

Individual differences in children's self-regulation in response to classroom activities and interactions

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SELF-REGULATION



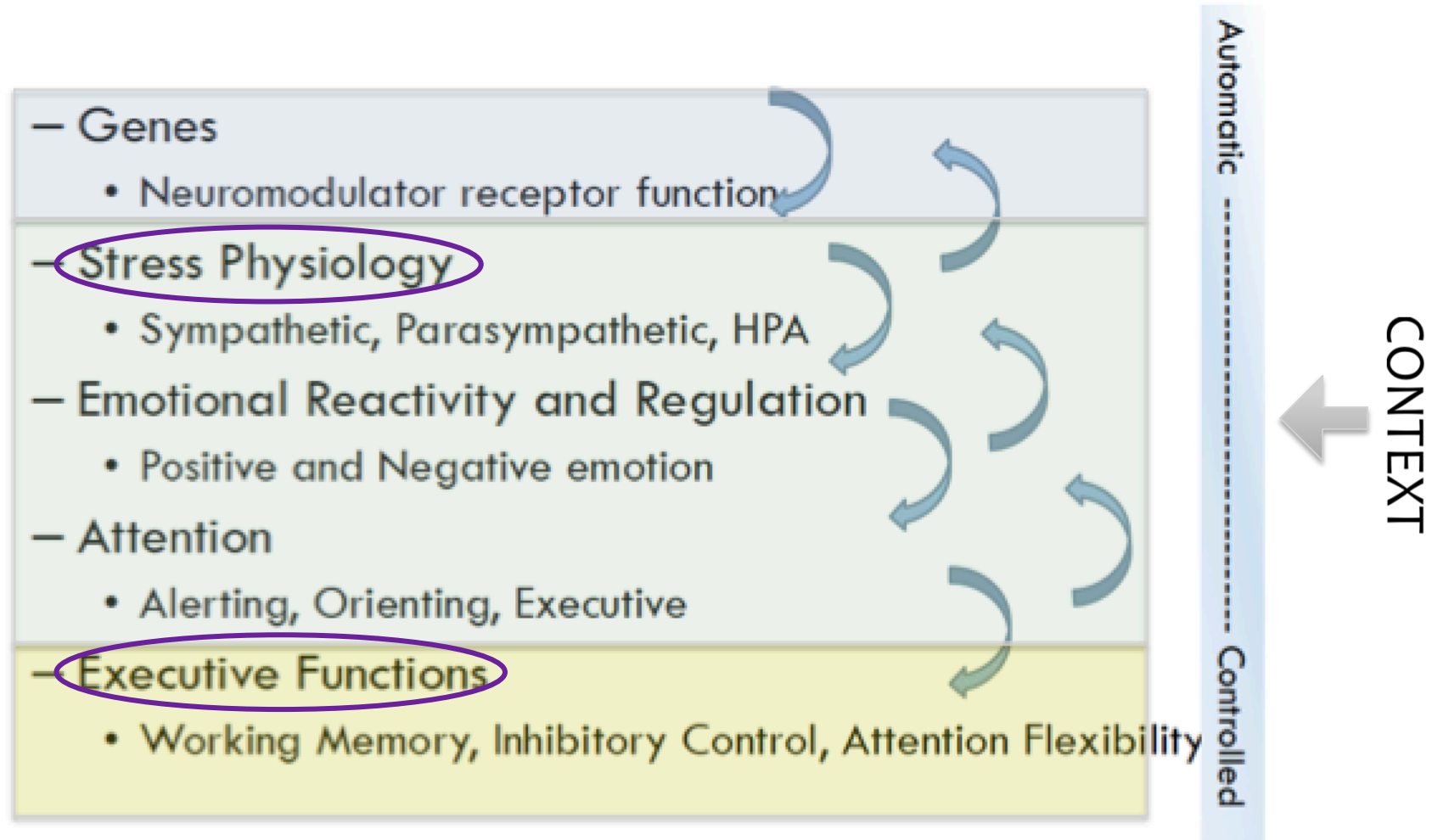
- A person's attempts to voluntarily regulate cognition, behavior, and emotion to promote effective functioning and positive adaptation

Self-regulation

- “occurs when a person ... attempts to change the way he or she would otherwise think, feel, or behave”
- “involves having the person override ... simple responses and effortful implement a different response”

