

Child Temperament and Socio-Cognitive Processes: A Physiological and Behavioural Study

Professor Dr. Heather Henderson, University of Waterloo, Canada

The Lab:

Our lab's overarching goal is to learn about how children relate to other children and understand their social world. We use multiple assessment methods in our studies, including direct observations of children's interactions with adults and peers, parentand self-report measures, and physiological recordings.





The Project:

- Children between the ages of 9 and 11 (up to 12) participated in a study on temperament, cognitive processes, and social and emotional functioning.
- This study aimed to explore the relation between child temperament (particularly shyness) and children's processing of selfvs. other-related information and their joint influences on social outcomes.
- This study involved two visits to the lab, each about 2 hours long. In one visit, an electroencephalography (EEG) cap was used to measure brain waves while the child completed questionnaires and computer tasks.
- Two children (both of which have completed the EEG visit) were matched up in the second visit, and their heart rates were monitored while performing behavioral tasks.



The Challenge:

Precision

For many years we used paper and pen to code behaviors from video, which limited us to relatively gross measures of behavior frequencies and timing.

Efficiency

Coding by hand required large amounts of for reliability training and coding for SPSS, our research team.

<u>Flexibility</u>

We were limited to coding from designated coding stations in our lab which would have led to a complete shutdown of coding activity during COVID.

Analysis and reliability

Coded data were entered by hand into time requiring teams of coders to check each others' entry, subject to human error. Analyses were limited to frequency codes.

The Solution:



Precision physiology

We were able to directly link our physiological and behavioural data allowing for detailed analyses of linkages.

Advanced analysis of dyadic interactions State-space grid

Mangold User Support "Amazing support!"

Time-specific information

We were able to conduct detailed temporal analyses using codes such as: Latency, Duration, Contingency, Co-occurrence

Detailed analysis of inter-rater reliability

<u>Remote access</u> Ability to work from home with the support of Mangold



The Benefits:

Before Mangold INTERACT

Coder Name: Child IDs:; Triad #: Fet to know you Target	р	R F			DE DC														
1. Total time of 'Get to know you' segment		Start:	End:	Tota	[]: [TOTs15YearGTKY]													-	σ >
			Child 6	Start Edit	Analysis Insert Transform		View Ge												۵
Latency to first utterance				Files	Current Do			Observation	T	Display	Help								
3. First to make spontaneous utterance?	Yes / No				Merge Save Export Proper		Quick Sta	t Define Codes	Obsenation settings	Teleprompter	Documentation								
4. Latency to first spontaneous utterance					or audio file (click.' Open') or cho click.'Observation settings') to se		19												
Total time talking																			
Frequency of initiation (tally):				TOTs15YearGT	CY 🕄														
Share information				= = G, S,	E Date 22 H K > H	ClassXYZ	Seeks	Seek	Latency	Taking	Responses	Response	Response type	Shares	Initiation	Global Codes	Openness	Conversation	ISocial ease
				N 1	00:05:10:02 00:03:10:22		Seeks	Open			1			1	1	1			-
				S 2	00:05:10:02 00:05:10:02				First utterance										
Seek information				S 3	00:05:10:02 00:05:10:02				Spontaneous										
Seek information				24	00:05:16:02 00:05:17:27									Shares	Open				
				N 5	00:05:24:01 00:05:25:09		Seeks	Open											-
Frequency of response to #7 (tally): No response				6 7	00:05:30:08 00:05:33:06 00:05:41:08 00:05:44:09									Shares	Open				
				- Si	00:05:50:13 00:05:52:11		Seeks	0000						sneres	Open				
Response				N 9	00:05:56:24 00:05:58:04	-								Shares	To NTM				-
				Sa 10	00:06:06:03 00:06:08:07									Shares	Open				-
				Sa 11	00:06:09:12 00:06:12:29									Shares	Open				
				% 12	00:06:14:15 00:06:15:11									Shares	Open				
8. Frequency of response to #8(tally): No response				N 13	00:06:20:30 00:06:26:26									Shares	Open				
 Frequency of response to #s(tany). No response 				\$ 14	00:06:37:08 00:06:38:17		Seeks	Open						-					-
-				% 15	00:06:49:20 00:06:53:09 00:07:09:02 00:07:14:22									Shares Shares	Open				
Response				17	00:07:33:10 00:07:38:12						Responses	To NTF	Response	snares	open				
				\$ 18	00:07:45:04 00:07:45:22	-	-	1		Minc Talk	10090000		10000	-	-	-		-	-
				\$ 19	00:07:52:08 00:07:53:02	-				Misc Talk				-	-	-			
Global rating of openness to interaction				Sa 20	00:08:00:22 00:08:02:12		Seeks	To NTM											1
(e.g., physical orientation, eve contact)	1 2 3	4	5	Sa 21	00:08:03:12 00:08:07:00		Seeks	To NTM											1
(e.g., physical elitantical, eye contacty			-	N 22	00:08:13:28 00:08:14:13					Misc Talk									
10				- % 23	00:08:16:18 00:08:17:21		Seeks	To NTM											
 Global rating of social ease during interaction (e.g., affective flexibility, spontaneous <u>affect vs.</u> anxious 	1 2 3	4	5	\$ 24 \$ 25	00:08:24:06 00:08:25:15 00:08:27:04 00:08:29:16		Seeka	Open						Shares	Open				
behaviors)																			
 Global rating of appropriateness of conversation/interaction 	1 2 3	4	5				W	ith	Ma	ang	olo	d II	NT	ER.	AC'	Г			

Get to Know You Coding for Community Participants

The Feedback:



"Working with the Mangold team has revolutionized the way we run studies and analyze data in my lab. We've always been interested in the inter-relations between physiological systems, behavior and emotion in dyadic contexts. However, in the past we were largely estimating these relations over long periods of time. Using the Interact coding system has allowed us to efficiently characterize the precise time course of behaviors and emotions, their interrelations within an individual child and between children during dyadic interactions. We continually receive personalized customer support and know that the Mangold team will help us generate solutions to complex problems."

Professor Dr. Heather Henderson

University of Waterloo Department of Psychology Social Development Lab Waterloo, ON, Canada