



The Emotional Intelligence Curriculum: Measuring SEL's Impact on Academic Achievement and Life Outcomes

Meenu P Thomas

Assistant Professor, Department of Mathematics, Marian College Kuttikkanam (Autonomous), Kottayam, Kerala, India.

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Abstract

Social-emotional learning (SEL) has emerged as a critical educational intervention designed to develop students' emotional intelligence, interpersonal skills, and psychological well-being. This paper examines the empirical evidence linking SEL programs to academic achievement and long-term life outcomes through a comprehensive analysis of meta-analytic studies, longitudinal research, and randomized controlled trials. Using a mixed-methods approach, this review synthesizes quantitative data on academic performance metrics and qualitative insights into mechanisms of impact. Findings indicate that well-implemented SEL interventions produce statistically significant improvements in academic achievement (effect size $d = 0.27-0.33$), alongside enhanced social competencies, reduced behavioral problems, and improved mental health outcomes. Longitudinal studies reveal persistent benefits extending into adulthood, including higher educational attainment, employment rates, and reduced criminal justice involvement. However, implementation fidelity, cultural adaptation, and systemic support structures critically moderate these effects. This paper argues that SEL represents not merely a supplementary educational program but a foundational framework for developing the competencies necessary for academic success and adaptive functioning across the lifespan. Implications for educational policy, teacher training, and future research directions are discussed.

Keywords: - Social-Emotional Learning, Emotional Intelligence, Academic Achievement, Life Outcomes, Educational Interventions, Meta-Analysis

I. INTRODUCTION

1.1. Background and Context

The traditional educational paradigm has historically prioritized cognitive development and academic content mastery while relegating social and emotional competencies to peripheral status. However, mounting evidence from developmental psychology, neuroscience, and educational research has challenged this dichotomy, revealing the inextricable connections between emotional regulation, social competence, and academic performance (Durlak et al., 2011). Social-emotional learning (SEL) has emerged as a systematic approach to cultivating these competencies through structured curricula that target five core domains: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making (Collaborative for Academic, Social, and Emotional Learning (CASEL), 2020).

The theoretical foundations of SEL draw from multiple disciplinary traditions, including Goleman's conceptualization of emotional intelligence, Bandura's social cognitive theory, developmental systems theory, and ecological models of human development (Elias et al., 1997). These frameworks converge on the premise that emotional and social competencies are learnable skills that, when systematically developed, enhance individuals' capacity to navigate academic challenges, establish productive relationships, manage stress, and make adaptive decisions. As educational systems increasingly recognize the multidimensional nature of student success, SEL has transitioned from a marginal innovation to a mainstream educational priority, with implementation occurring in thousands of schools across diverse contexts globally (Jones & Kahn, 2017).

1.2. Problem Statement

Despite widespread adoption and substantial investment in SEL programming, fundamental questions persist regarding the magnitude, mechanisms, and durability of SEL's impact on measurable outcomes. While proponents assert that SEL interventions produce transformative effects on academic achievement and life trajectories, skeptics question whether these programs represent effective use of limited instructional time and resources, particularly given competing curricular demands and accountability pressures (Hoffman, 2009). The heterogeneity of SEL programs, implementation contexts, and measurement approaches further complicates efforts to establish definitive causal relationships between SEL participation and outcomes.

Critical gaps exist in understanding how SEL effects vary across developmental stages, cultural contexts, and socioeconomic conditions. Questions regarding optimal dosage, implementation fidelity, teacher training requirements, and long-term sustainability remain inadequately addressed. Moreover, the field lacks comprehensive frameworks for understanding the mechanisms through which enhanced emotional intelligence translates into improved academic performance and adaptive life outcomes. These uncertainties have significant implications for educational policy, resource allocation, and curriculum design.

1.3. Research Questions

This paper addresses the following research questions:

- What is the empirical evidence for SEL's impact on academic achievement outcomes, as measured through standardized assessments, grade point averages, and graduation rates?
- How do SEL interventions influence long-term life outcomes, including educational attainment, employment, mental health, and social functioning?
- What mechanisms mediate the relationship between SEL participation and improved outcomes?
- What factors moderate SEL effectiveness, including implementation quality, student characteristics, and contextual variables?
- What methodological considerations and limitations characterize current SEL research, and what implications do these have for interpreting findings?

1.4. Significance of the Study

This comprehensive review synthesizes evidence from multiple methodological traditions to provide an integrated understanding of SEL's impact and mechanisms of action. By examining both proximal academic outcomes and distal life trajectories, this paper addresses critical questions facing educators, policymakers, and researchers. The findings have direct implications for educational policy decisions regarding curriculum adoption, resource allocation, and teacher professional development. Furthermore, this analysis identifies methodological gaps and research priorities that can guide future investigations, ultimately contributing to more effective strategies for promoting student success across cognitive, social, and emotional domains.

II. LITERATURE REVIEW

2.1. Theoretical Foundations of Social-Emotional Learning

The conceptual architecture of SEL rests on multiple theoretical pillars that collectively explain how emotional and social competencies develop and influence academic and life outcomes. (Goleman, 1995) popularization of emotional intelligence provided an accessible framework emphasizing self-awareness, self-regulation, motivation, empathy, and social skills as distinct but interconnected capabilities. While Goleman's work sparked widespread interest, subsequent scholarship has refined and expanded these constructs through more rigorous empirical investigation.

