <orient>, 8, <unscrew>, <pull>, <bang>, <shake>, <mouth>, <hit>, <othstrats>,	

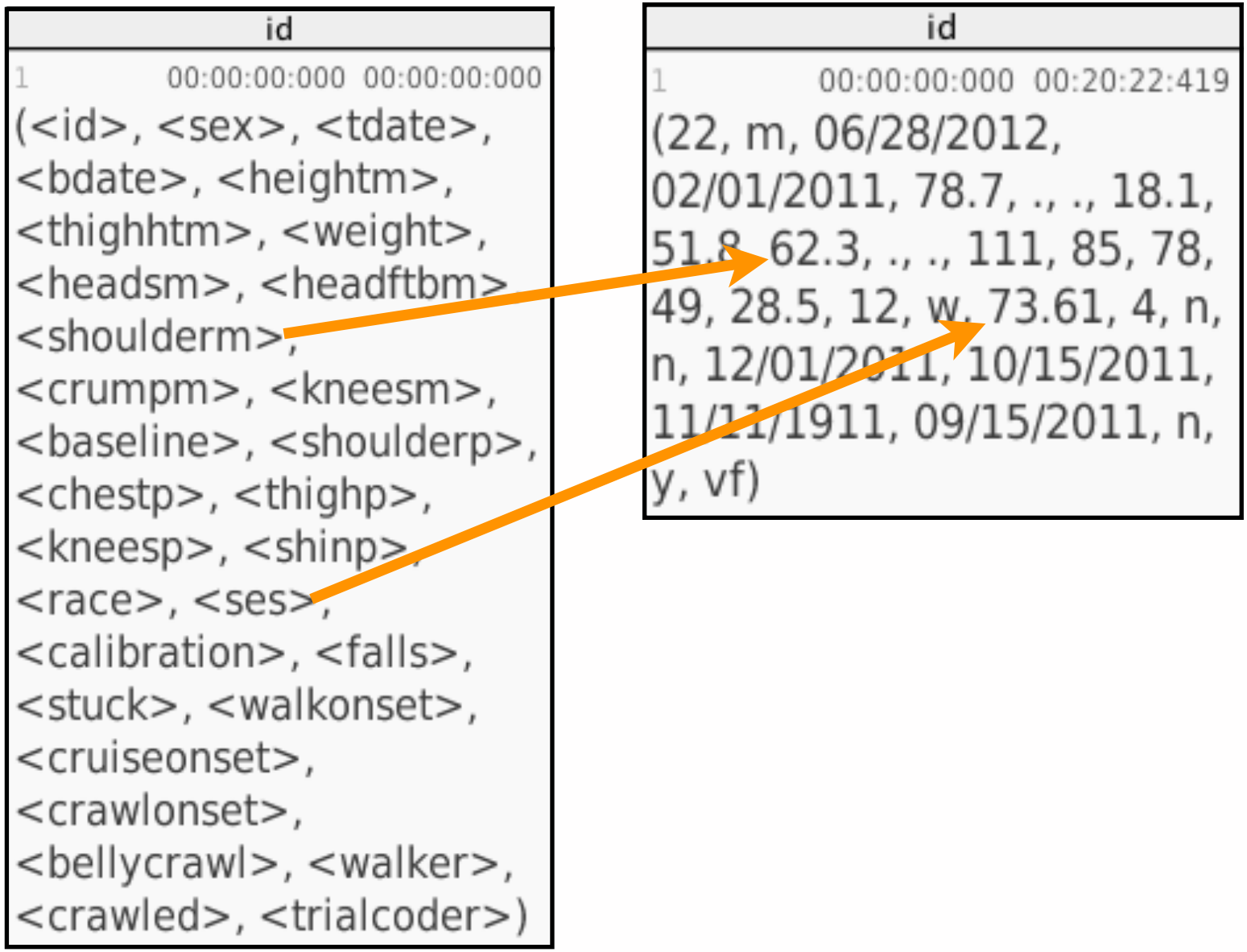
Temporal alignment: Nested events

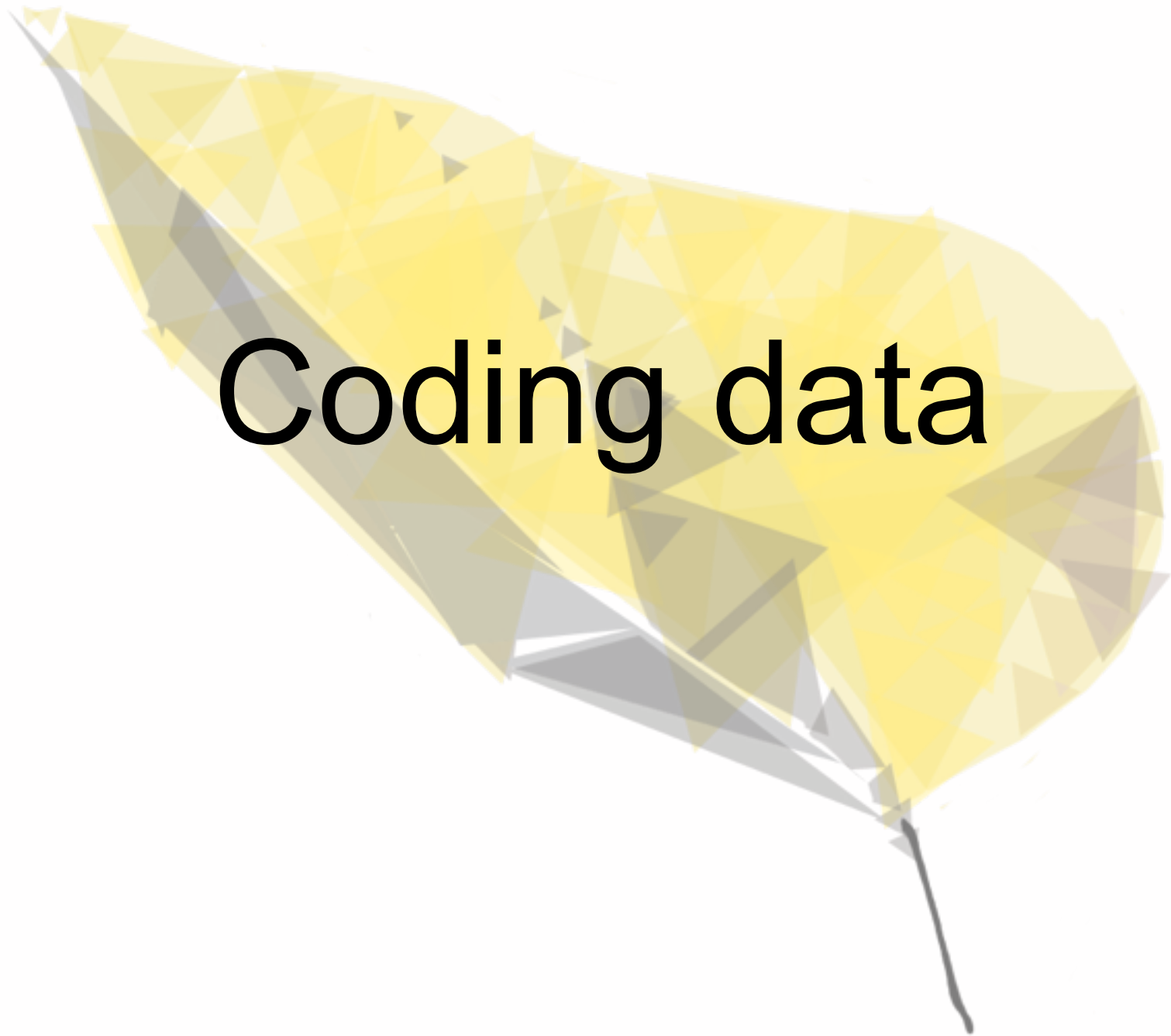
momgesture	momtranscription	momverbal	ctouch
1 00:06:37:912 00:06:46:197 (n, .)	1 00:06:37:912 00:06:53:100 (Try this one. Let's see. There's a little open. Can you pull it up? Pull this way. It's gonna go.)	1 00:06:37:912 00:06:40:772 (e)	1 00:09:30:044 00:09:30:757 (b)
2 00:06:46:198 00:06:46:946 (t, y)		2 00:06:40:773 00:06:43:875 (e)	2 00:09:30:758 00:09:36:130 (l)
3 00:06:46:946 00:06:49:068 (s, .)		3 00:06:43:876 00:06:44:463 (n)	3 00:09:47:520 00:09:48:335 (b)
4 00:06:49:069 00:06:53:100 (a, y)	2 00:06:58:752 00:07:05:986 (Ok. Was it...? There you go.)	4 00:06:44:464 00:06:46:602 (a)	4 00:09:48:336 00:09:49:253 (l)
5 00:06:58:752 00:07:05:986 (s, .)		5 00:06:46:603 00:06:49:069 (n)	5 00:09:49:254 00:09:49:389 (b)
6 00:07:12:144 00:07:18:365 (s, .)		6 00:06:49:070 00:06:50:344 (a)	6 00:09:49:390 00:09:50:035 (l)
7 00:07:18:366 00:07:20:627 (n, .)	3 00:07:12:144 00:07:26:760 (Closer. Okay. Can you do this one? Go on the corner.)	7 00:06:50:345 00:06:53:100 (n)	7 00:09:50:036 00:09:50:341 (b)
8 00:07:20:628 00:07:21:891 (l, y)		8 00:06:58:752 00:07:05:986 (e)	8 00:09:50:342 00:09:52:075 (l)
9 00:07:21:892 00:07:26:760 (n, .)		9 00:07:12:144 00:07:18:365 (e)	9 00:09:52:076 00:09:52:313 (b)
10 00:07:31:532 00:07:37:776 (n, .)	4 00:07:31:532 00:07:37:776 (n)	10 00:07:18:366 00:07:20:627 (n)	10 00:09:52:314 00:09:53:299 (l)
