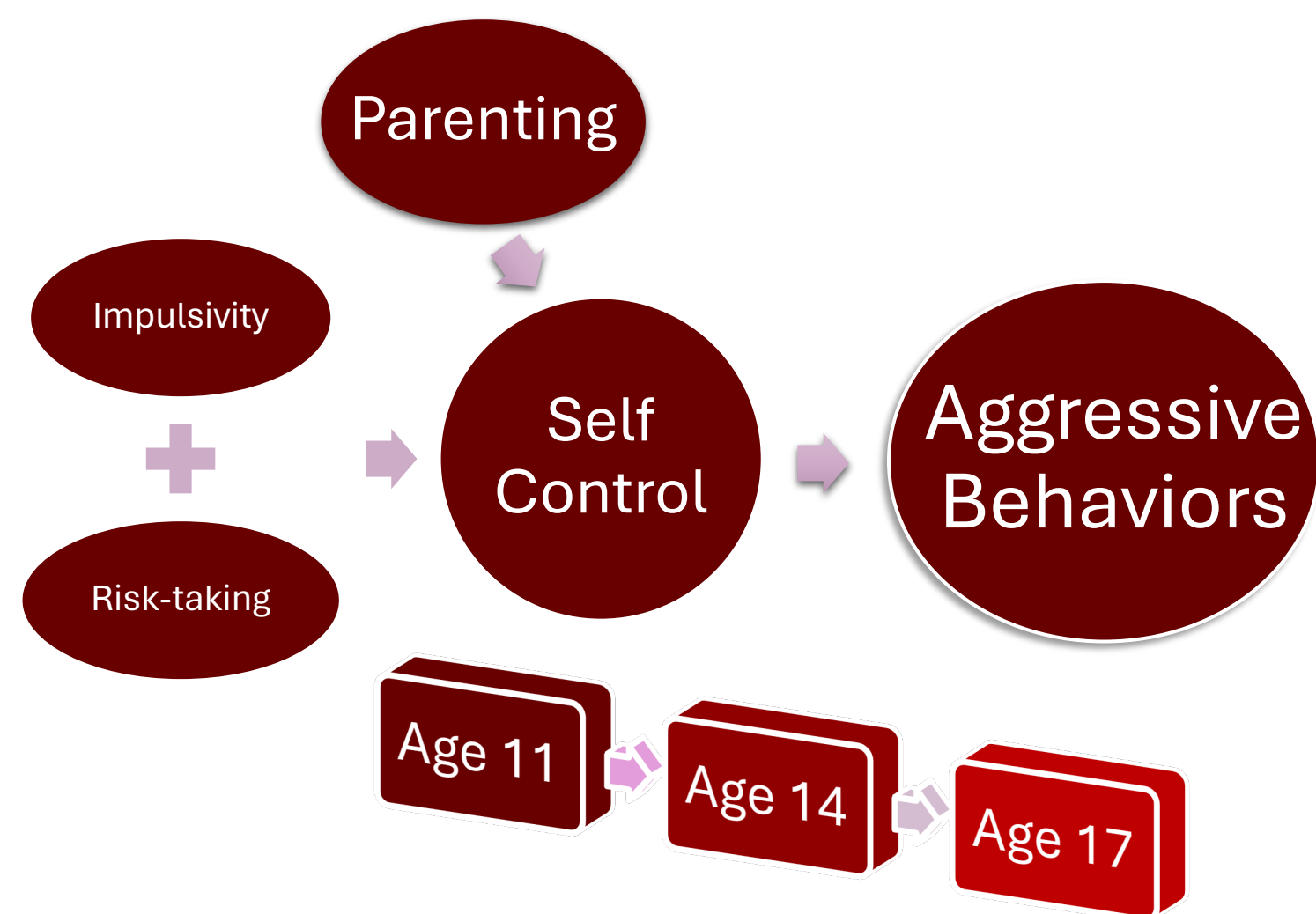# Revisiting Self-Control: A Longitudinal Analysis Using the Millenium Cohort Study

