

Effects of Verbal & Non-Verbal Communication on Emotion Regulation in Early Childhood

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Abstract

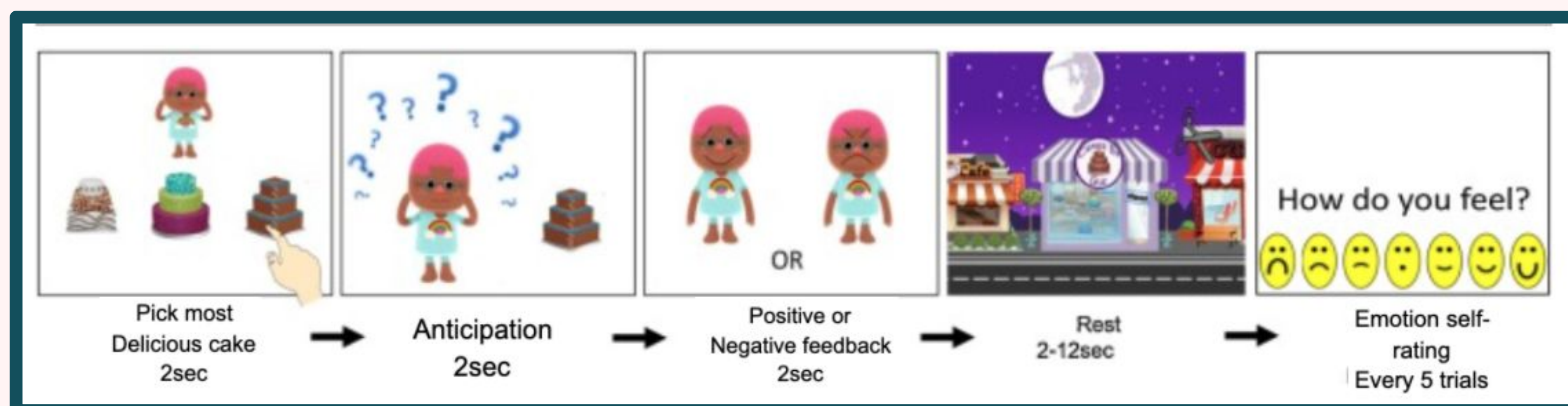
Children use behavioral strategies (e.g., verbal and non-verbal communication) to regulate their emotions¹. Research has found language ability² and non-verbal³ communication (e.g., gaze) to be predictors of children's emotion regulation (ER) skills. However, it is unclear how verbal and non-verbal communication affect children's real time ER.



This study aimed to examine whether verbal and non-verbal communication are predictors of adaptive ER. Seventy-eight children (ages 3.5-5) completed a frustration-eliciting task⁴ while neural and physiological activity were simultaneously recorded. Caregivers rated children's ER⁵. Verbal communication predicted higher PFC activation, while non-verbal communication predicted lower PFC activation following negative feedback ($p < 0.05$). Results suggest that verbal behaviors are adaptive, while non-verbal behaviors are maladaptive predictors of neural activity.

Methods

- Children completed the frustration task “incredible cake kids”⁴ on a touchscreen computer.
 - The task consisted of choosing the “most delicious cake” for virtual customers, who gave predetermined positive or negative feedback.



- A coding system was created to code children's verbal and non-verbal responses to frustration. Behaviors were defined as follows:
 - Verbal Behaviors: (speech); number of words, sentences and repetition.
 - Non-Verbal Behavior: (gaze); instances of eye contact.
- Participant's prefrontal cortex (PFC) activation and physiological reactivity and recovery were recorded via functional near-infrared spectroscopy (fNIRS) and Galvanic Skin Response, respectively.
- Caregivers completed the Child Behavior Questionnaire⁵.