11 00:07:43:216 00:07:50:254 (n, .)	5 00:07:43:216 00:07:50:254 (n)	11 00:07:20:628 00:07:21:891 (a)	11 00:09:53:300 00:09:53:503 (b)
	6 00:07:55:320 00:08:12:082		

Flexible user defined codes



GET NEW ID CELL





Coding data

Code the structure of the study

id	task	trial
1 00:00:00:000 00:23:02:712 (screwtop, 100, 03/31/2014, 03/01/2012, m, 4.84, 5.00)	1 00:00:00:000 00:04:12:162 (i)	1 00:08:49:890 00:08:53:630 (1, u, b, n, y, n, n, n, n, n, n, n, s)
+ Click to create new cell	2 00:06:07:152 00:08:27:722 (m)	2 00:09:05:938 00:09:09:848 (2, u, b, n, y, n, n, n, n, n, n, n, s)
	3 00:08:47:578 00:23:02:712 (o)	3 00:09:30:044 00:09:36:130 (3, r, 9, y, y, n, n, n, n, n, n, n, s)
	+ Click to create new cell	4 00:09:47:520 00:09:56:190 (4, i, 14, y, n, n, n, n, n, n, n, n, s)
		5 00:10:22:914 00:10:37:636 (5, o, 3, y, n, n, n, n, n, n, n, n, s)

Code the structure of the study

id	task	trial
1 00:00:00:000 00:23:02:712 (screwtop, 100, 03/31/2014, 03/01/2012, m, 4.84, 5.00)	1 00:00:00:000 00:04:12:162 (i)	1 00:08:49:890 00:08:53:630 (1, u, b, n, y, n, n, n, n, n, n, n, s)
	2 00:06:07:152 00:08:27:722 (m)	2 00:09:05:938 00:09:09:848 (2, u, b, n, y, n, n, n, n, n, n, n, s)
+ Click to create new cell	3 00:08:47:578 00:23:02:712 (o)	3 00:09:30:044 00:09:36:130 (3, r, 9, y, y, n, n, n, n, n, n, n, s)
	+ Click to create new cell	4 00:09:47:520 00:09:56:190 (4, i, 14, y, n, n, n, n, n, n, n, n, s)
		5 00:10:22:914 00:10:37:636 (5, o, 3, y, n, n, n, n, n, n, n, n, s)