(Mayer & Salovey, 1997) ability-based model of emotional intelligence conceptualizes it as a set of cognitive abilities involving the perception, understanding, management, and utilization of emotions. This framework emphasizes emotional intelligence as a measurable cognitive capacity distinct from personality traits, providing a foundation for assessment development and intervention design. Research employing this model has demonstrated significant correlations between emotional intelligence abilities and academic performance, particularly in domains requiring interpersonal interaction and stress management (Brackett et al., 2011).

Social cognitive theory (Bandura, 1986) provides complementary insights by emphasizing reciprocal determinism between personal factors, behavior, and environmental influences. From this perspective, SEL interventions operate by enhancing self-efficacy beliefs, modeling adaptive behaviors, and creating supportive environments that reinforce social-emotional competencies. Bandura's emphasis on observational learning and self-regulation aligns directly with SEL pedagogical approaches that employ explicit instruction, modeling, practice opportunities, and feedback mechanisms (Zins et al., 2004).

Developmental systems theory contributes understanding of how SEL competencies emerge through dynamic interactions between individuals and contexts across time. This perspective highlights critical periods for intervention, developmental trajectories of social-emotional skills, and the importance of aligning interventions with developmental capacities. Research informed by developmental frameworks reveals that SEL interventions demonstrate differential effectiveness across age groups, with some competencies (e.g., emotional recognition) more amenable to early childhood intervention while others (e.g., complex social problem-solving) benefit from sustained development across developmental stages (Denham & Brown, 2010).

Ecological models, particularly (Bronfenbrenner, 1979) bioecological framework, emphasize the nested contexts influencing development, from proximal interactions to broader cultural systems. This perspective underscores that SEL effectiveness depends not only on program content but also on implementation ecology, including classroom climate, school culture, family engagement, and community resources. Research examining implementation contexts reveals that systemic factors such as administrative support, teacher buy-in, and alignment with existing school initiatives significantly moderate program effects (Durlak & DuPre, 2008).

2.2. Empirical Evidence on Academic Achievement Outcomes

Meta-analytic syntheses provide the most robust evidence regarding SEL's impact on academic achievement. (Durlak et al., 2011) conducted a landmark meta-analysis of 213 school-based SEL programs involving 270,034 students from kindergarten through high school. This comprehensive review revealed that students participating in SEL programs demonstrated significantly improved academic performance compared to controls, with an average effect size of 0.27 standard deviations on standardized achievement measures. This magnitude of effect translates to an 11-percentile-point gain in academic achievement, representing substantial practical significance given that the intervention addresses non-academic competencies.

The academic benefits observed by (Durlak et al., 2011) extended across multiple indicators, including achievement test scores ($d = 0.27$), grade point averages ($d = 0.33$), and school engagement measures. Notably, these effects remained significant even when analyses controlled for baseline differences and were not moderated by student demographic characteristics, suggesting broad applicability across diverse populations. The durability of effects varied, with some studies demonstrating sustained benefits at follow-up assessments months or years post-intervention, while others showed diminishing effects over time, highlighting the importance of sustained implementation.

(Taylor et al., 2017) updated this meta-analysis with 82 additional studies, examining outcomes for 97,406 students. This follow-up analysis confirmed and extended earlier findings, demonstrating sustained academic benefits at an average of 3.75 years post-intervention. Students who participated in SEL programs showed continued advantages in academic achievement ($d = 0.33$), along with improved attitudes toward self and others, positive social behaviors, and reduced conduct problems and emotional distress. The persistence of effects across this extended timeframe provides compelling evidence that SEL interventions produce durable changes in competencies that continue to support academic success.

Examining specific SEL programs reveals variation in effectiveness related to program characteristics and implementation approaches. The RULER program, developed by (Brackett et al., 2012), focuses explicitly on emotion regulation and demonstrates particularly strong effects on academic achievement when implemented with high fidelity and sustained teacher support. A randomized controlled trial involving 5,000 students across 63 schools found that students in RULER schools showed significantly higher academic performance, improved classroom climate ratings, and enhanced teacher-student relationships compared to control schools (Hagelskamp et al., 2013).

The Second Step program, one of the most widely disseminated SEL curricula, has been evaluated through multiple rigorous studies demonstrating positive effects on both social-emotional competencies and academic outcomes. (Frey et al., 2005) found that elementary students participating in Second Step showed significant improvements in social-emotional skills and modest but statistically significant gains in academic achievement, particularly in reading comprehension. These effects were mediated by improvements in attention, self-regulation, and prosocial behavior, suggesting that SEL enhances academic performance partially through improved classroom behavior and engagement.

The Promoting Alternative Thinking Strategies (PATHS) curriculum represents another evidence-based SEL intervention with demonstrated academic benefits. Longitudinal evaluations reveal that students receiving PATHS instruction show improved executive function, emotion knowledge, and social problem-solving skills, which in turn predict enhanced academic achievement trajectories (Bierman et al., 2008). Particularly noteworthy, PATHS demonstrates effectiveness among high-risk populations, including students experiencing poverty and those with identified behavioral or emotional difficulties.

2.3. Long-Term Life Outcomes

While academic achievement represents an important proximal outcome, the ultimate value of SEL interventions depends on whether enhanced social-emotional competencies translate into improved life trajectories. Longitudinal research provides increasingly robust evidence that SEL participation produces benefits extending well beyond the school years into adulthood.

