

ATTACHMENT DISORDERED BEHAVIORS IN INSTITUTIONALIZED CHILDREN, CARDIAC ACTIVITY AND CAREGIVERS' NARRATIVE COMPETENCE

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Aims

- To examine, in a group of Portuguese institutionally-reared children, the relations among:
 - child's attachment disordered behaviors,
 - caregiver's narrative competence,
 - child's psychophysiological response (cardiac activity) during interaction tasks with the caregiver.

Participants

- **40 children** aged between 9-30 months and their institutional caregivers
 - 19 female; 21 male
 - Mean age: 19.9 M; SD=6.66
 - Age at time of admission: 8.35 M; SD=7.77
 - Length of time in institution: 11.53 M; SD=4.58
- Recruited in 12 institutions in the North of Portugal.

Measures

- **Disturbances of Attachment Interview – DAI** (Smyke & Zeanah, 1999):
 - Semistructured interview that aims to explore the presence of signs of disturbances of attachment.
 - Administered to institutional caregivers, accordingly to their proximity and knowledge of the child.
 - 3 sub-scales: Non-attachment/Inhibited, Indiscriminate Behavior, Secure Base Distortions.

Measures

- **RISE- Rating of Infant and Stranger Engagement** (Atlas-Corbett, Riley & Lyons-Ruth, 2005).
 - Assesses the relative engagement of children with stranger and mother (or caregiver of reference, in institutionalized children) observed throughout the SSP episodes
 - Low scores: clear preference for and greater engagement with the mother/caregiver.
 - High scores : very comfortable in the stranger's presence; accept their physical contact and comfort; display a greater engagement or brighter affect with her, comparing to the mother/ caregiver – **Indiscriminate attachment behavior**

Measures

- **Strange Situation Procedure** (Ainsworth et al., 1978)
- **2 Routine Interaction Tasks :**
 - **Caregiving Task:** the caregiver is prompted to engage in a conversation with the infant while feeding him/her a light meal.
 - **Play Task:** caregiver tells the child a story with a picture book.

Measures

- **Bio-Behavior Attachment Multimedia System**
 - **BioBeAMS 2.0** (Soares, Dias, Rangel, Martins, & Cunha, 2008)
 - Allows the collecting and treatment of bio-signal (ECG), video and audio data synchronized.
 - Integrates a video camera, a portable computer, a wireless biosignal acquisition box (which allows total liberty of movement by the child) and the BioBeAMS 2.0 software
 - Enables the identification of HR and HR variability (LF/HF ratio), a sign of sympathovagal balance.

Measures

- **Caregivers' narrative competence (Gonçalves et al., 2001)**
 - **Narrative Structure and Coherence** (focus on orientation, structural sequence, evaluative commitment, and integration).
 - **Narrative Process and Complexity** (focus on objectifying, emotional subjectifying, cognitive subjectifying, and metaphorizing).

Measures

- **Infant Characteristics Questionnaire - ICQ** (Bates, Freeland, & Lounsbury, 1979)
 - *Difficult Temperament*
- **Bayley Scales of Infant Development III** (Bayley, 2006)
 - *Cognitive level*
 - *Language*

Procedure

- **Strange Situation Procedure:**
 - SSP was carried out at the institutions, using a standardized environment (similar toys and equipment).
 - Since the baby experiences no stress from either the stranger's presence nor the caregiver's separation on episode 2, this has been defined as the baseline for the cardiac activity, decision which has been supported by other authors (Soares, Silva, Costa, & Cunha, 1999).
- **Interaction tasks** were carried out before the SSP
 - Before starting the procedure, children were connected to three electrodes (connected to the wireless signal acquisition box placed on a backpack).

RESULTS

1. Interaction Tasks
2. Strange Situation

Caregivers' narrative competence and child's cognitive and language development

Caregiving Task

	Bayley Cognitive (Percentile)	Bayley Language (Percentile)
Narrative Structure	-.02	-.17
Narrative Process	-.33	-.55*

* $p < .05$

(Spearman correlation)

Caregivers' narrative competence and child's cognitive and language development

Play Task

	Bayley Cognitive (Percentile)	Bayley Language (Percentile)
Narrative Structure	-.015	.23
Narrative Process	-.29	-.09

(Spearman correlation)

Caregiver's narrative competence and child's temperament

Caregiving Task

	ICQ Difficult	N	M (S.D.)	Z
Structure	Low	12	32.33 (11.75)	-1.459
	High	9	38.22 (4.94)	
Process	Low	12	7.50 (6.83)	-1.348
	High	9	12.67 (8.94)	

Caregiver's narrative competence and child's temperament

Play Task

	ICQ Difficult	N	M (S.D.)	Z
Structure	Low	13	45.85 (7.37)	-2.195*
	High	15	38.40 (8.36)	
Process	Low	13	20.62 (7.23)	-1.090
	High	15	17.20 (10.50)	

p < .05

Caregiver's narrative competence and child's cardiac activity (HR – baseline and LF/HF Ratio – baseline)

Caregiving Task

	HR - Baseline	LF/HF - Baseline
Narrative Structure	.14	.47
Narrative Process	.13	.42

