

Introduction

Early negative life experiences (NLEs)—such as family conflict, illness, and financial hardship—can significantly impact adolescent development. In a national sample, **58%** of **U.S. adolescents** reported **at least one NLE**, with nearly **60%** of those experiencing **multiple** adversities (McLaughlin et al., 2012).

NLEs increase risk for **internalizing** (e.g., anxiety, depression) and **externalizing** (e.g., aggression) symptoms later in life (McLaughlin et al., 2014; Sadikova et al., 2025) and also shape caregiving environments.

Parent–child interaction (PCI) traits—warmth, rejection, structure, interactivenss—reflect caregiving styles that may **buffer or exacerbate** adversity’s effects (Bretherton, 1992; Kiff et al., 2011).

Prior studies often examine NLEs and adolescent outcomes separately, relying on retrospective reports. PCI is typically assessed concurrently or via recall, introducing bias. This study uses **longitudinal** data to test how early NLEs and PCI **jointly predict** adolescent psychopathology, offering an objective, developmentally grounded view.

Research Question and Hypotheses

Do **early PCI** dimensions (warmth, rejection, structure, interactivenss) **mediate** the relationship between early childhood **NLE** and **adolescent psychopathology**?

- **H₁**: Greater **severity** and **total number** of early **NLE** will **predict** higher internalizing and externalizing **psychopathology** symptoms in adolescence.
- **H₂**: **PCI** dimensions will **mediate** the relationship between early NLE and adolescent psychopathology.
- **H₃**: **Mediation** effects will **differ** depending on whether NLE are measured by **severity** or **total number** of events.

Method

Participants and Procedure

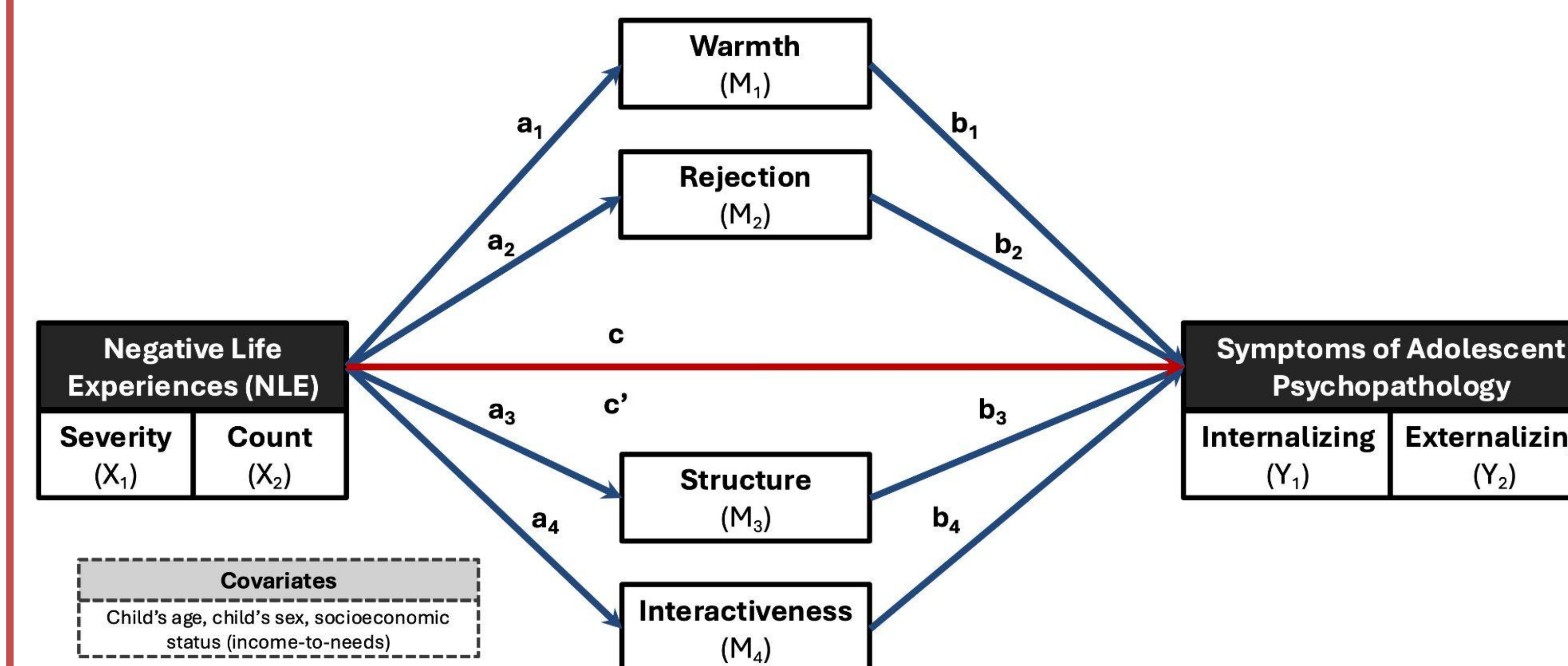
- This longitudinal study followed **mother–child dyads** in the Seattle, WA area.
 - 216 **children** ($M = 3.05$ years, $SD = 0.07$; range = 2.95–3.34).
 - There were 114 **male children** and 113 **female children**
 - The **income-needs-ratio (ITN)** ($M = 3.03$, $SD = 1.88$; range = 0.22–8.19), reflects socioeconomic diversity with a positive skew.
- Mothers reported their child’s **negative life experiences (NLEs)** in the past 9 months and rated event distress.
- **Parent–child interaction (PCI)** was systematically observed and coded during structured play tasks in a laboratory setting (Kiff et al., 2011).
- During adolescence, both children and mothers completed questionnaires assessing the child’s **psychopathology symptoms** (McLaughlin et al., 2014).