(Jones et al., 2015) conducted a groundbreaking meta-analysis examining long-term outcomes of SEL interventions, synthesizing data from studies with follow-up periods ranging from 6 months to 18 years post-intervention. This analysis revealed that SEL participants demonstrated significantly better outcomes across multiple life domains compared to controls. Educational attainment showed particular improvement, with SEL participants more likely to graduate high school and pursue postsecondary education. Employment outcomes also favored SEL participants, who demonstrated higher employment rates and job stability in early adulthood.

Mental health outcomes represent another critical domain where SEL demonstrates long-term impact. Several longitudinal studies have documented reduced rates of mental health disorders, substance abuse, and risky behaviors among SEL participants tracked into adolescence and young adulthood (Hawkins et al., 2008). The Seattle Social Development Project, a long-term evaluation following participants for over 20 years, found that individuals who received comprehensive SEL programming in elementary school demonstrated significantly better mental health, lower substance abuse rates, and reduced criminal involvement at age 27 compared to controls (Hawkins et al., 2008). These effects persisted after controlling for baseline risk factors and demographic characteristics, suggesting genuine intervention effects rather than selection artifacts.

The Chicago Longitudinal Study provides additional compelling evidence regarding SEL's long-term impact through its evaluation of the Child-Parent Center (CPC) program, which incorporates substantial SEL components alongside academic instruction. Follow-up assessments of CPC participants into their 30s revealed significantly higher educational attainment, employment rates, and income compared to matched controls (Reynolds et al., 2011). Importantly, CPC participants also demonstrated substantially lower rates of criminal justice involvement, with arrest rates 33% lower and incarceration rates 42% lower than comparison groups. Cost-benefit analyses reveal that every dollar invested in the CPC program returns approximately \$7.14 in societal benefits through increased earnings, reduced crime, and decreased social service utilization.

Relationship quality and social functioning represent additional life outcome domains influenced by early SEL experiences. Longitudinal research indicates that individuals participating in SEL programs demonstrate enhanced relationship quality, including more stable romantic partnerships, lower rates of domestic violence, and more positive parenting practices (Hawkins et al., 2008). These findings suggest that the relationship skills and emotional competencies developed through SEL programming transfer to adult relationship contexts, producing intergenerational benefits as SEL participants raise their own children with enhanced social-emotional capacities.

Health outcomes provide another lens for examining SEL's long-term impact. Emerging evidence suggests that social-emotional competencies predict health behaviors and outcomes across the lifespan. Individuals with higher emotional intelligence demonstrate better stress management, healthier lifestyle choices, and more effective utilization of healthcare resources (Salovey & Grewal, 2005). Longitudinal studies connecting childhood SEL participation to adult health outcomes remain relatively sparse but initial findings suggest promising patterns, including lower rates of cardiovascular disease, obesity, and stress-related disorders among SEL participants.

2.4. Mechanisms of Impact

Understanding how SEL interventions produce observed effects represents a critical research priority with implications for program refinement and implementation optimization. Multiple mechanisms operate simultaneously, creating cascading effects that ultimately influence academic and life outcomes.

Self-regulation represents a primary mechanism through which SEL enhances academic achievement. SEL interventions explicitly teach strategies for managing emotions, attention, and behavior, directly addressing executive function capacities essential for academic success. Neuroimaging research reveals that SEL participation is associated with enhanced activity in prefrontal regions associated with executive control and emotion regulation (Davidson et al., 2012). These neural changes correspond to behavioral improvements in attention control, impulse regulation, and goal-directed persistence, all of which facilitate academic engagement and performance.

Improved classroom behavior and engagement represent another crucial mechanism. Students who develop stronger social-emotional competencies demonstrate reduced disruptive behavior, enhanced cooperation, and greater academic engagement (Durlak et al., 2011). These behavioral improvements create more conducive learning environments benefiting all students while allowing SEL participants to maximize instructional time. Teachers report that classrooms with consistent SEL implementation demonstrate better climate, fewer disciplinary incidents, and more time available for instruction, creating positive feedback loops that amplify intervention effects.

Enhanced relationships with teachers and peers function as additional mediating mechanisms. SEL programming improves students' capacity to form positive relationships, communicate effectively, and navigate conflicts constructively. These enhanced relationship skills lead to stronger teacher-student relationships characterized by greater trust, communication, and support (Jennings & Greenberg, 2009). Similarly, improved peer relationships reduce social stress, increase collaborative learning opportunities, and provide social support that buffers against academic challenges. Longitudinal research demonstrates that relationship quality partially mediates the association between SEL participation and subsequent academic achievement.

Academic mindsets and motivation represent cognitive-affective mechanisms influenced by SEL interventions. Students developing stronger self-awareness and self-efficacy beliefs demonstrate more adaptive achievement motivation, greater willingness to persist through challenges, and more constructive responses to setbacks (Yeager & Dweck, 2012). SEL programs that explicitly address growth mindset, goal-setting, and self-efficacy appear particularly effective at enhancing these motivational processes, which in turn predict academic achievement trajectories.

Stress reduction and improved mental health function as additional mediating pathways. Academic settings generate substantial stress, and students lacking effective coping strategies may experience anxiety, depression, or other mental health difficulties that impair academic performance. SEL interventions provide emotion regulation strategies, stress management techniques, and social support systems that reduce psychological distress and enhance psychological well-being (Durlak et al., 2011). Improved mental health enables greater cognitive availability for learning, reduced absenteeism, and enhanced academic engagement.