THE ARCHITECTURE OF SELF-REGULATION

(BLAIR & URSACHE, 2011)



SELF-REGULATION PROCESSES

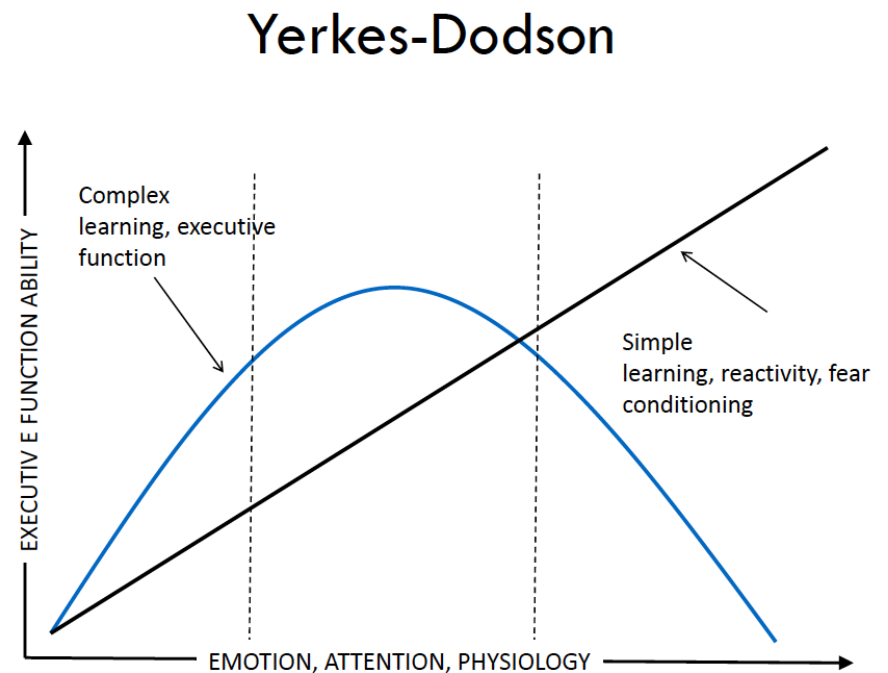


- *Lower order processes*: Regulation of the stress response system
 - components: parasympathetic, sympathetic, and HPA axis
- *Higher order processes*: Executive functions
 - attention, working memory, and inhibitory control
 - considered as cognitive foundation of the ability to apply attention, working memory, and inhibitory control to behavior