(Partial correlation, controlling for age)

Caregiver's narrative competence and child's cardiac activity (HR – baseline and LF/HF Ratio – baseline)

Play Task

	HR – Baseline	LF/HF - Baseline
Narrative Structure	.36	.16
Narrative Process	.22	.35

(Partial correlation, controlling for age)

Attachment disordered behaviors (DAI) and cardiac activity (mean HR and LF/HF – baseline) during InteractionTasks

Caregiving Task

	HR - Baseline	LF/HF - Baseline
Non-attached / inhibited	-.07	-.15
Indiscriminate Behavior	.26	.47*
Secure-Base Distortions	-.11	.12

* p < .05

(Partial correlation, controlling for age)

Attachment disordered behaviors (DAI) and cardiac activity (mean HR and LF/HF – baseline) during Interaction Tasks

Play Task

	HR - Baseline	LF/HF - Baseline
Non-attached / inhibited	-.13	-.18
Indiscriminate Behavior	.37	.09
Secure-Base Distortions	.06	.35

(Partial correlation, controlling for age)

Indiscriminate Behavior (RISE) and cardiac activity (mean HR and LF/HF ratio) during Narrative tasks

Caregiving Task

	HR - Baseline	LF/HF - Baseline
RISE	.09	-.12

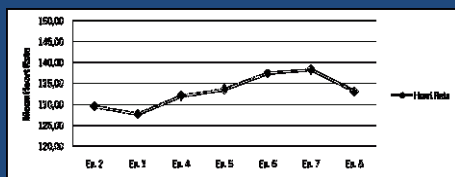
Play Task

	HR - Baseline	LF/HF - Baseline
RISE	-.03	-.45*

* $p < .10$

(Partial correlation, controlling for age)

Average Heart Rate during the SSP



Attachment disordered behaviors (DAI) and cardiac activity (Average HR – baseline) during SSP Episodes

	Non-attached / inhibited	Indiscriminate Behavior	Secure-Base Distortions
Episode 3 (A)	.10	.04	.06
Episode 3 (B)	.06	-.11	.02
Episode 3 (C)	.17	-.24	.11
Episode 4	.30	-.29	.43*
Episode 5	.11	-.35*	.31
Episode 6	-.02	-.32	.38*
Episode 7	.13	-.33	.26
Episode 8	.12	-.21	.16

$p < .10$; * $p < .05$

(Partial correlation, controlling for age)

Attachment disordered behaviors (DAI) and cardiac activity (Average LF/HF ratio – baseline) during SSP Episodes

	Non-attached / inhibited	Indiscriminate Behavior	Secure-Base Distortions
Episode 3 (A)	-.03	-.10	.40*
Episode 3 (B)	.05	-.07	.24
Episode 3 (C)	.13	-.08	.47*
Episode 4	.20	.11	.19
Episode 5	.13	-.25	.31
Episode 6	.27	-.09	.13
Episode 7	.17	-.01	.09
Episode 8	.23	-.20	.10

* $p < .10$; $p < .05$

(Partial correlation, controlling for age)

Indiscriminate behavior (RISE) and cardiac activity (Average HR – baseline) during SSP Episodes

	RISE
Episode 3 (A)	-.05
Episode 3 (B)	-.10
Episode 3 (C)	-.26
Episode 4	-.57*
Episode 5	-.18
Episode 6	-.20
Episode 7	-.37*
Episode 8	.07

$p < .10$; * $p < .05$

(Partial correlation, controlling for age)

Indiscriminate behavior (RISE) and cardiac activity (LF/HF ratio – baseline) during SSP Episodes

	RISE
Episode 3 (A)	-.26
Episode 3 (B)	-.16
Episode 3 (C)	-.41 *
Episode 4	-.12
Episode 5	-.28
Episode 6	-.08
Episode 7	-.05
Episode 8	-.16

p < .10; * p < .05

(Partial correlation, controlling for age)

Discussion

- Preliminary results on an ongoing study...
- Caregivers' narrative competence seems relevant to the quality of interaction with institutionalized children
 - Negative association between caregivers' narrative complexity and children's language level suggests a higher stimulation from the caregivers when verbally interacting with these children in a structured task.
 - Children with less difficult temperament have caregivers who tell more structured narratives; that may promote children's narrative development.

Discussion

- Structured interaction tasks and cardiac activity (HR variability) relate differently with DAI indiscriminate behavior and with RISE:
 - Need for a behavioral observation measure focusing specifically on the quality of the interaction between child and caregiver during these narrative structured routine tasks.

Discussion

- Indiscriminate Behavior (DAI & RISE) related to cardiac activity during the SSP
 - Decreased HR during interaction with stranger (episodes 4 and 7), suggesting lower activation/stress in the presence of the stranger, and supporting the indiscriminate orientation from the child towards different adults;
 - Decreased LF/HF ratio when caregiver leaves (final part of Episode 3), suggesting reduced sympathetic activity.

Final Comment

- Strange Situation scoring still in progress...
- Need to go further on data analysis with more participants – data collection and analysis is in progress