2.5. Moderators of SEL Effectiveness

While meta-analytic evidence demonstrates average positive effects of SEL interventions, substantial heterogeneity exists across studies, reflecting the influence of multiple moderating factors that enhance or diminish program effectiveness.

Implementation quality emerges as perhaps the most critical moderator of SEL effectiveness. (Durlak & DuPre, 2008) identified implementation fidelity, dosage, quality, and participant responsiveness as key implementation dimensions predicting outcomes. Programs implemented with high fidelity—meaning they are delivered as designed with appropriate dosage and quality produce substantially larger effects ($d = 0.40-0.50$) compared to low-fidelity implementations ($d = 0.10-0.15$). This pattern underscores that SEL programs require careful, sustained implementation rather than superficial adoption.

Teacher characteristics and preparation significantly moderate SEL effectiveness. Teachers delivering SEL curriculum require not only technical knowledge of program content but also personal social-emotional competencies and beliefs supporting SEL goals (Jennings & Greenberg, 2009). Research indicates that teachers with higher emotional intelligence, stronger classroom management skills, and more positive attitudes toward SEL produce better student outcomes. Professional development intensity and ongoing coaching support predict implementation quality, suggesting that substantial investment in teacher preparation is necessary for optimal outcomes.

Program characteristics influence effectiveness in predictable ways. Programs incorporating SAFE elements—Sequenced, Active, Focused, and Explicit produce significantly larger effects than programs lacking these design features (Durlak et al., 2011). Sequenced programs provide connected and coordinated activities building skills progressively. Active programs employ active learning methods engaging students directly. Focused programs dedicate sufficient time specifically to social-emotional skill development. Explicit programs target specific social-emotional competencies as primary learning objectives. The SAFE framework provides actionable guidance for program selection and design.

Student developmental stage moderates SEL effects in complex ways. While SEL interventions demonstrate effectiveness across age ranges from early childhood through high school, certain competencies show developmental sensitivity. Early childhood interventions focusing on foundational skills like emotion recognition and basic self-regulation produce robust immediate effects that provide developmental scaffolding for subsequent learning (Denham & Brown, 2010). Adolescent interventions addressing more complex competencies like perspective-taking and ethical decision-making align with emerging cognitive capacities and show particular relevance for preventing risky behaviors.

Sociocultural context represents another crucial moderating influence. SEL programs developed and evaluated primarily in Western, middle-class contexts may require cultural adaptation for effectiveness in diverse settings. Emerging research examines cultural variations in emotional expression, social norms, and relationship patterns that influence how SEL competencies are understood and valued (Jagers et al., 2019). Culturally responsive SEL acknowledges these variations and adapts curriculum content, instructional approaches, and expected outcomes accordingly. Studies comparing standard versus culturally adapted SEL implementations reveal that adapted programs produce stronger effects among culturally diverse populations.

School and community context influences SEL effectiveness through multiple pathways. Schools with strong leadership support, positive organizational culture, and alignment between SEL and other school initiatives demonstrate better implementation quality and student outcomes (Durlak & DuPre, 2008). Community factors including poverty levels, neighborhood safety, and family stress influence both baseline student needs and the degree to which school-based SEL interventions must compensate for environmental challenges. Some evidence suggests SEL interventions produce particularly strong effects among high-risk populations, though these students may also require more intensive or sustained intervention to achieve comparable gains.

2.6. Methodological Considerations and Limitations

Evaluating SEL effectiveness presents substantial methodological challenges that influence interpretation of existing evidence. Random assignment to conditions represents the gold standard for causal inference, yet randomized controlled trials (RCTs) of SEL interventions remain relatively uncommon, particularly for long-term outcome evaluations. Many published studies employ quasi-experimental designs with matched comparison groups, introducing potential selection bias and confounding variables. While statistical techniques can partially address these limitations, residual confounding remains plausible, potentially inflating effect size estimates.

Measurement issues pose additional challenges. Academic achievement outcomes typically rely on standardized tests or grades, providing relatively objective, reliable metrics. However, social-emotional competency assessment proves more complex, relying primarily on self-report measures or teacher ratings, each with inherent limitations. Self-report measures are vulnerable to social desirability bias and limited self-awareness, particularly among younger children. Teacher ratings, while providing external perspective, may be influenced by halo effects, limited observation opportunities, and rater biases. Performance-based assessments of emotional intelligence exist but require substantial administration time and expertise, limiting their use in large-scale evaluations.

Attrition represents a significant concern in longitudinal SEL research. Long-term follow-up studies necessarily experience participant attrition as individuals move, decline continued participation, or become otherwise unreachable. If attrition is differential—meaning it occurs more frequently in certain subgroups or conditions—resulting estimates may be biased. Most longitudinal SEL studies experience 20-40% attrition over multi-year follow-up periods, though sophisticated statistical techniques can partially mitigate resulting bias.

Publication bias may inflate apparent SEL effectiveness if studies with null or negative findings are less likely to be published. Meta-analyses examining publication bias through funnel plot asymmetry and fail-safe N calculations generally suggest modest publication bias that does not fully account for observed effects, though this concern cannot be entirely dismissed (Durlak et al., 2011). Pre-registration of studies and requirements for publishing null findings would address this limitation in future research.