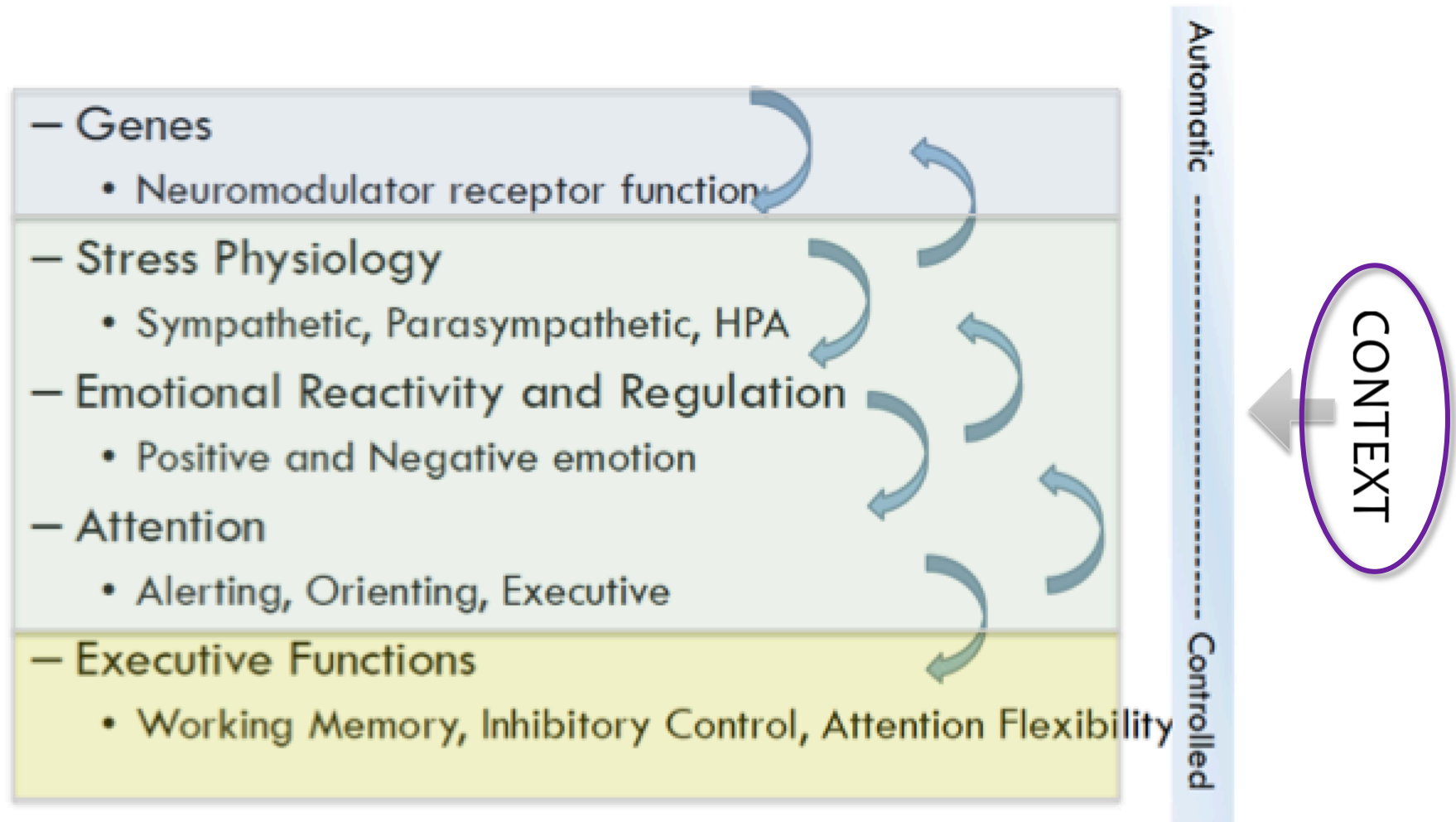
SELF-REGULATION PROCESSES



- Alteration of stress response physiology influences neural activity in the prefrontal cortex that underlies executive function (Blair & Raver, 2012)
- HPA dysregulation (very high or very low levels of stress response) are associated with deficits in executive functioning (Blair & Ursache, 2011)



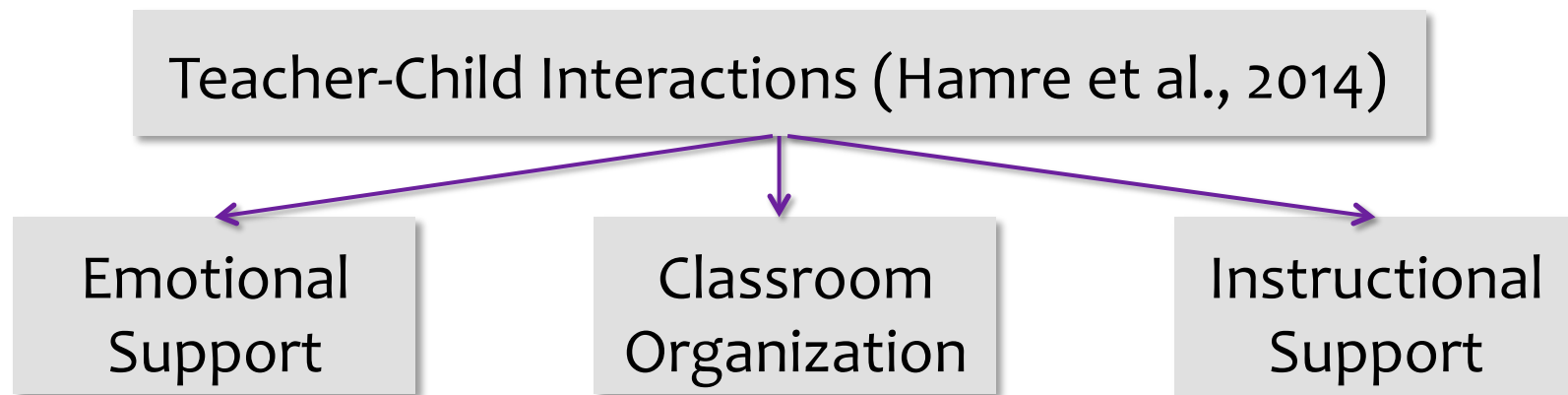
THE ARCHITECTURE OF SELF-REGULATION



TEACHER-CHILD INTERACTIONS



- Adults play a critical role in supporting the development of self-regulation skills
- Importance of high-quality classroom environment
 - Teacher-child interactions as primary mechanisms through which children learn in classrooms