Siyang Ni
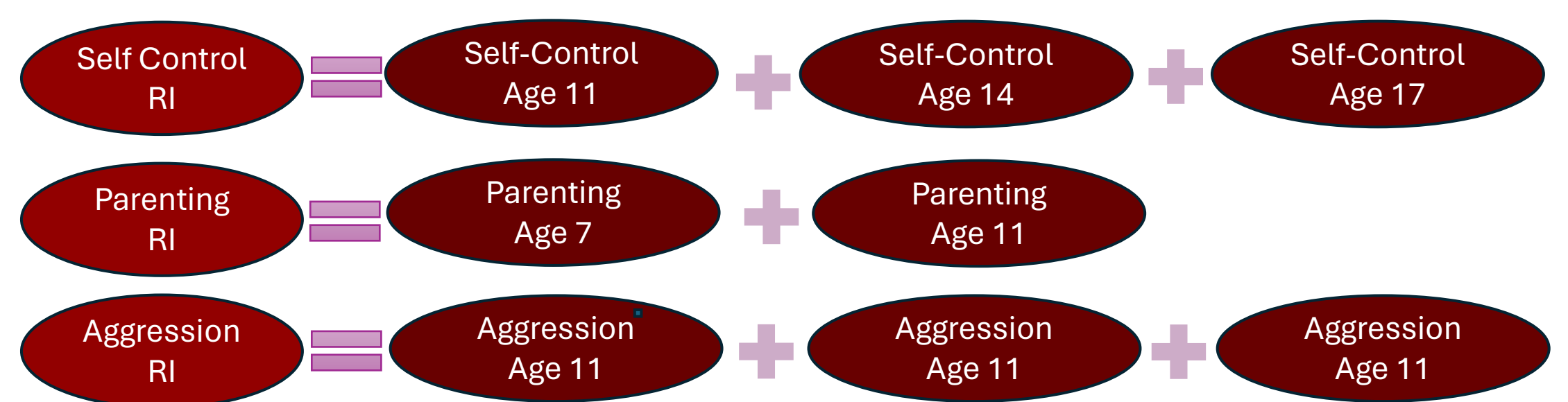
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Four Key Developmental Pathways in One Model

Dual-mode Self-control Measurement
Stability of Self-Control
Stability of Effect of Self-control on Aggressive Behaviors
Stability of Effect of Parenting on Aggressive Behaviors through Self-Control

Longitudinal Data From Age 7 to 17

From The UK Millenium Cohort Study

The UK Millennium Cohort Study is a longitudinal survey tracking approximately **19,000 individuals** born in the UK between 2000 and 2002. We use four waves of data generated from this large-scale longitudinal survey, **from respondents at age 7 until age 17**, covering two key developmental period: **childhood and adolescence**.

Observed Variables	Range	Age 7			Age 11			Age 14			Age 17		
		Mean	SD	% Missing	Mean	SD	% Missing	Mean	SD	% Missing	Mean	SD	% Missing
Fight with Others	0-1	-	-	-	.071	.258	38.6	.069	.253	47.4	.144	.351	49.4
Self-Control	-	-	-	-	-	-	-	-	-	-	-	-	-
Impulsivity	0-6	-	-	-	2.989	1.918	40.3	2.839	1.878	48.9	2.377	1.864	61.3
Unhealthy Risk Raking Behaviors	0-8	-	-	-	.823	1.049	43.1	1.306	1.298	50.3	1.890	1.263	62.9
Parenting	-	-	-	-	-	-	-	-	-	-	-	-	-
Send to bedroom when misbehave	0-1	.586	.493	32.1	.432	.495	40.9	-	-	-	-	-	-
Take away treats when misbehave	0-1	.626	.484	31.9	.452	.498	40.2	-	-	-	-	-	-
Reason when misbehave	0-1	.866	.340	31.7	.743	.437	40.2	-	-	-	-	-	-
Control Variables													
CM sex	1-2	1.5		39.1									
Parents' education	0-5	2.88		43.5									
Race	1-4			41.7									
White		48.428%											
Non-white		9.864%											
Parents' Marital Status	0-1	0.59		3.7%									
Little's MCAR TEST: 15297 (df=9569) P < .001													