Contamination and diffusion effects complicate interpretation when control conditions are exposed to SEL programming through school-wide initiatives, teacher practices, or curricular integration. In such circumstances, comparisons may underestimate true effects by comparing SEL intervention to partially SEL-exposed controls rather than to truly SEL-naïve conditions. This issue becomes particularly salient as SEL becomes more widely adopted, making it increasingly difficult to identify appropriate comparison conditions.

III. METHODOLOGY

This paper employs a systematic review methodology synthesizing empirical evidence from multiple research traditions, including meta-analyses, randomized controlled trials, quasi-experimental studies, and longitudinal cohort investigations. The review strategy prioritizes methodologically rigorous studies while acknowledging the complementary insights provided by diverse research designs.

3.1. Search Strategy and Inclusion Criteria

A comprehensive literature search was conducted across multiple academic databases, including PsycINFO, ERIC, Web of Science, and Google Scholar, covering publications from 2000 through 2024. Search terms combined variations of "social-emotional learning," "SEL," "emotional intelligence," "social-emotional competence" with outcome terms including "academic achievement," "academic performance," "life outcomes," "longitudinal outcomes," and "follow-up." Reference lists from identified articles and relevant meta-analyses were examined for additional sources.

Inclusion criteria specified that studies must:

- Evaluate a defined SEL intervention or examine naturally occurring variation in social-emotional competencies
- Measure academic achievement outcomes (standardized test scores, GPA, graduation rates) or long-term life outcomes (educational attainment, employment, mental health, criminal involvement)
- Employ comparison groups or longitudinal designs enabling causal inference
- Utilize validated outcome measures
- Provide sufficient statistical information for effect size calculation.

Studies were excluded if they focused exclusively on clinical populations receiving therapeutic interventions rather than universal or indicated prevention programs, or if they lacked adequate methodological rigor.

3.2. Data Extraction and Synthesis

From each included study, the following information was extracted:

- Study design and sample characteristics;
- Sel intervention characteristics including theoretical foundation, target competencies, duration, and implementation context;
- Outcome measures and assessment timing;
- Statistical findings including effect sizes, confidence intervals, and significance levels; and
- Moderator analyses examining factors influencing effectiveness.

Given the review's synthesis of existing meta-analyses rather than primary aggregation of individual studies, quantitative synthesis focused on summarizing meta-analytic effect size estimates and examining consistency across meta-analyses. For individual studies of particular methodological rigor or addressing gaps in meta-analytic coverage, findings are presented narratively with attention to study quality indicators.

3.3. Quality Assessment

Study quality was evaluated using criteria adapted from the Cochrane Collaboration's risk of bias tool, considering:

- Random assignment versus quasi-experimental design
- Sample size adequacy
- Attrition rates and handling of missing data
- Outcome measure validity and reliability
- Implementation fidelity assessment
- Appropriate statistical analysis including control for baseline differences and clustering effects.

Meta-analyses were evaluated based on comprehensiveness of search strategies, inclusion criteria transparency, appropriate statistical methods, and examination of publication bias and heterogeneity.

3.4. Analytical Framework

The analytical approach integrates findings across multiple levels of analysis. Meta-analytic evidence provides the foundation for conclusions regarding average intervention effects. Individual rigorous studies, particularly RCTs and high-quality longitudinal investigations, provide detailed insights into mechanisms, moderators, and specific outcome domains. Cross-study comparisons enable identification of program characteristics and implementation conditions associated with enhanced effectiveness. Throughout, the analysis maintains critical awareness of methodological limitations and their implications for causal interpretation.

IV. RESULTS

4.1. Academic Achievement Outcomes

Evidence from meta-analytic syntheses provides robust support for SEL's positive impact on academic achievement across multiple indicators. Table 1 presents effect size estimates from major meta-analyses examining academic outcomes.

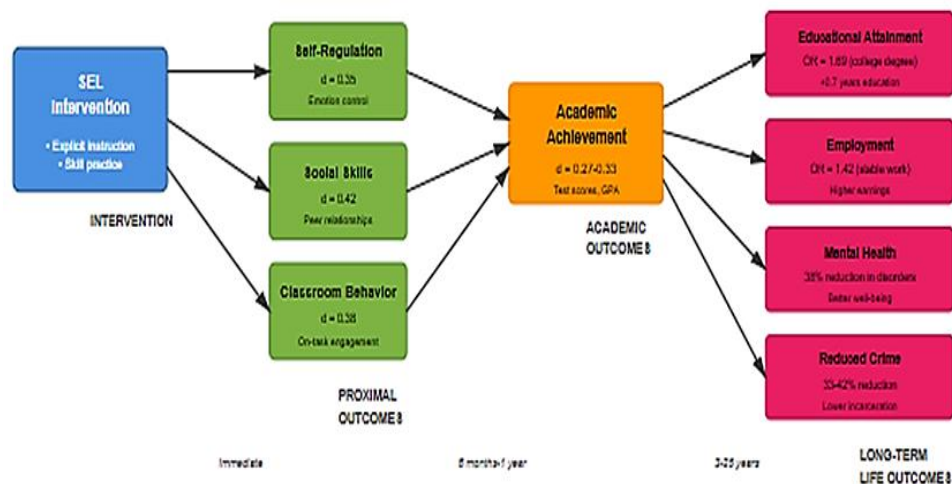
Table 1. Meta-Analytic Evidence for SEL Impact on Academic Achievement

Study	N Studies	N Participants	Achievement Measure	Effect Size (d)	95% CI
Durlak et al. (2011)	213	270,034	Standardized Tests	0.27	[0.19, 0.35]
Durlak et al. (2011)	213	270,034	Grade Point Average	0.33	[0.23, 0.43]
Taylor et al. (2017)	82	97,406	Academic Performance (combined)	0.33	[0.23, 0.42]
Sklad et al. (2012)	75	45,000+	Academic Achievement	0.40	[0.27, 0.53]
Wigelsworth et al. (2016)	89	60,000+	Academic Outcomes	0.26	[0.17, 0.35]

Note. d = Cohen's d standardized mean difference effect size. CI = confidence interval. Effect sizes represent differences between SEL intervention and control groups at post-intervention assessment.