Analysis Plan

- **Parallel mediation** model; four mediators; PROCESS Model 4 (Hayes, 2018).
- **Bootstrapping** with 5,000 samples provided 95% confidence interval.
- Child sex/age as well as family ITN served as **covariates**.

Conceptual Model

Figure 1. Conceptual Model: Parent–Child Interaction (PCI) Dimensions as Mediators of the Relationship Between Negative Life Experiences (NLE) and Adolescent Psychopathology



Note. Model accounts for all combinations of the two predictor and two outcome variables.

Model Effects

Table 1. Results From Negative Life Experiences (NLE), Parent–Child Interaction (PCI), and Adolescent Psychopathology

Type of Effect		Model 1: Internalizing (Severity)			Model 2: Internalizing (Count)			Model 3: Externalizing (Severity)			Model 4: Externalizing (Count)		
		Effect	t(df)	p	Effect	t(df)	p	Effect	t(df)	p	Effect	t(df)	p
Overall Effect	NLE Predictor	5.45	2.28 (211)	.024*	0.25	1.60 (211)	.111	5.79	2.81 (211)	.005*	0.36	2.68 (211)	.008*
Predicts PCI	—	−0.06	−0.47 (211)	.642	−0.009	−1.13 (211)	.26	−0.06	−0.47 (211)	.642	−0.009	−1.13 (211)	.26
	Rejection (a ₂)	0.2	1.78 (211)	.077†	0.017	2.39 (211)	.018*	0.2	1.78 (211)	.077†	0.02	2.39 (211)	.018*
	Structure (a ₃)	−0.15	−1.36 (211)	.175	−0.009	−1.26 (211)	.209	−0.15	−1.36 (211)	.175	−0.009	−1.26 (211)	.209
	Interactivenss (a ₄)	0.01	0.05 (211)	.961	0.001	0.08 (211)	.934	0.01	0.05 (211)	.961	0.001	0.08 (211)	.934
Direct Effects	Warmth (b ₁)	−0.06	−0.04 (207)	.972	0.07	0.04 (207)	.967	−1.47	−0.95 (207)	.344	−1.31	−0.84 (207)	.401
	Rejection (b ₂)	−0.19	−0.10 (207)	.922	−0.17	−0.09 (207)	.93	1.28	0.76 (207)	.446	1.18	0.70 (207)	.485
	Structure (b ₃)	−3.62	−1.92 (207)	.057†	−3.77	−1.99 (207)	.048*	−0.80	−0.49 (207)	.626	−0.96	−0.58 (207)	.56
	Interactivenss (b ₄)	−2.18	−1.50 (207)	.135	−2.21	−1.51 (207)	.133	0.11	0.08 (207)	.932	0.05	0.04 (207)	.966
	Predictor (c')	4.97	2.09 (207)	.038*	0.22	1.43 (207)	.156	5.34	2.57 (207)	.011*	0.32	2.35 (207)	.020*
Total Indirect Effect		Effect	LL	UL	Effect	LL	UL	Effect	LL	UL	Effect	LL	UL
		0.48	—	—	0.03	—	—	0.46	—	—	0.04	—	—
	Warmth	0.004	−0.47	0.51	0.001	−0.05	0.05	0.08	−0.41	0.69	0.012	−0.02	0.06
	Rejection	−0.04	−1.17	0.90	−0.003	−0.10	0.07	0.25	−0.52	1.23	0.020	−0.04	0.10
	CI Structure	0.53	−0.29	1.84	0.03	−0.03	0.12	0.12	−0.52	0.91	0.008	−0.03	0.06
	Interactivenss	−0.01	−0.82	0.74	−0.002	−0.06	0.06	0.001	−0.31	0.30	0.000	−0.02	0.02