Code the structure of the study

id	task	trial
1 00:00:00:000 00:23:02:712 (screwtop, 100, 03/31/2014, 03/01/2012, m, 4.84, 5.00)	1 00:00:00:000 00:04:12:162 (i)	1 00:08:49:890 00:08:53:630 (1, u, b, n, y, n, n, n, n, n, n, n, s)
+ Click to create new cell	2 00:06:07:152 00:08:27:722 (m)	2 00:09:05:938 00:09:09:848 (2, u, b, n, y, n, n, n, n, n, n, n, s)
	3 00:08:47:578 00:23:02:712 (o)	3 00:09:30:044 00:09:36:130 (3, r, 9, y, y, n, n, n, n, n, n, n, s)
	+ Click to create new cell	4 00:09:47:520 00:09:56:190 (4, i, 14, y, n, n, n, n, n, n, n, n, s)
		5 00:10:22:914 00:10:37:636 (5, o, 3, y, n, n, n, n, n, n, n, n, s)

Code in passes

trial	momgesture	momtranscription
1 00:08:49:890 00:08:53:630 (1, u, b, n, y, n, n, n, n, n, n, n, s)	1 00:06:37:912 00:06:46:197 (n, .)	1 00:06:37:912 00:06:53:100 (Try this one. Let's see. There's a little open. Can you pull it up? Pull this way. It's gonna go.)
2 00:09:05:938 00:09:09:848 (2, u, b, n, y, n, n, n, n, n, n, n, s)	2 00:06:46:198 00:06:46:946 (t, y)	
3 00:09:30:044 00:09:36:130 (3, r, 9, y, y, n, n, n, n, n, n, n, s)	3 00:06:46:946 00:06:49:068 (s, .)	
4 00:09:47:520 00:09:56:190 (4, i, 14, y, n, n, n, n, n, n, n, n, s)	4 00:06:49:069 00:06:53:100 (a, y)	2 00:06:58:752 00:07:05:986 (Ok. Was it...? There you go.)
	5 00:06:58:752 00:07:05:986 (s, .)	
	6 00:07:12:144 00:07:18:365 (s, .)	