The consistency of effect sizes across meta-analyses, ranging from $d = 0.26$ to $d = 0.40$, provides confidence in the robustness of findings. These effects represent small to medium magnitude using conventional interpretive guidelines, translating to approximately 10-15 percentile point gains in academic achievement. While modest in absolute terms, these gains accrue across student populations and multiple years, producing substantial cumulative impact.

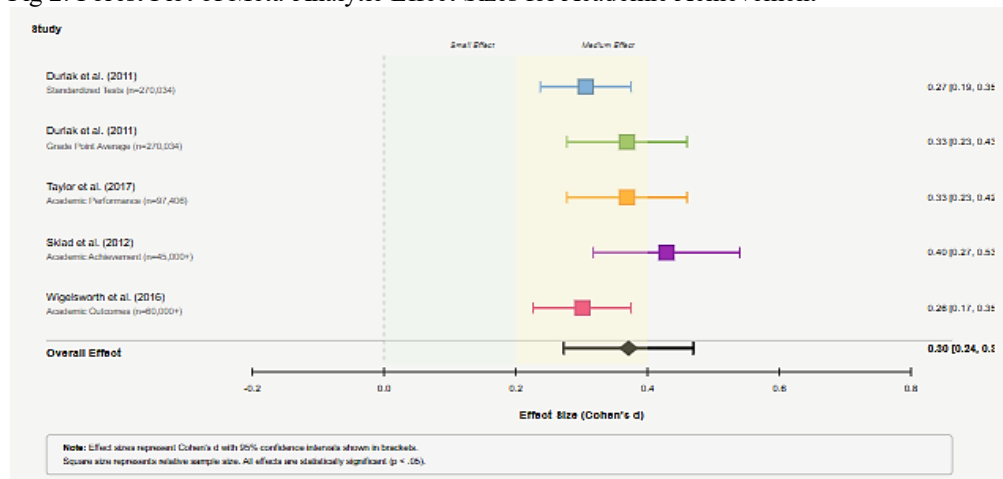
Fig 1: Conceptual Model of SEL Mechanisms and Outcomes



Examination of specific outcome measures reveals that SEL effects extend across multiple academic indicators. Grade point average shows particularly strong effects ($d = 0.33$), potentially reflecting that GPA captures not only academic knowledge but also work habits, persistence, and engagement—dimensions directly targeted by SEL interventions. Standardized achievement test scores, while showing slightly smaller effects ($d = 0.27$), nonetheless demonstrate that SEL participation enhances measurable academic learning, not merely behavioral compliance or subjective teacher ratings.

Analysis of achievement patterns across content domains indicates relatively consistent effects across reading, mathematics, and other academic subjects, suggesting that SEL enhances general learning capacity rather than domain-specific skills. Some evidence indicates particularly strong effects for reading achievement, potentially reflecting that reading comprehension engages social-emotional processes including perspective-taking, emotion inference, and motivational engagement with text content (Brackett et al., 2011).

Fig 2: Forest Plot of Meta-Analytic Effect Sizes for Academic Achievement



Temporal patterns of effects reveal important nuances regarding intervention timing and sustainability. Immediate post-intervention assessments typically show stronger effects than longer-term follow-up assessments, suggesting that academic benefits diminish somewhat over time, particularly when SEL programming is discontinued. However, (Taylor et al., 2017) finding of sustained effects ($d = 0.33$) at an average of 3.75 years post-intervention demonstrates that well-implemented SEL programs can produce durable academic benefits, particularly when intervention duration is substantial and implementation quality is high.

Subgroup analyses examining moderators of academic effects reveal several important patterns. Programs implemented with high fidelity produce substantially larger effects ($d = 0.40$ - 0.50) compared to low-fidelity implementations ($d = 0.10$ - 0.15), underscoring implementation quality as a critical determinant of effectiveness. Programs incorporating SAFE design elements show significantly larger effects than programs lacking these features, with effect sizes differing by approximately 0.20 - 0.30 standard deviations.

Student developmental stage shows complex moderating effects on academic outcomes. Elementary school interventions demonstrate robust effects across multiple meta-analyses, with effect sizes typically in the $d = 0.30$ - 0.40 range. Middle school interventions show somewhat smaller but still significant effects ($d = 0.20$ - 0.30), while high school interventions demonstrate more variable effects depending heavily on program characteristics and implementation context. These developmental patterns may reflect that early intervention provides foundational competencies supporting subsequent learning, while later interventions must address more entrenched patterns and compete with intensifying academic demands.