Descriptive Statistics of Variables

Multi-level Design and Cross-lagged Model in a Unified Structural Equation Model

The Measurement of Self-Control

The Auto-regressive Part in Structural Model

The Cross-Lag Part in Structural Model

The Random-Intercept Part in Structural Model

There are two key innovations in our methods:
1. We measure self-control as a latent factor using both impulsivity and risk-taking behaviors.
2. We use the latest Random Intercept Cross-Lagged Panel Models (RI-CLPM) to model the complex causal relationship between self-control, parenting, and aggression at different ages.
We then put our dual-model measurement of self-control and the RI-CLPM design into one complete structural equation model.
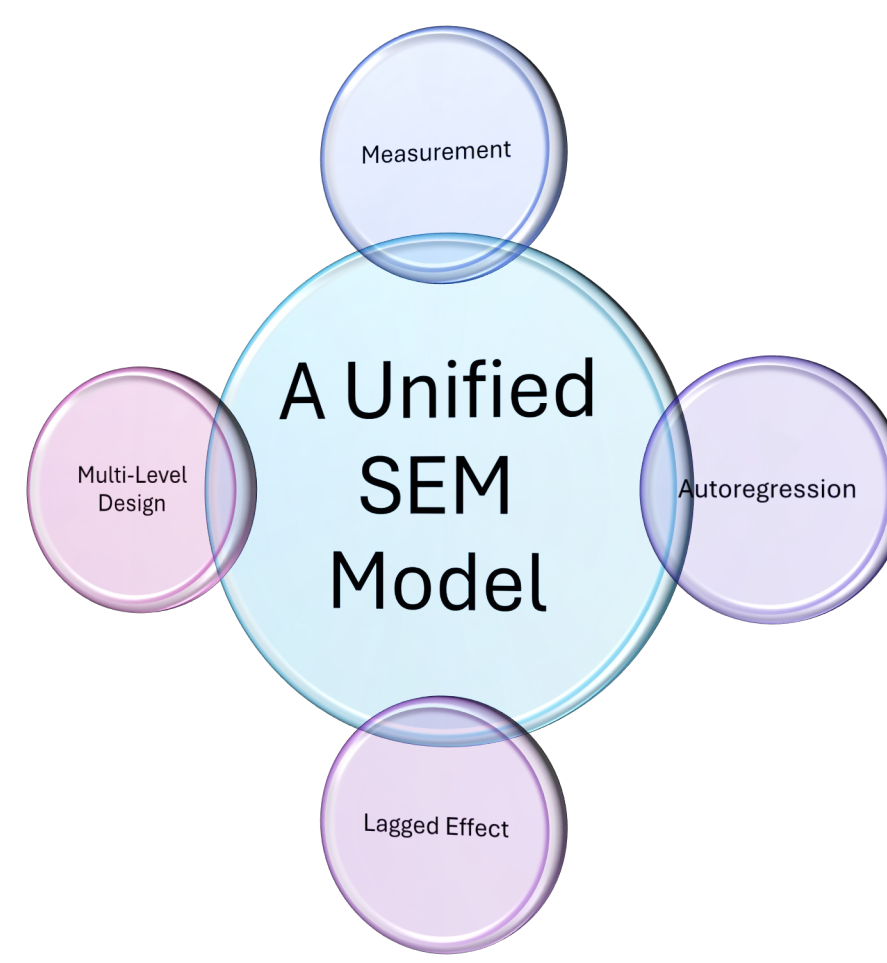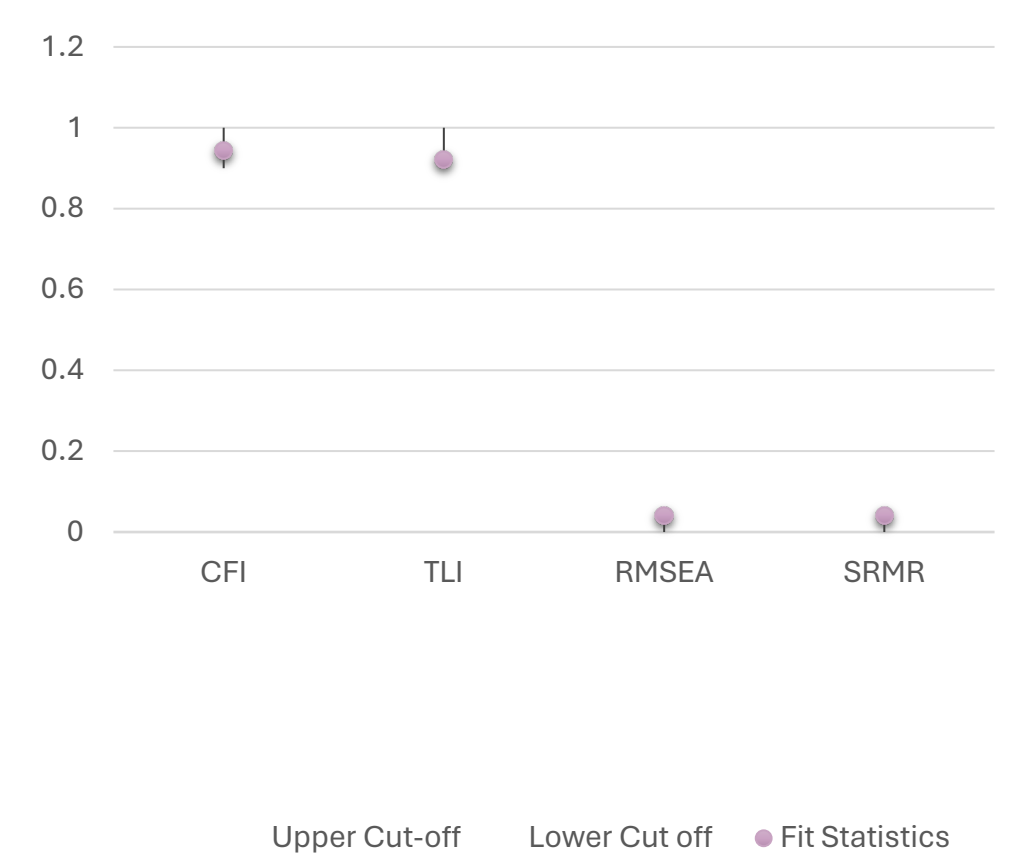