Results

Table 1: Linear Regressions Between Verbal & Non-Verbal Behaviors, and Neural Activation

	Stand. Beta	Std. Error	t	Sig.	R-Squared
Left PFC Activation					
Verbal Behavior	0.3	0.4	2.2	0.03*	
Non-Verbal	-0.3	0.7	-2.4	0.01**	
Right PFC Activation					
Verbal Behavior	0.3	0.4	2	0.05***	
Non-Verbal	-0.2	0.7	-1.6	0.1	

Note: Sig. at the *0.05, **0.01, and ***marginal level

Table 1: Results show that verbal behavior significantly, positively predicted high PFC activation, while non-verbal behavior significantly, negatively predicted low PFC activation following negative feedback ($p < 0.05$).

Table 2: Crosstabulation

		Non-Verbal		
		No	Yes	Total
Verbal	No	11	12	23
	Yes	46	9	55
Total		57	21	78

Table 2: We found that children expressed mostly verbal or non-verbal behaviors ($N=58$), not both ($N=9$).

Table 3: Chi-Square Test

	Value	df.	Asymp. Sig. (2 sided)
Pearson's Chi-square	10.571	1	0.001
Continuity Correction	8.829	1	0.003
Likelihood Ratio	10.006	1	0.002
Linear-by-Linear Assoc.	10.435	1	0.001

Table 3: The results of the Chi-Squared Test of Association (2x2), show there's a significant association between verbal and non-verbal communication ($X^2(1,78) = 10.57, p = 0.001$).

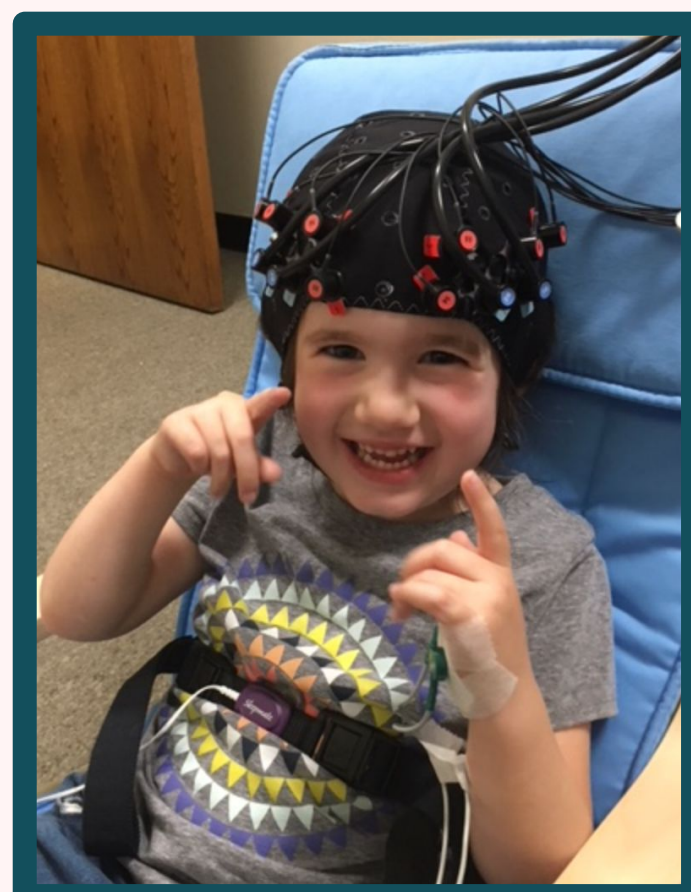
Discussion

In general, our findings suggest that children use more verbal than non-verbal communication to express frustration.

- Results suggest that verbal behaviors lead to better emotion regulation; this may be a result of active processing which assumes that attention and plasticity affect how listeners cope with adverse situations⁷.
- Lastly, non-significant results were found when comparing verbal and non-verbal communication with physiological reactivity (GSR) or parents ratings. Further research is needed in order to understand this lack of association.

Future Directions

- Focus on the effects of verbal and non-verbal effects as a result of positive feedback.
- Further research is needed to investigate why verbal behaviors predict effective ER, while non-verbal behaviors do not.



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