Evidence regarding differential effects across student subgroups indicates relatively consistent benefits across demographic categories. Effects do not significantly differ by student gender, race/ethnicity, or socioeconomic status in most meta-analyses, suggesting broad applicability (Durlak et al., 2011). However, some individual studies indicate particularly strong effects for students at elevated risk due to poverty, family stress, or behavioral difficulties, suggesting SEL may provide compensatory benefits for students facing environmental challenges.

4.2. Long-Term Life Outcomes

While academic achievement represents an important proximal outcome, the ultimate value of SEL depends on whether enhanced competencies translate into improved life trajectories. Table 2 summarizes evidence regarding long-term outcomes from major longitudinal studies.

Table 2. Longitudinal Evidence for SEL Impact on Life Outcomes

Study	N Participants	Follow-up Duration	Outcome Domain	Finding
Hawkins et al. (2008)	808	18 years	Educational Attainment	OR = 1.69 for college degree
Hawkins et al. (2008)	808	18 years	Mental Health	38% reduction in mental health diagnoses
Hawkins et al. (2008)	808	18 years	Criminal Involvement	33% reduction in crime involvement
Reynolds et al. (2011)	1,539	25 years	Educational Attainment	+0.7 years additional education
Reynolds et al. (2011)	1,539	25 years	Employment	OR = 1.42 for stable employment
Reynolds et al. (2011)	1,539	25 years	Criminal Justice	42% reduction in incarceration
Jones et al. (2015)	57,000+	6 mo - 18 yr	Employment	$d = 0.33$ for employment outcomes
Jones et al. (2015)	57,000+	6 mo - 18 yr	Mental Health	$d = 0.23$ for mental health indicators

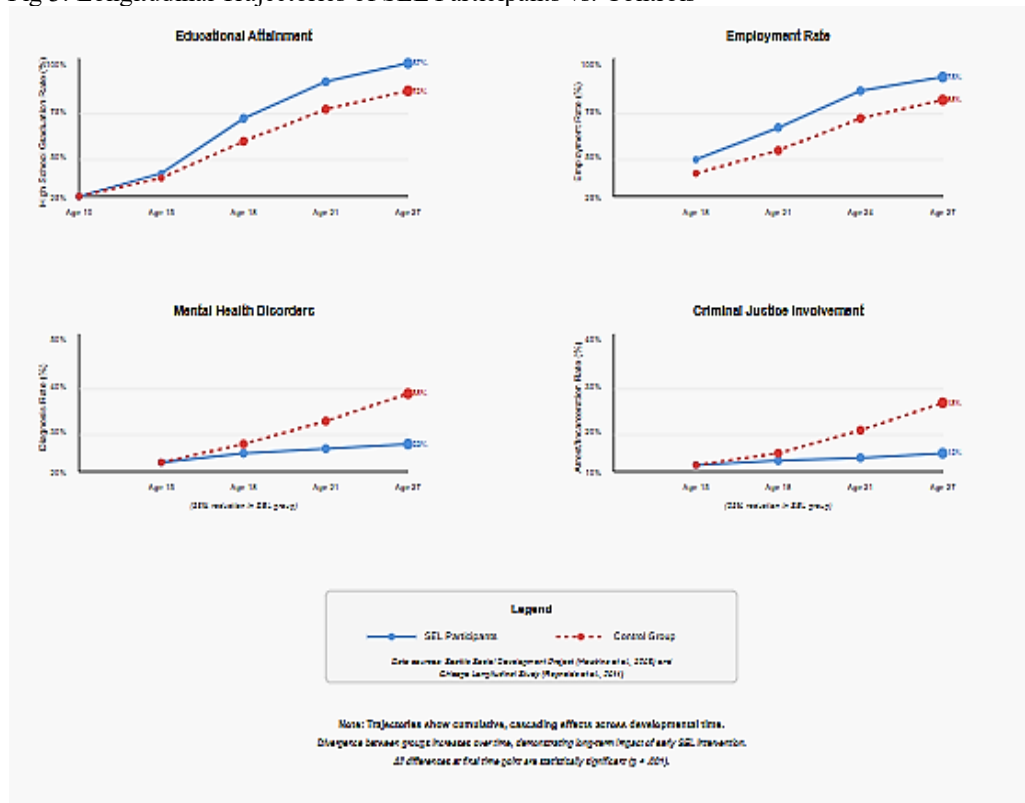
Note. OR = odds ratio. d = Cohen's d standardized mean difference. All findings significant at $p < .05$. Effect sizes and odds ratios represent differences favoring SEL intervention participants.

The Seattle Social Development Project provides particularly compelling evidence for long-term impact through its 18-year follow-up of participants who received comprehensive SEL programming in elementary school (Hawkins et al., 2008). At age 27, SEL participants demonstrated significantly better outcomes across multiple life domains compared to controls. Educational attainment showed substantial advantages, with SEL participants 69% more likely to have earned a college degree. This educational advantage likely contributes to observed employment and income benefits, creating cascading effects across life domains.

Mental health outcomes reveal striking long-term benefits. SEL participants demonstrated 38% lower rates of mental health diagnoses, including significantly reduced rates of anxiety disorders, depression, and substance abuse. These mental health advantages have profound implications for life quality, relationship functioning, and productivity. The mechanisms underlying these long-term mental health benefits likely include enhanced emotion regulation capacities, more effective coping strategies, stronger social support networks, and reduced exposure to cumulative stress.