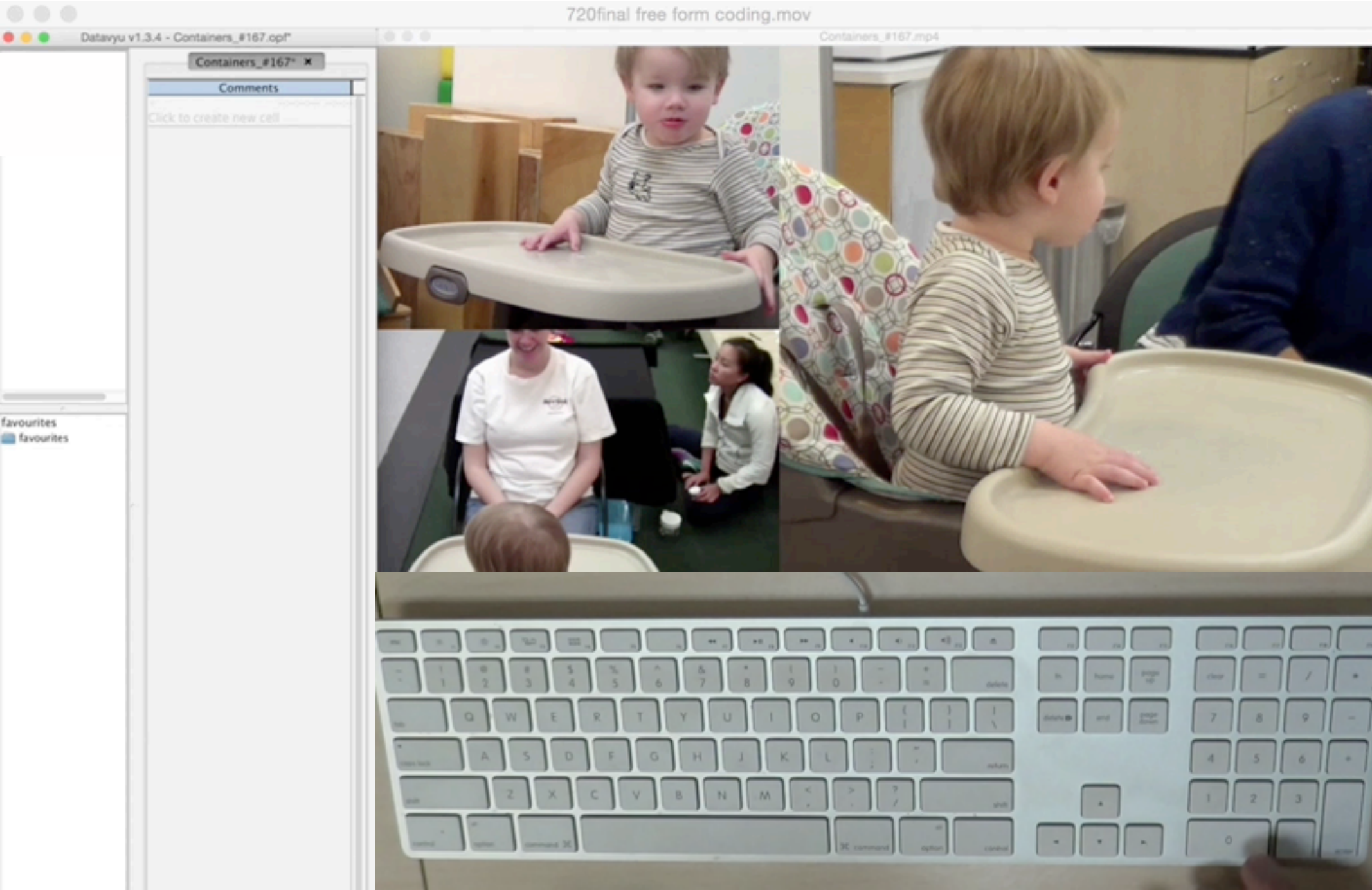
Code in passes

trial	momgesture	momtranscription
1 00:08:49:890 00:08:53:630 (1, u, b, n, y, n, n, n, n, n, n, n, s)	1 00:06:37:912 00:06:46:197 (n, .)	1 00:06:37:912 00:06:53:100 (Try this one. Let's see. There's a little open. Can you pull it up? Pull this way. It's gonna go.)
2 00:09:05:938 00:09:09:848 (2, u, b, n, y, n, n, n, n, n, n, n, s)	2 00:06:46:198 00:06:46:946 (t, y)	
3 00:09:30:044 00:09:36:130 (3, r, 9, y, y, n, n, n, n, n, n, n, s)	3 00:06:46:946 00:06:49:068 (s, .)	
4 00:09:47:520 00:09:56:190 (4, i, 14, y, n, n, n, n, n, n, n, n, s)	4 00:06:49:069 00:06:53:100 (a, y)	2 00:06:58:752 00:07:05:986 (Ok. Was it...? There you go.)
	5 00:06:58:752 00:07:05:986 (s, .)	
	6 00:07:12:144 00:07:18:365 (s, .)	