A Unified SEM Model

Model Fit Statistics

Upper Cut-off   Lower Cut off   • Fit Statistics

Results: Self-control, Parenting, and Aggression
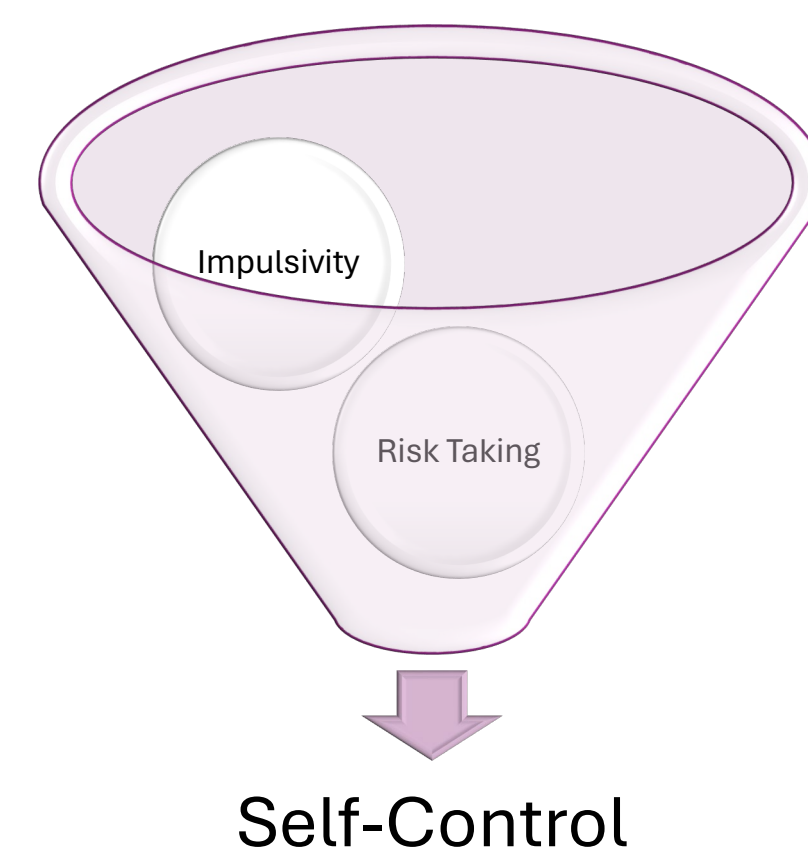
Self-Control

Our measurement model indicates that self-control should not be treated simply as impulsivity. Both risk-taking behaviors and impulsivity are indicators of level of adolescent self-control.
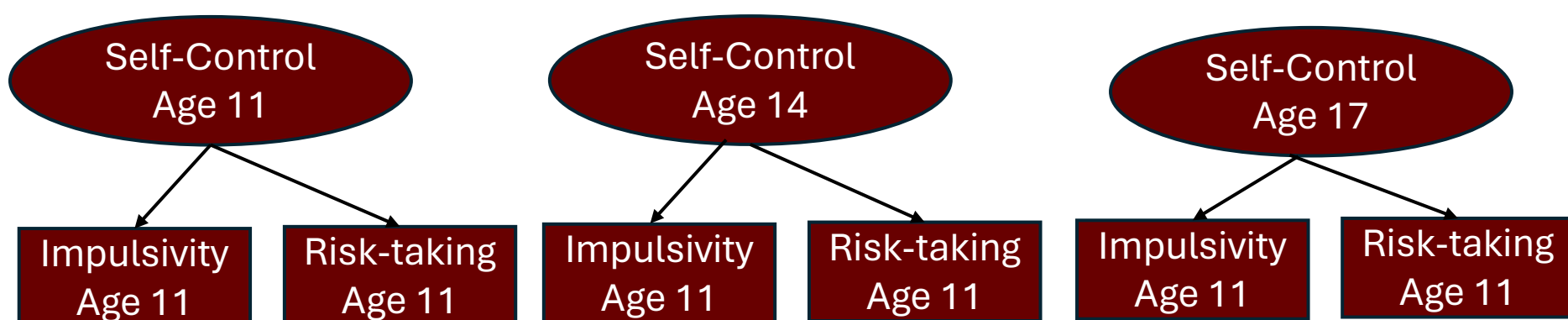