Note. a_1 – a_4 = path coefficients from NLE to PCI mediators; b_1 – b_4 = path coefficients from PCI mediators to psychopathology symptoms; c' = direct effect of NLE on symptoms controlling for PCI mediators; CI = bootstrapped 95% confidence interval. Covariates include child sex, child age, and income-to-needs ratio (ITN). * $p < .05$, † $p < .10$.

Results

NLE Descriptives

- **Count**: $M = 5.69$, $SD = 4.30$, range = 0–27
- **Severity**: $M = 0.34$, $SD = 0.28$, range = 0–1.94

Total Effects (c path)

- **Internalizing severity**: $b = 5.45$, $t(211) = 2.28$, $p = .024$
- **Externalizing severity**: $b = 5.79$, $t(211) = 2.81$, $p = .005$
- **Externalizing count**: $b = 0.36$, $t(211) = 2.68$, $p = .008$

Direct Effects Controlling for PCI (c' path)

- **Internalizing**: $b = 4.97$, $t(207) = 2.09$, $p = .038$
- **Externalizing**: $b = 5.34$, $t(207) = 2.57$, $p = .011$
- **Externalizing count**: $b = 0.32$, $t(207) = 2.35$, $p = .020$

Significant/Marginal PCI Paths

- a_2 : $b = 0.20$, $t(211) = 1.78$, $p = .077†$
- b_2 : $b = 0.017$, $t(207) = 2.39$, $p = .018$
- b_3 : $b = −3.77$, $t(207) = −1.99$, $p = .048$
- b_4 : $b = −3.62$, $t(207) = −1.92$, $p = .057†$

Note. $p < .05$. † $p < .10$. All other effects ns.

Discussion

Limitations

- PCI was assessed at **one time** point, limits interpretation.
- Uses **specific geographic region**, limits generalizability.
- Broad symptom categories without clinical diagnoses
- Symptom measures based on averaged scores

Implications and Future Directions

Expand contextual factors to include:

- **Genetic predispositions** to psychological symptoms
- PCI with **other caretakers** (e.g., fathers, teachers)

Leverage longitudinal design

- The larger dataset includes four times of PCI and NLE data, approximately 9 months apart.
- Apply **advanced modeling** (e.g., cross-lagged panel models) to examine developmental trajectories.
- Account for potential **reactivity bias** in observed PCI

Disaggregate PCI across task types

- PCI was averaged across four structured tasks:
 - (1) restricted play, (2) unrestricted play, (3) scaffolding, and (4) clean-up.
- Analyzing task-specific PCI may better reflect variability in parenting across contexts