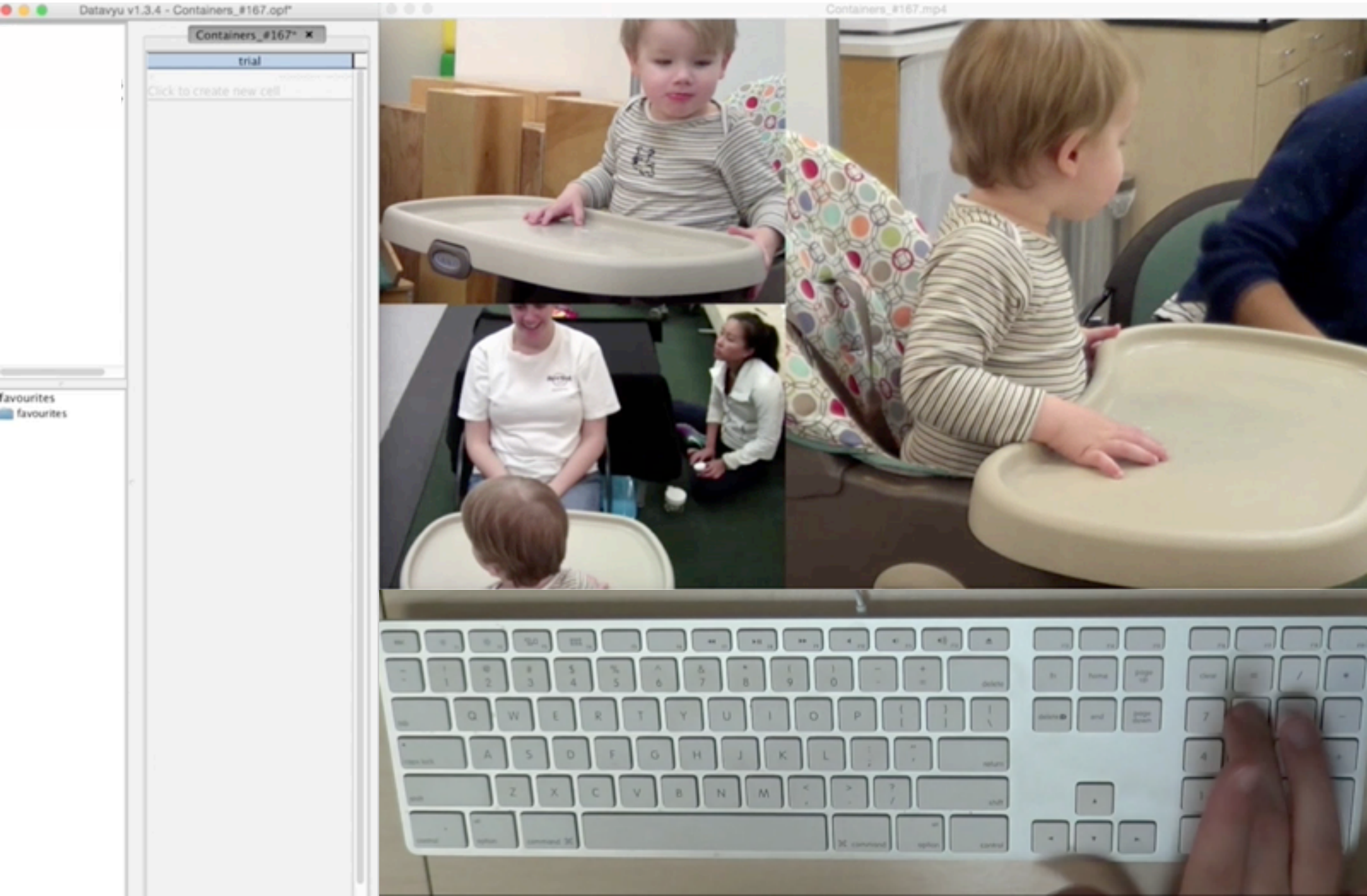
Write free-form comments

- A note by a coder
  - Free form
  - Formalized

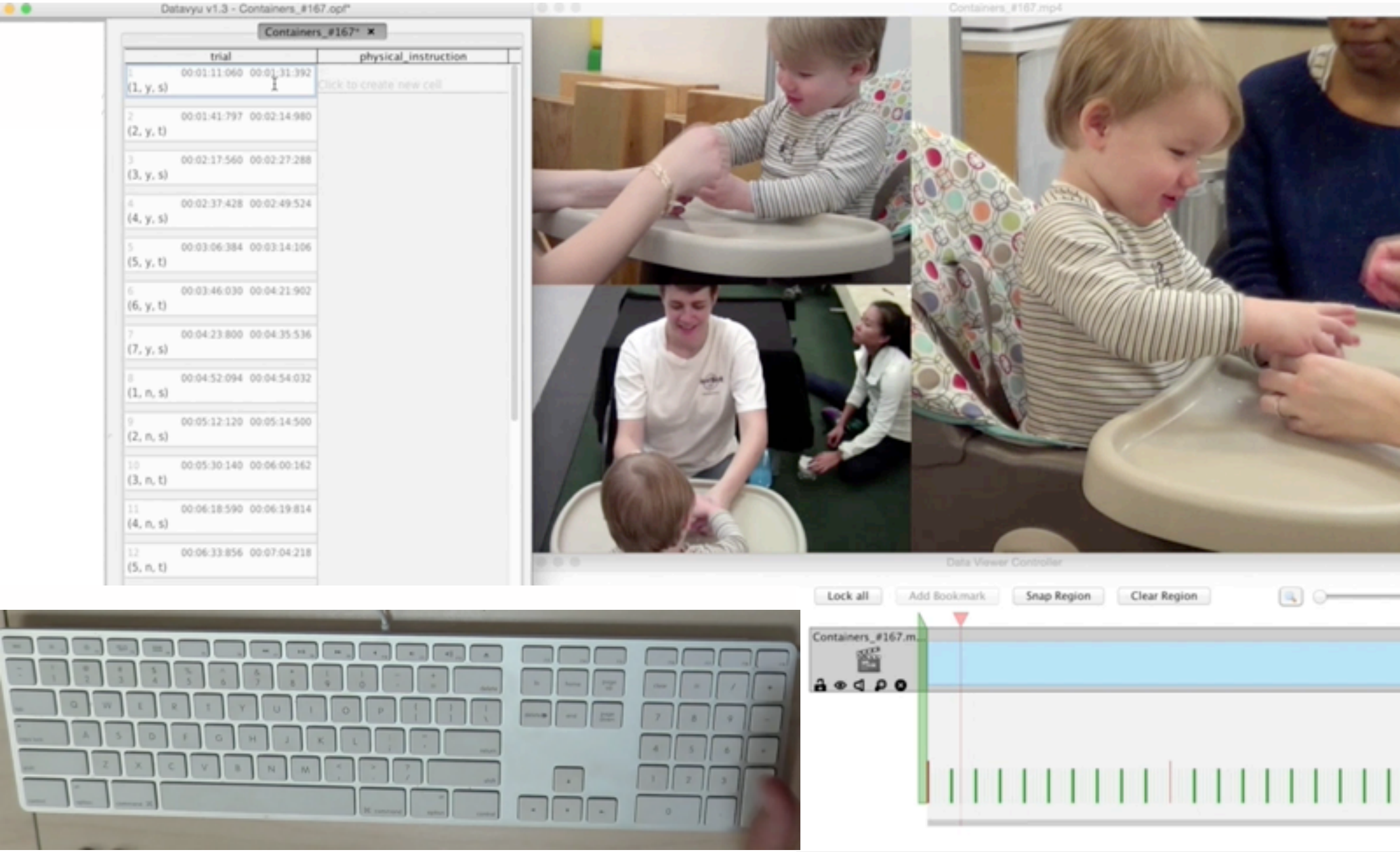
Write free-form comments



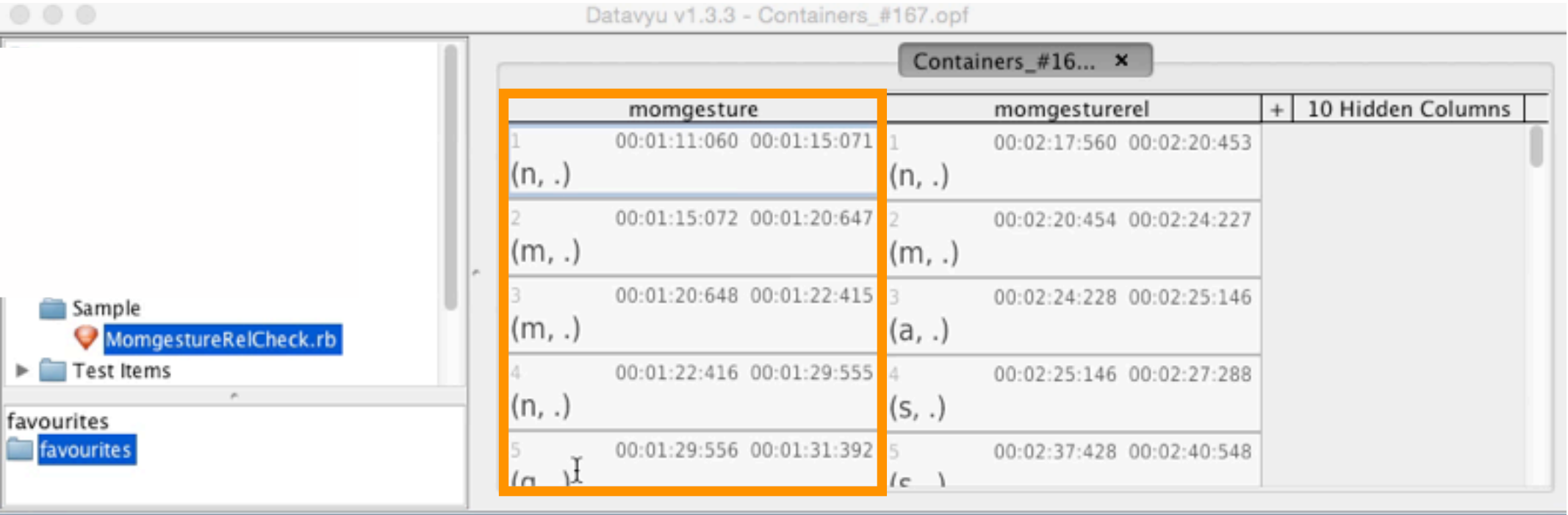
Code events


Datavyu v1.3.4 - Containers_#167.opf*
Containers_#167*
trial
Click to create new cell
favourites
favourites
Containers_#167.mp4