Self-control is stable across once formed in childhood. The level of self-control at late childhood is highly predictive of the level of self-control in later developmental period. This result suggests that self-control is relatively stable through the life-course, as it is proposed in Hirschi's General Theory of Crime.
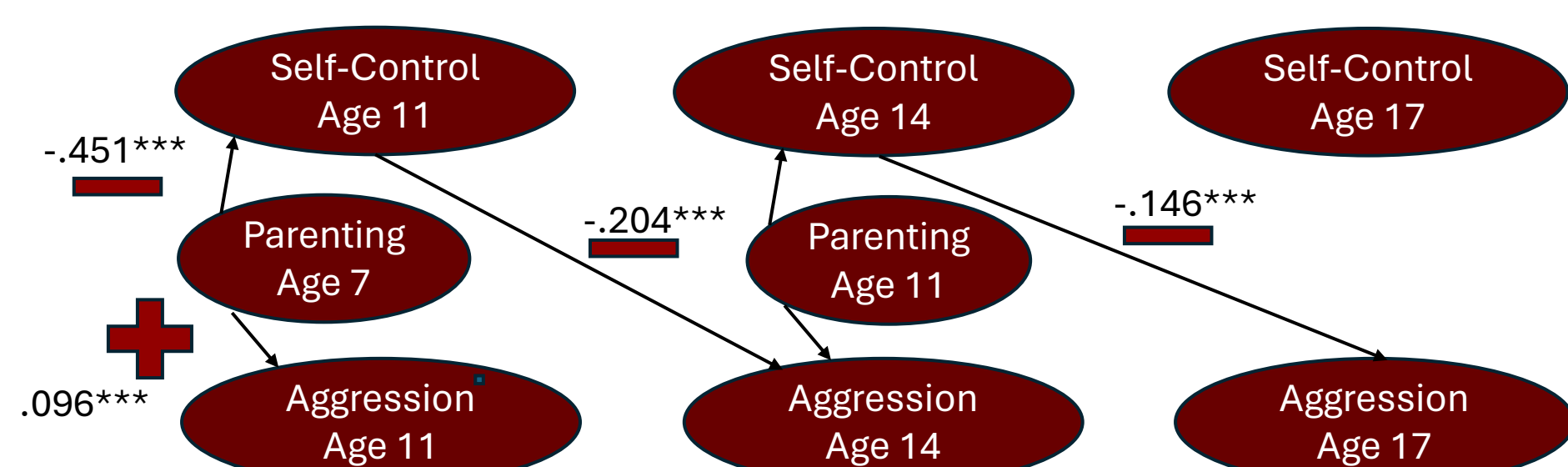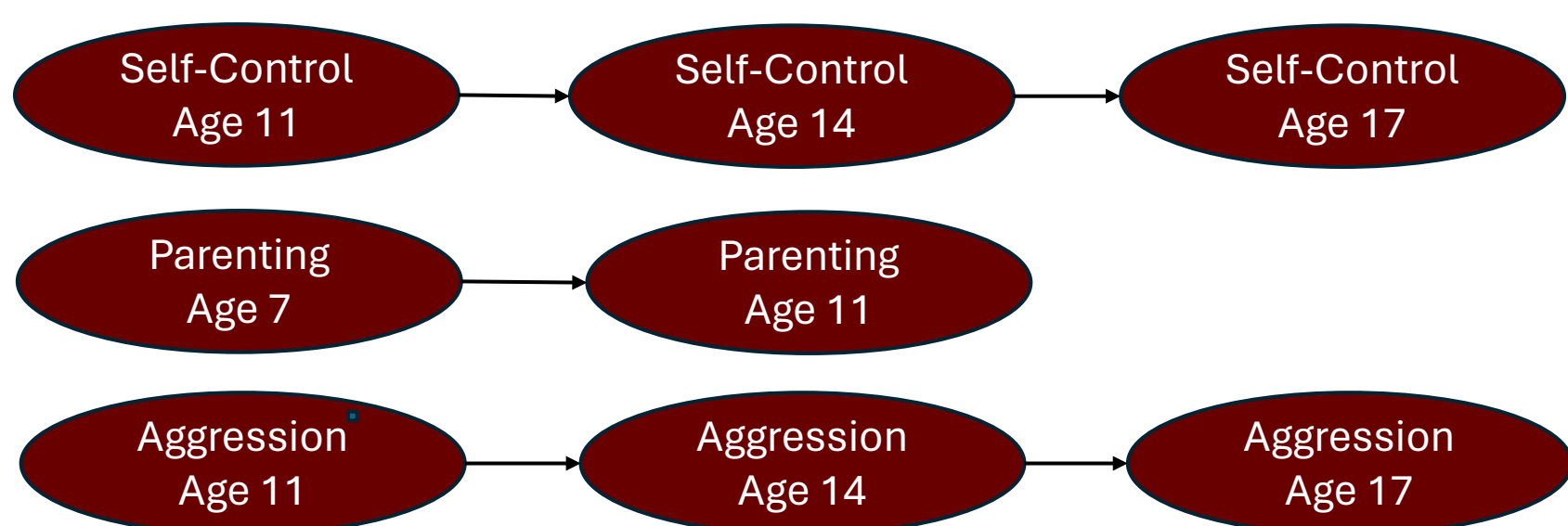