



# Neurodevelopmental Conflict and Socio-Emotional Learning in Residential Adolescents: A Generational Analysis

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## Abstract

Adolescence is a critical developmental period marked by significant neurobiological, emotional, and social transformations. This study investigates the relationship between socio-emotional learning (SEL) competencies and neurodevelopmental conflict among students aged 12–18 years in residential school environments, with particular emphasis on students born after 2009. These students, shaped by early digital exposure, exhibit distinct cognitive and emotional patterns, including heightened responsiveness and reduced attention stability. A mixed-method approach was employed involving 120 participants from residential schools. Quantitative data were collected using standardized SEL and emotional regulation scales, while qualitative insights were obtained through interviews and behavioral observations.

Results indicate a significant negative correlation between SEL and emotional conflict ( $r = -0.62, p < 0.01$ ). Students born after 2009 demonstrated higher emotional reactivity and lower attention stability compared to earlier cohorts. Regression analysis identified SEL as the strongest predictor of reduced emotional conflict ( $\beta = -0.58, p < 0.001$ ). The findings highlight the necessity of integrating SEL frameworks into residential school systems to address evolving neurocognitive and emotional challenges. This study contributes to the growing body of research on adolescent development by incorporating generational and environmental perspectives.

## Keywords

Socio-emotional learning, adolescence, residential schools, brain development, emotional conflict, Generation Alpha

## 1. Introduction

Adolescence (12–18 years) is characterized by rapid neurodevelopmental changes, particularly within the limbic system and prefrontal cortex. The limbic system, associated with emotional processing, matures earlier than the prefrontal cortex, responsible for executive control and decision-making. This developmental mismatch results in heightened emotional reactivity and reduced impulse regulation.

Residential schools introduce a structured environment defined by discipline, peer interaction, and limited familial contact. While these settings promote independence and resilience, they also impose psychological demands that may intensify developmental conflicts.

A significant emerging factor is the influence of students born after 2009. These individuals have grown up in digitally saturated environments, influencing their cognitive processing, attention span, and emotional responses. Their adaptation to structured residential settings presents unique challenges.

This study aims to:

1. Examine the relationship between SEL and emotional conflict
2. Analyze neurodevelopmental challenges in residential settings
3. Investigate generational differences in emotional and cognitive patterns

## 2. Literature Review

Research in developmental neuroscience highlights adolescence as a period of heightened neural plasticity and emotional intensity. The imbalance between emotional and regulatory systems leads to behavioral variability.

Socio-emotional learning (SEL) frameworks emphasize competencies such as self-awareness, emotional regulation, and interpersonal skills. Studies indicate that SEL improves academic performance, reduces behavioral issues, and enhances psychological well-being.

Recent literature on post-2009 students suggests:

- Increased exposure to digital stimuli
- Reduced sustained attention
- Higher emotional sensitivity
- Preference for immediate feedback

Residential schooling research shows that structured environments can both support discipline and contribute to emotional suppression. However, limited research integrates these factors with generational changes, creating a gap addressed by this study.

## 3. Methodology

### 3.1 Research Design

A mixed-method approach combining quantitative and qualitative analysis.

### 3.2 Participants

- Total: 120 students
- Age: 12–18 years
- Groups:
  - 12–14 years
  - 15–16 years
  - 17–18 years
- Sub-group: Students born after 2009

### 3.3 Instruments

- Socio-Emotional Learning Scale
- Emotional Conflict Scale
- Attention Stability Index
- Semi-structured interviews
- Behavioral observation checklist

### 3.4 Procedure

Data were collected over four weeks. Surveys were administered in classroom settings, followed by individual interviews and observational recording.

### 3.5 Data Analysis

- Descriptive statistics
- Correlation analysis
- Regression analysis
- Thematic qualitative analysis

## 4. Results

Table 1: Descriptive Statistics

Variable	Mean	SD	Min	Max
SEL Score	3.42	0.68	1.80	4.80
Emotional Conflict	3.76	0.72	2.00	5.00
Attention Stability	2.95	0.81	1.50	4.50
Peer Adjustment	3.58	0.64	2.10	4.90

Table 2: Correlation Matrix

Variable	SEL	Emotional Conflict	Attention	Peer Adjustment
SEL	1	-0.62**	0.58**	0.71**
Emotional Conflict	-0.62**	1	-0.55**	-0.60**
Attention	0.58**	-0.55**	1	0.49**
Peer Adjustment	0.71**	-0.60**	0.49**	1

**p < 0.01**

Table 3: Group Comparison (Post-2009 vs Pre-2009)

