

### INTRODUCTION

- Children who lack self-regulation have been found to be higher in both internalizing behaviors, such as anxiety and depression, and externalizing behaviors, such as aggression and defiance.
- Less is understood about how self-regulation is related to changes in internalizing and externalizing behaviors examined from toddlerhood through school-age.
- Understanding the developmental course of these behaviors and how self-regulation is related to these changes can inform early intervention strategies.
- The goal of the current study was to examine how self-regulation related to changes in internalizing and externalizing behaviors across early childhood.

### METHODS

#### Participants

	Year	N	<i>M</i> <sub>age</sub> (years)	<i>SD</i> <sub>age</sub> (years)	Sex (boys)
Time – 1	2005	140	2.67	0.13	51.43%
Time – 2	2008	116	4.91	0.30	53.25%
Time – 3	2012	95	8.80	0.41	52.63%

#### Demographics

Category	Response
Race	White (95.7%)
Family Income	\$45,000 to \$60,000 ( <i>M</i> = 4.44, <i>SD</i> = 1.67 on a 7-point scale)
Maternal Education	College degree or higher (71.4%)
Maternal Marital Status	Married or living with their children's father (96.4%)
Siblings	None (21.4%), One (52.1%), Two or more (26.4%)

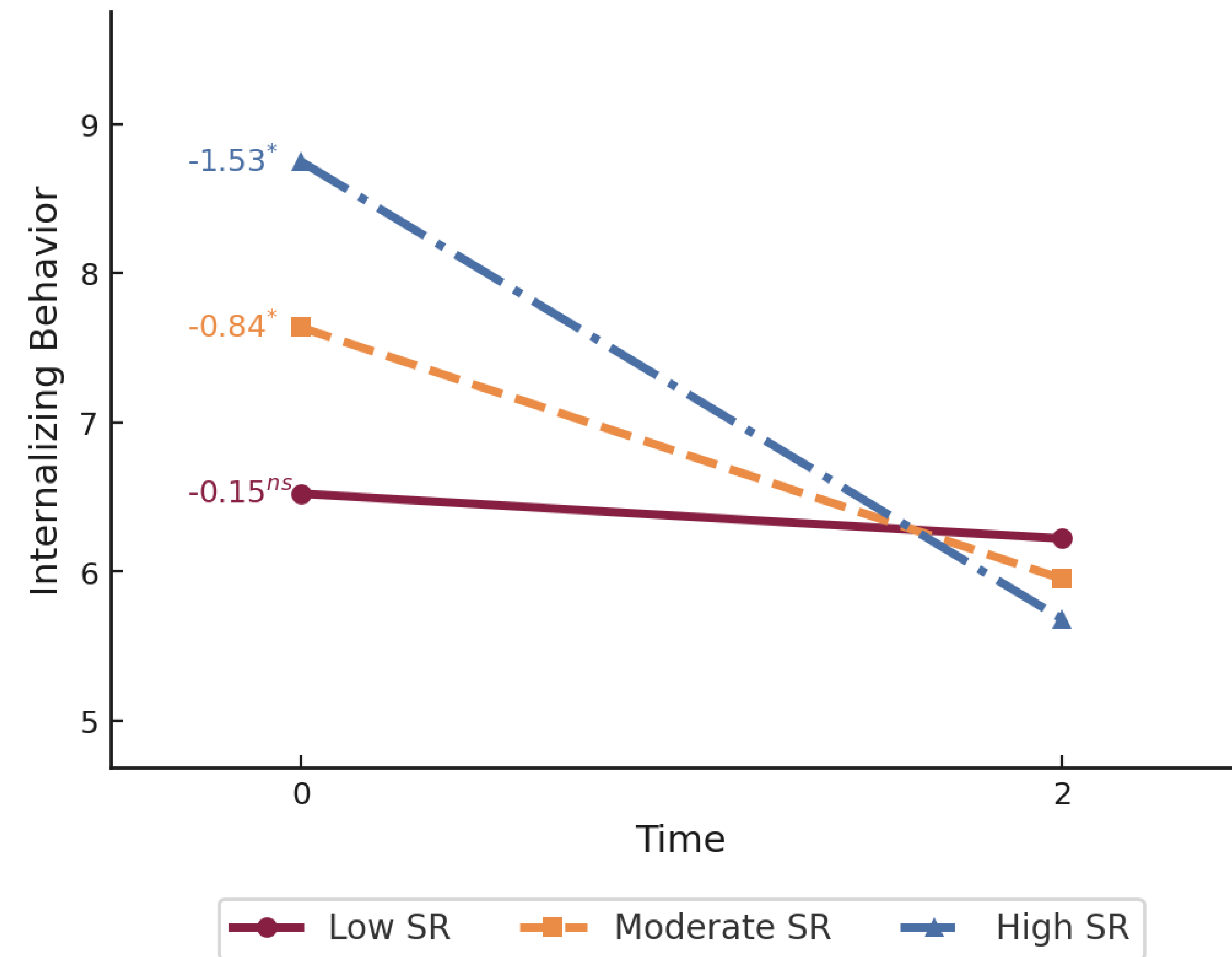
Note: Mothers reported demographics at T1 (*N* = 140)