THE PRESENT STUDY



- Explore individual differences in relations between lower and higher order self-regulation processes
- Investigate whether or not teacher-child interactions differentially affect lower and higher order processes of self-regulation

SAMPLE



- 141 children (45% girls); $M_{age} = 63$ months ($SD = 4.9$)
- International Sample from the UAE:
 - Arab (58%), American (17%), Indian (9%), Asian (7%), European (6%), African (2%), and Australian (1%)
- Family SES: primarily middle-class background
- From 27 kindergarten classrooms
 - Predominately teachers from the UK and the U.S.
 - All female teachers; $M_{age} = 36$ years ($SD = 9.2$); on average, 10 years of teaching experience in ECE ($SD = 8.0$)

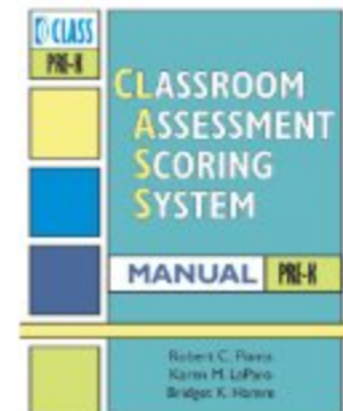
MEASURES



- Stress response physiology
 - Saliva and hair cortisol
- Executive function battery
 - Pencil Tapping, DCCS, Number recall
- Quality of teacher-child interactions
 - Classroom Assessment Scoring System CLASS Pre-K

Rating: 10 items. Time sampling with cycles of 20-min observation and 10-min scoring.

Scale: 1 – 7 (1,2 = *low*, 3,4,5 = *mid*, 6,7 = *high*)



RESULTS: RELATIONS BETWEEN LOWER AND HIGHER ORDER SELF-REGULATION PROCESSES



Table 1. Associations between lower and higher order self-regulation processes

		1.	2.	3.	4.	5.
Lower order self-regulation processes (Stress response regulation)	1. Saliva Cortisol ^a	--				
	2. Hair Cortisol ^a	.45*	--			
Higher order self-regulation processes (Executive functions)	3. Working Memory	.04	-.34*	--		
	4. Attention	-.00	-.03	.91**	--	
	5. Inhibitory Control	-.01	-.31*	.86**	.89**	--

Note. * $p < .05$. ** $p < .01$.

^a Overall cortisol output (higher scores reflect higher cortisol levels).