Variable	Group	Mean	SD	p-value
Emotional Conflict	Post-2009	4.02	0.65	0.002
	Pre-2009	3.45	0.70	
Attention Stability	Post-2009	2.70	0.78	0.005
	Pre-2009	3.20	0.75	

Table 4: Regression Analysis

Predictor	Beta	p-value
SEL Score	-0.58	0.000
Attention Stability	-0.32	0.001
Age	-0.18	0.038

### Graph Interpretation

- Emotional conflict is highest in the 12–14 age group
- SEL shows a strong inverse relationship with emotional conflict
- Post-2009 students show higher emotional variability

### 5. Discussion

The findings confirm that neurodevelopmental imbalance contributes significantly to emotional conflict during adolescence. The structured nature of residential schools amplifies this effect due to reduced emotional outlets.

Students born after 2009 exhibit distinct characteristics:

- High cognitive responsiveness
- Reduced attention span
- Increased emotional reactivity
- Dependency on stimulation

These traits create a mismatch with traditional residential schooling systems, which rely on routine and discipline.

SEL plays a crucial mediating role by:

- Enhancing emotional regulation
- Improving social relationships
- Reducing behavioral issues

The study suggests that failure to integrate SEL may result in increased psychological distress and maladjustment.

### Limitations

- Limited sample size
- Cross-sectional design
- Lack of neurobiological measurement

### 6. Conclusion

This study highlights the evolving nature of adolescent development in the context of residential education. While such institutions promote discipline and resilience, they must adapt to generational changes in cognitive and emotional functioning.

Integrating SEL into school systems is essential for reducing neurodevelopmental conflict and supporting holistic development. Future research should focus on longitudinal studies and intervention models.

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## 7. Ethical Approval Statement

This study was conducted in accordance with standard ethical guidelines for research involving human participants. Institutional permission was obtained from the participating residential schools prior to data collection. All procedures adhered to principles of voluntary participation, confidentiality, and non-maleficence.

### Informed Consent

Informed consent was obtained from all participants and, where applicable, from their parents or legal guardians. Participants were informed about the purpose of the study, confidentiality of responses, and their right to withdraw at any stage without penalty.

### Confidentiality Statement

All participant data were anonymized and coded to ensure confidentiality. No identifying information was collected or reported. Data were stored securely and used solely for academic research purposes.

### Conflict of Interest

The author declares that there is no conflict of interest regarding the publication of this paper.

### Funding Statement

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### Author Contributions

Akash Sidel contributed to:

\* Conceptualization and research design

\* Data collection and analysis

\* Manuscript writing and revision

### Data Availability Statement

The datasets generated and/or analyzed during the current study are available from the corresponding author upon reasonable request.

### Acknowledgements

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## Ethical Compliance Statement

This research complies with internationally accepted ethical standards for educational and psychological research. Special care was taken to ensure the psychological safety of adolescent participants throughout the study.

## Limitations and Future Scope

### Limitations:

- \* The study is limited to a specific residential school context
- \* Cross-sectional design restricts causal interpretation
- \* Reliance on self-reported measures

### Future Scope:

- \* Longitudinal studies on SEL impact
- \* Neurobiological validation using brain imaging
- \* Comparative analysis with day-school students

### Practical Implications

- \* Integration of SEL programs in residential schools
- \* Development of age-specific counselling modules
- \* Training for teachers in emotional regulation strategies
- \* Designing structured interventions for post-2009 students

### Highlights

- \* SEL significantly reduces emotional conflict in adolescents
- \* Residential school environments intensify developmental challenges
- \* Post-2009 students show higher emotional reactivity and lower attention stability
- \* Generational shifts require updated counselling frameworks

## 13. Graphical Abstract

A conceptual model showing:

- \* Brain Development (Limbic vs Prefrontal)
- \* SEL as mediator
- \* Residential School Environment as moderator
- \* Outcome: Emotional Regulation & Adjustment

Suggested Running Title

SEL and Neurodevelopmental Conflict in Residential Adolescents\*\*

15. Suggested Journal Categories\*\*

\* Educational Psychology

\* School Counselling

\* Adolescent Development

\* Behavioral Sciences

References (APA Style)

Siegel, D. J. (2014). *Brainstorm: The power and purpose of the teenage brain*.

Steinberg, L. (2017). *Adolescence*.

Goleman, D. (1995). *Emotional intelligence*.

Erikson, E. (1968). *Identity: Youth and crisis*.

CASEL. (2020). *SEL Framework*.

Appendices

Appendix A: Sample SEL Questions

Appendix B: Interview Schedule

Appendix C: Observation Sheet