#### Measures

	Self-Regulation	Internalizing & Externalizing Behaviors
Time – 1	Walk-a-Line <sup>1, 2</sup>	CBCL for Ages 1½–5 <sup>a, b</sup>
Time – 2	Drawing <sup>1, 2</sup>	CBCL for Ages 1½–5 <sup>a, b</sup>
Time – 3	Trail-Making <sup>1, 3</sup>	CBCL for Ages 6–18 <sup>a, c</sup>

Notes:<sup>1</sup> Behavioral assessment; <sup>2</sup> Kochanska et al., 1996, 2000; <sup>3</sup> Espy & Cwik, 2004; <sup>a</sup> Child Behavior Checklist; maternal-report. <sup>b</sup> Achenbach & Rescorla, 2000; <sup>c</sup> Achenbach & Rescorla, 2001.

### RESULTS



**Figure 1.** Internalizing Behaviors as a Function of Self-Regulation and Time Points

Notes: SR = Self-Regulation; ns = not significant; \* *p* < .05.

**Internalizing behaviors declined over time for children with average and high levels of self-regulation.**

**Externalizing behaviors decreased over time, which was not predicted by self-regulation.**

**Table 1.** Multilevel Results for Internalizing and Externalizing Behaviours as a Function of Self-Regulation, Time Points, and Their Interaction

	Internalizing Behavior			Externalizing Behavior		
Predictor	<i>b</i>	<i>SE</i>	<i>p</i>	<i>b</i>	<i>SE</i>	<i>p</i>
Intercept	7.64	0.62	<.001	13.16	0.81	<.001
SR	0.06	0.03	.08	0.06	0.04	.21
Time	-0.84	0.41	.04	-3.27	0.57	<.001
SR x Time	-0.04	0.02	.04	-0.04	0.02	.08

### RESULTS (Cont'd)

**Table 2.** Descriptive Statistics and Correlations for Self-Regulation, Internalizing and Externalizing Behaviours at Each Time Point

Variable	T	1	2	3	4	5	6	7	8	9
SR	1	—								
Int. Beh.	1	-.13	—							
Ext. Beh.	1	-.11	.64**	—						
SR	2	.05	-.15	-.09	—					
Int. Beh.	2	.02	.59**	.43**	-.09	—				
Ext. Beh.	2	.01	.41**	.61**	-.03	.67**	—			
SR	3	-.29**	.00	-.10	-.14	.16	.10	—		
Int. Beh.	3	-.04	.40**	.35**	-.01	.62**	.54**	.07	—	
Ext. Beh.	3	-.01	.28**	.40**	-.03	.45**	.67**	.01	.60**	—
<i>M</i>		0.11	6.67	12.27	12.58	6.92	10.04	38.11	5.57	5.86
<i>SD</i>		3.29	5.10	7.28	11.75	5.50	7.48	16.45	5.48	6.62

Notes: SR = Self-Regulation. Int Beh = Internalizing Behaviors. Ext Beh = Externalizing Behaviors. \*\* *p* < .01.

### DISCUSSION

- Examining how these behaviors change over time and their relations with self-regulation can provide a better understanding of the risk and protective factors that shape children's behavioral adjustment.
- Higher levels of self-regulation were associated with decreases in internalizing behaviors across childhood but were not associated with externalizing behaviors.
- Internalizing behaviors may be more closely linked to attentional aspects of self-regulation, whereas externalizing behaviors might be influenced more by social or environmental factors.
- The decline in externalizing behaviors over time is normative and may be driven by increasing cognitive maturity and environmental reinforcements, including socialization, rather than individual differences in self-regulation.
- Alternative measures, such as delay of gratification tasks, may better capture self-regulation processes relevant to externalizing behaviors, particularly those related to impulsivity and inhibitory control.

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