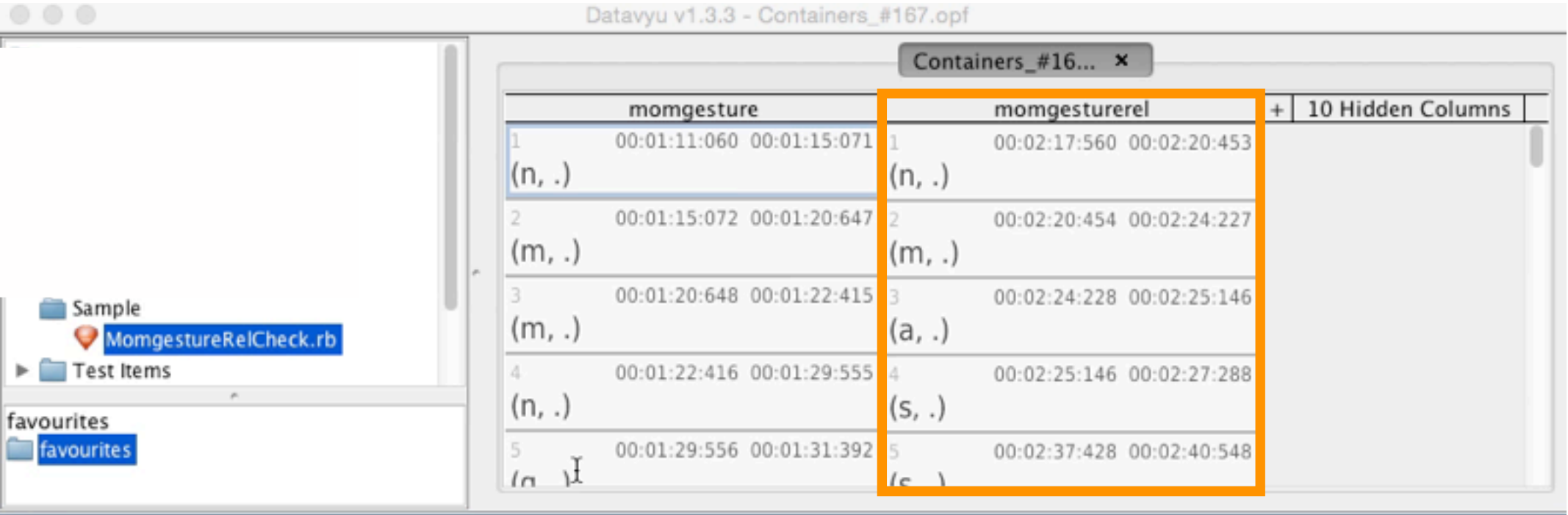
Build on prior passes



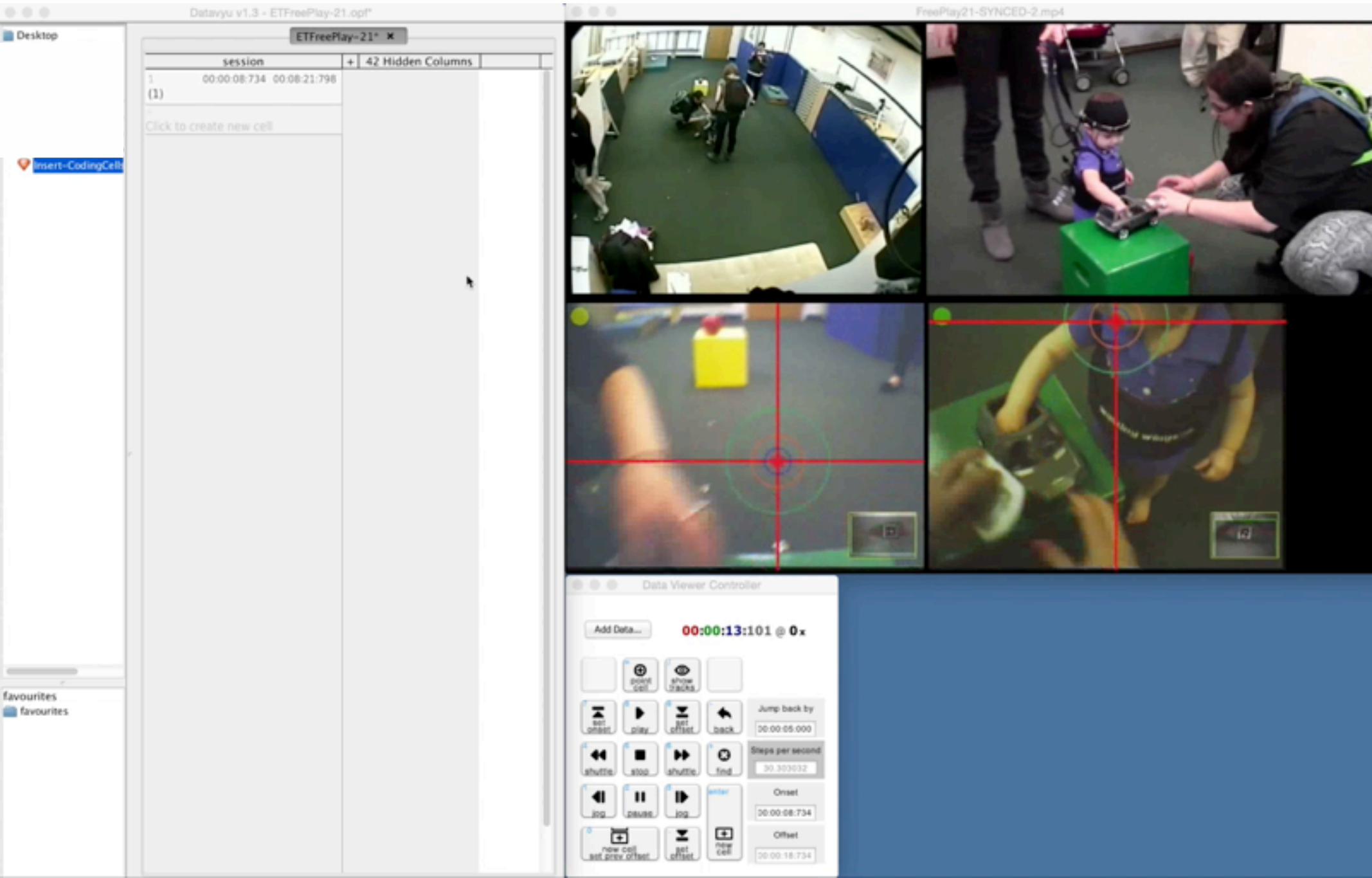
Check reliability



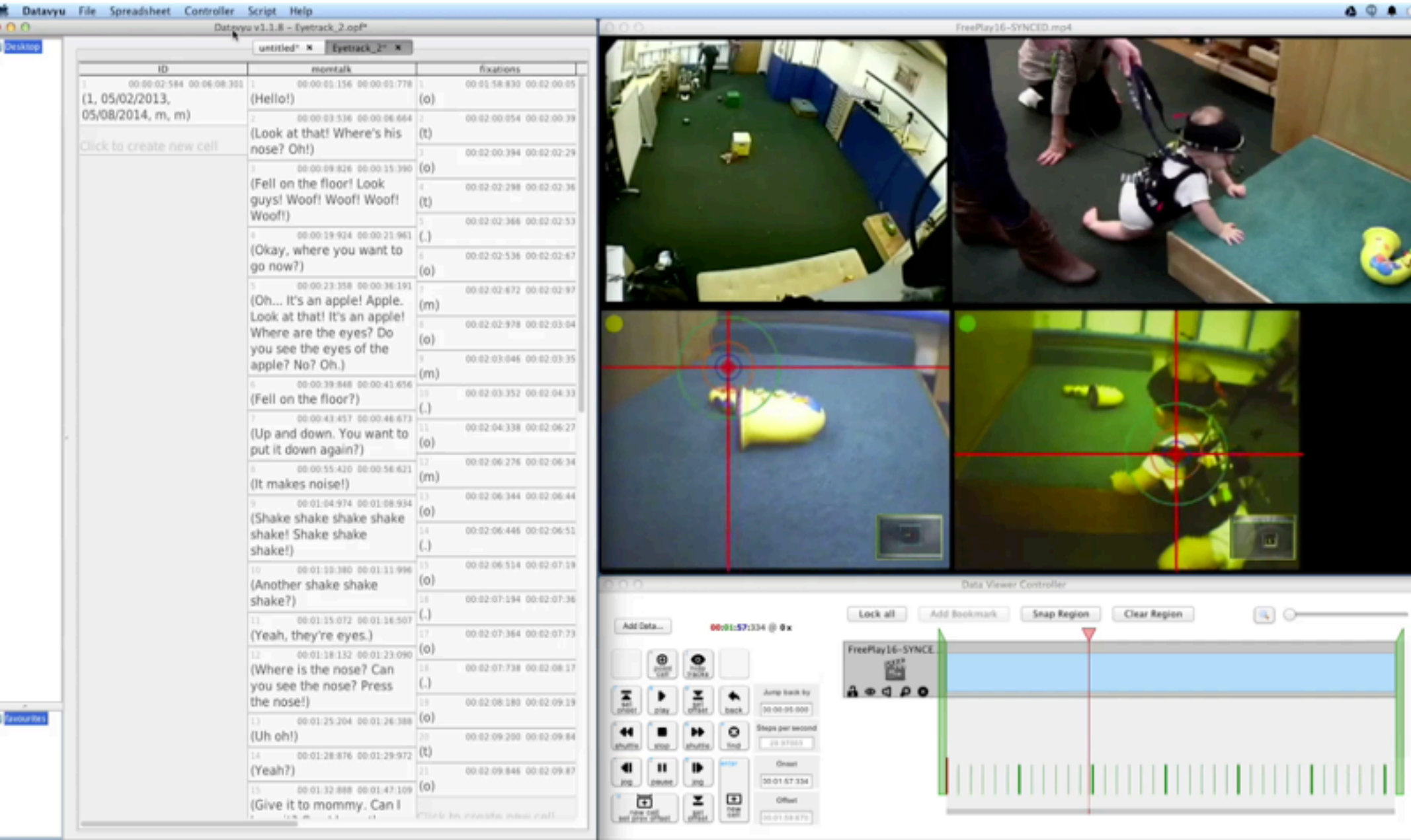
Check reliability



Capture time samples



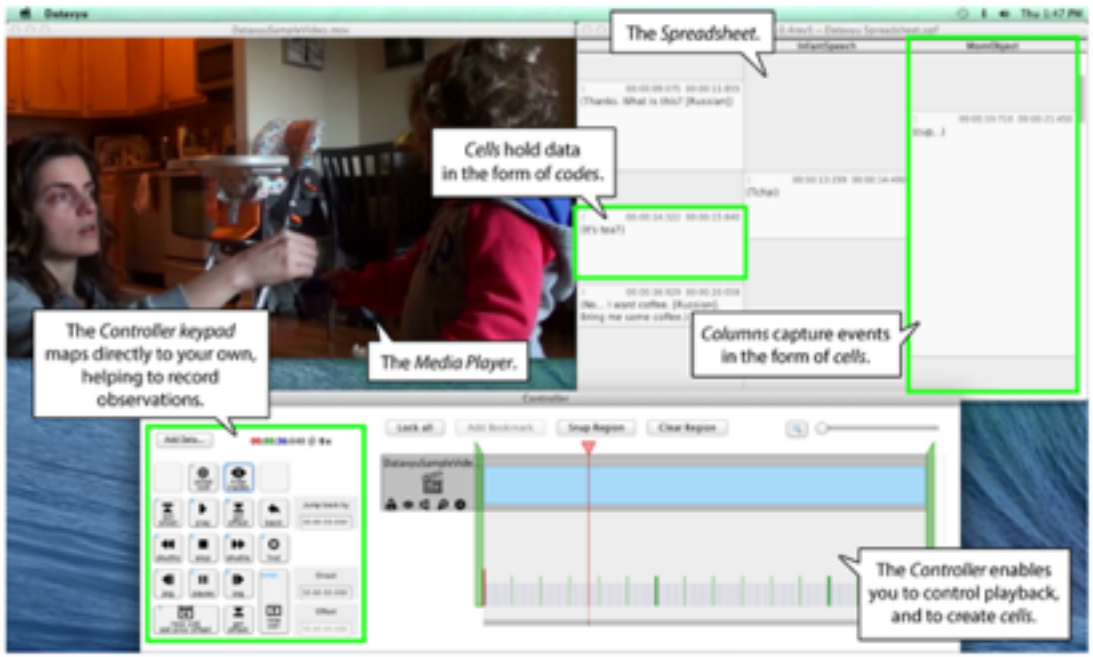
Exporting with Datavyu scripts



datavyu.com/user-guide/index.html

User Guide ▸

WELCOME TO DATAVYU'S DOCUMENTATION!