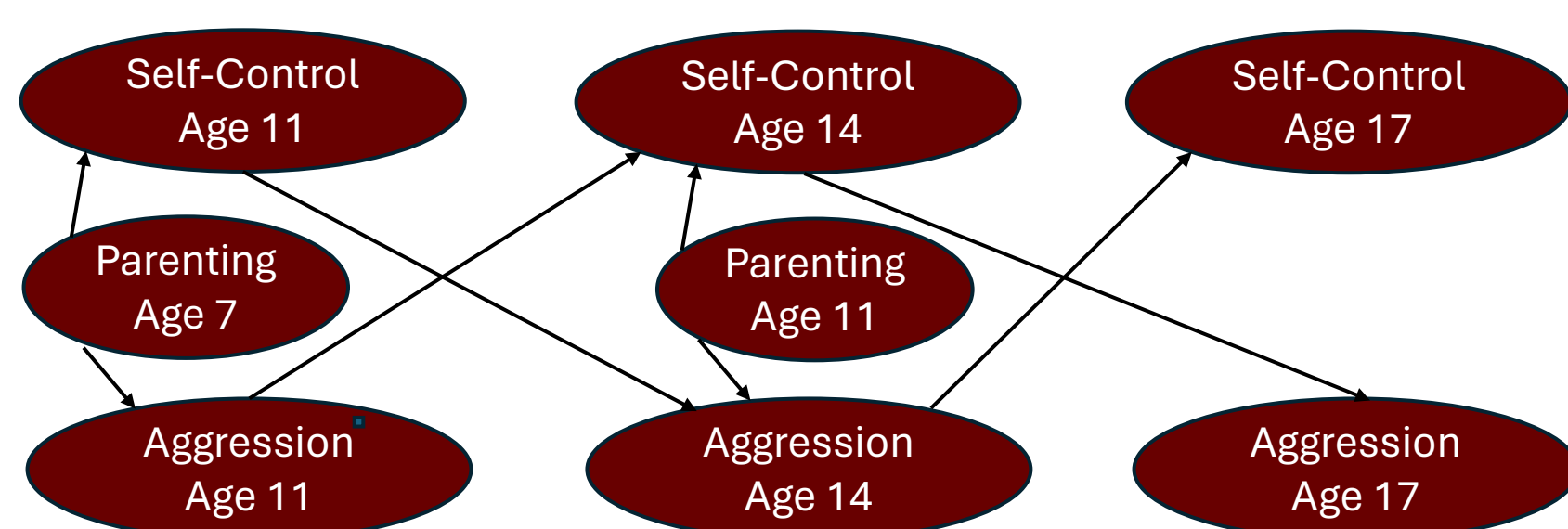

Self-control has strong aggression-inhibition effect, but the effect is stronger during early adolescence. Disciplinary parenting in early childhood significantly lower a child's level of self-control and increases one's likelihood of being aggressive in later childhood.

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