RESULTS: DESCRIBING THE QUALITY OF TEACHER-CHILD INTERACTIONS

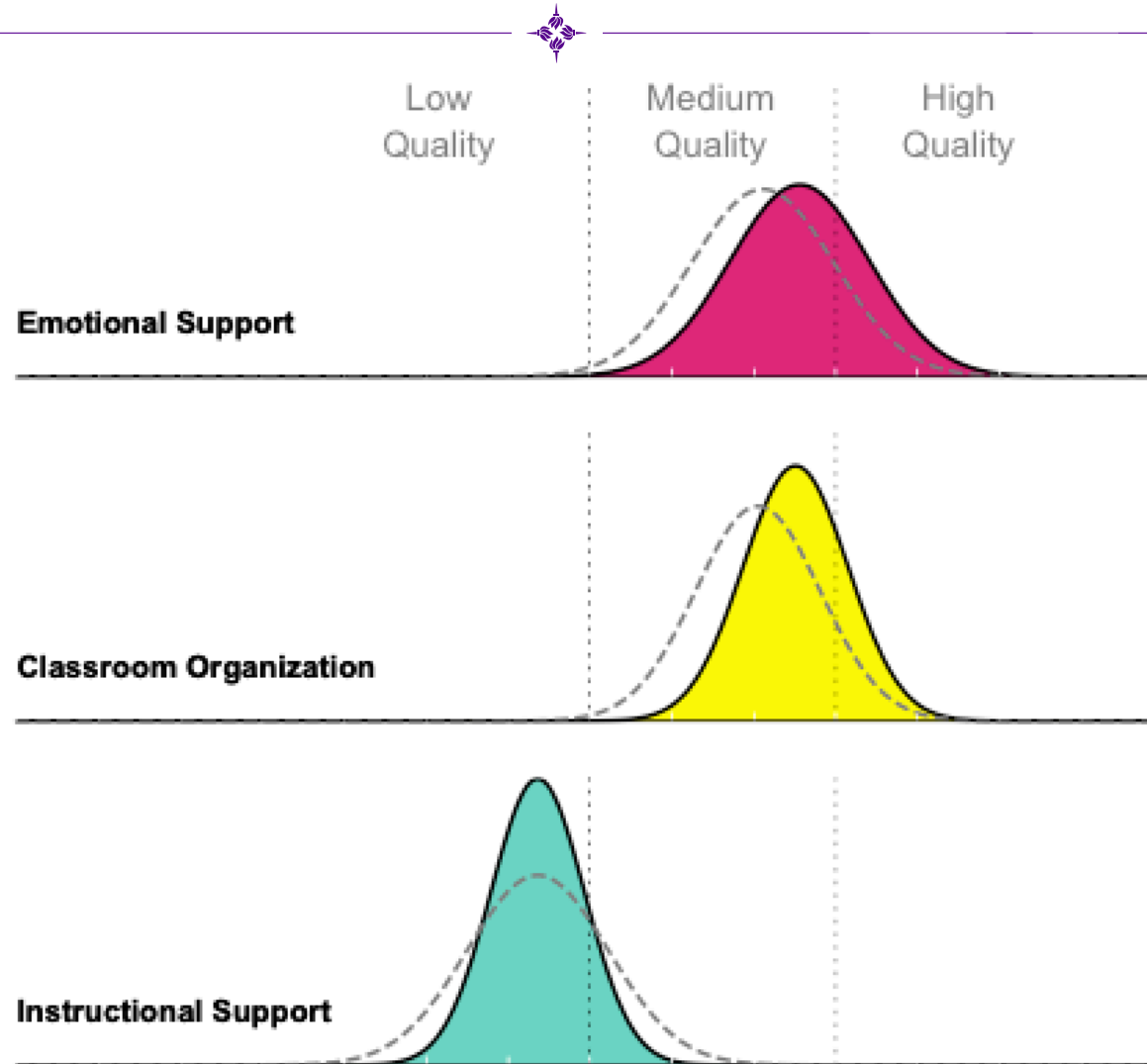


Figure 1. Average ratings of interactions. Colored area: UAE data. The area under the dashed lines represents USA data for comparison (Hamre, Hatfield, Pianta, & Jamil, 2014).

RESULTS: RELATIONS BETWEEN TEACHER-CHILD INTERACTIONS AND SELF-REGULATION PROCESSES



Table 2. *Multilevel models of domains of teacher-child interactions on lower and higher order self-regulation processes*

	Lower order self-regulation processes (Stress response regulation)		Higher order self-regulation processes (Executive functions)		
	Saliva Cortisol ^a	Hair Cortisol ^a	Working memory	Attention	Inhibitory Control
Emotional Support	-.19+	-.34*	.74**	.70**	.67**
Instructional Support	-.24*	-.31*	.75**	.55**	.55**
Classroom Organization	-.08	-.01	.67**	.81**	.60**

Note. Controlling for child age and gender. + $p < .10$. * $p < .05$. ** $p < .01$.

^a Overall cortisol output (higher scores reflect higher cortisol levels).

DISCUSSION



- High correlations among higher order self-regulation measures support the assumption of a single latent executive function construct in early childhood (Hughes et al., 2010; Wiebe et al., 2008, 2011)
- Moderate interrelations between lower and higher order self-regulation processes might be due to the age of the children
- Teacher-child interactions provide an important context for children's self-regulation, in particular higher order self-regulation processes

CONCLUSION



- Investigate the relation of lower order self-regulation processes to the developmental trajectories of higher order self-regulation processes
- Enhancing the quality of the learning environment to promote children's self-regulation skills
 - Important to make high-quality classrooms accessible to all children
 - Determine which types of educational experiences lead to optimal levels of arousal and engagement



THANK YOU!

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