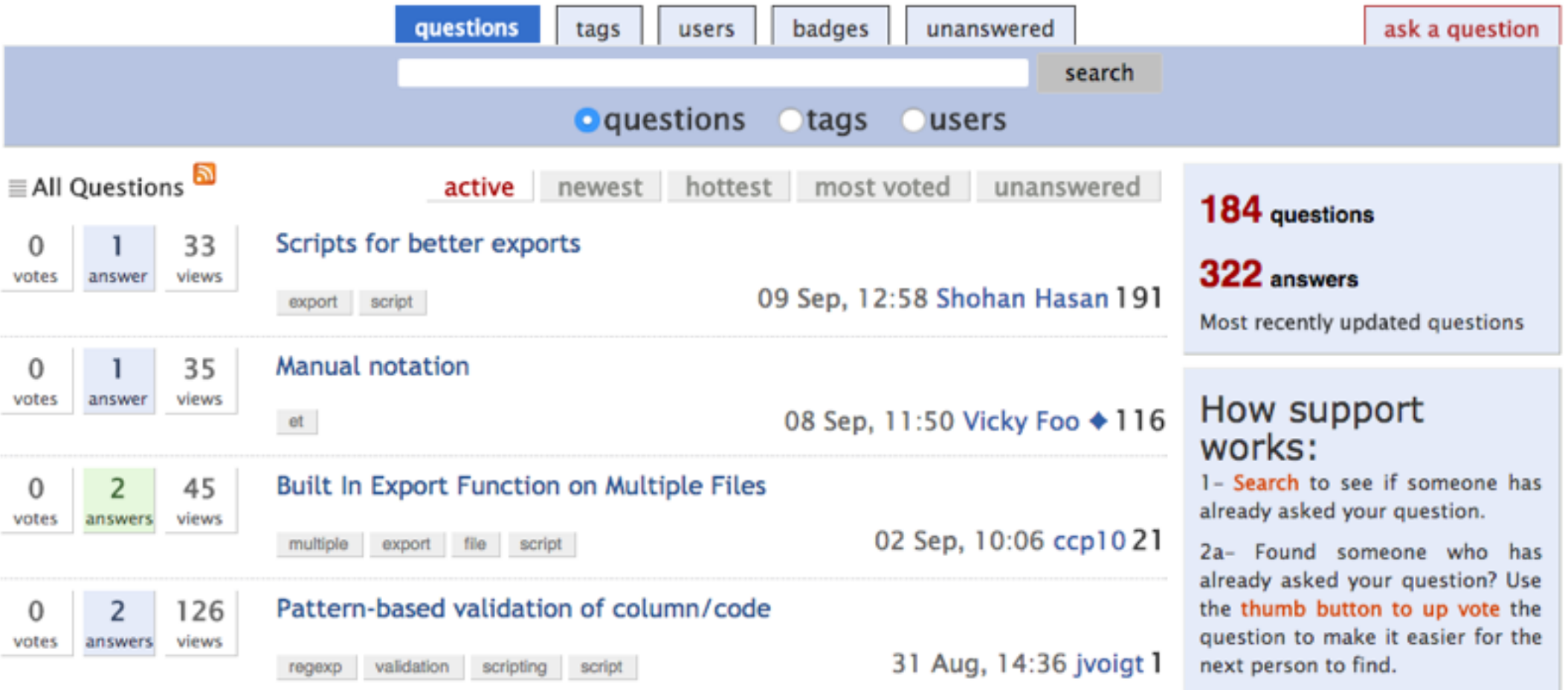
Datavyu is a complete software package for visualizing and coding behavioral observations from video data sources. Designed by – and for – behavioral scientists, Datavyu facilitates data coding and sharing through the ongoing Databrary data library project.

Datavyu

- Software Guide
- Ruby API
- Frequently Asked Questions
- Walkthrough Videos
- Coding Example

Download the docs for offline viewing.

datavyu.com/support



Drop-in support hours

- Mondays, 2 pm - 4 pm
- Thursday, 11 am - 12 pm
- https://bluejeans.com/databrary/


Questions?
Comments?

Agenda

12:00-1:00	Introduction to Databrary: Video reuse & sharing
1:00-2:00	Policies & best practices for sharing & managing video data
2:00-2:15	Break
2:15-3:00	Video Coding
3:00-4:00	**Questions & hands-on help**