Criminal justice involvement shows particularly dramatic long-term effects. The Seattle study found 33% reduction in criminal involvement among SEL participants, while the Chicago Longitudinal Study documented 42% reduction in incarceration rates (Reynolds et al., 2011). These effects translate into substantial societal benefits through reduced crime victimization, criminal justice costs, and incarceration expenses. Cost-benefit analyses reveal that reduced criminal justice involvement alone accounts for a substantial proportion of the economic return on SEL investment.

Fig 3: Longitudinal Trajectories of SEL Participants vs. Controls



Employment outcomes demonstrate consistent advantages for SEL participants tracked into adulthood. The Chicago study found 42% higher odds of stable employment among SEL participants, along with significantly higher earnings (Reynolds et al., 2011). These employment advantages likely reflect multiple mechanisms, including enhanced educational attainment, stronger social skills facilitating workplace relationships, greater emotional regulation supporting workplace performance, and more effective problem-solving and decision-making capacities.

Relationship quality and social functioning represent additional long-term outcome domains showing SEL impact. The Seattle study documented that SEL participants demonstrated higher relationship quality, including more stable romantic partnerships and lower rates of domestic violence involvement. SEL participants also reported stronger social support networks and more positive parenting practices, suggesting intergenerational transmission of benefits as SEL participants raise their own children with enhanced social-emotional capacities.

Economic analyses provide compelling evidence regarding the long-term return on investment in SEL programming. (Reynolds et al., 2011) cost-benefit analysis of the Chicago Child-Parent Centers, which incorporate substantial SEL components, estimated a return of \$7.14 for every dollar invested, with benefits accruing through increased educational attainment and earnings, reduced criminal justice involvement, decreased social service utilization, and improved health outcomes. Similar analyses of other SEL programs reveal benefit-cost ratios ranging from 3:1 to 11:1, depending on program characteristics and follow-up duration.

4.3. Mechanisms of Impact

Understanding the pathways through which SEL produces observed effects represents a critical research priority. Multiple mediational studies provide insights into these mechanisms, though comprehensive understanding remains incomplete.

Self-regulation emerges as a primary mediator of SEL effects on academic achievement. Several studies employing mediational analyses demonstrate that improvements in attention control, impulse regulation, and emotion management partially or fully account for the relationship between SEL participation and subsequent academic performance (Bierman et al., 2008). These findings align with theoretical models emphasizing executive function as foundational for academic learning. Neuroimaging research provides convergent evidence, demonstrating that SEL participation is associated with enhanced prefrontal cortex activity during tasks requiring cognitive control and emotion regulation (Davidson et al., 2012).

Classroom behavior and engagement function as additional mediating pathways. Observational studies reveal that students participating in SEL programs demonstrate reduced disruptive behavior, enhanced cooperative learning, and greater on-task behavior (Durlak et al., 2011). These behavioral improvements create more conducive learning environments while enabling students to maximize instructional time. Mediational analyses indicate that reduced behavioral problems and enhanced engagement partially account for SEL effects on academic achievement, though direct effects remain significant even after controlling for these mediators, suggesting multiple pathways of influence.

Teacher-student relationship quality represents another mediating mechanism. Students developing stronger social-emotional competencies demonstrate enhanced capacity to form positive relationships with teachers, characterized by greater

trust, communication, and support (Jennings & Greenberg, 2009). These improved relationships predict enhanced academic motivation, increased help-seeking when confused, and greater persistence through challenges. Mediation analyses confirm that teacher-student relationship quality partially accounts for the association between SEL participation and academic outcomes.

Academic mindsets and motivational orientations serve as cognitive-affective mediators. Students developing stronger self-awareness and self-efficacy through SEL participation demonstrate more adaptive achievement motivation, including incremental theories of intelligence, mastery goal orientations, and constructive attributional patterns (Yeager & Dweck, 2012). These mindset changes predict greater willingness to engage challenging material, more constructive responses to setbacks, and enhanced academic persistence. While direct evidence for mediation remains limited, correlational patterns support this pathway.

Stress reduction and improved mental health function as additional mediating mechanisms, particularly for long-term outcomes. Students developing effective emotion regulation and coping strategies through SEL demonstrate reduced psychological distress, lower anxiety and depression symptoms, and enhanced psychological well-being (Durlak et al., 2011). Improved mental health enables greater cognitive availability for learning, reduced absenteeism, and enhanced capacity to navigate social and academic challenges. Longitudinal mediation analyses suggest that mental health improvements in childhood and adolescence partially account for long-term educational and employment advantages observed in adulthood.

4.4. Implementation Factors and Moderators

The effectiveness of SEL interventions depends critically on implementation conditions, with substantial variation in outcomes attributable to differences in implementation quality, teacher preparation, and contextual support. Implementation fidelity—the degree to which programs are delivered as designed—emerges as perhaps the most critical moderator. Meta-analyses reveal that high-fidelity implementations produce effect sizes approximately three times larger than low-fidelity implementations (Durlak & DuPre, 2008). Fidelity includes multiple dimensions: adherence to program protocols, dosage (sufficient time allocation), quality of delivery (engaging, responsive instruction), and participant responsiveness (student engagement). Studies examining these dimensions reveal that all contribute to outcomes, with quality of delivery showing particularly strong associations with effectiveness.

Teacher factors significantly moderate SEL outcomes. Effective SEL implementation requires teachers who possess not only technical knowledge of program content but also personal social-emotional competencies, classroom management skills, and beliefs supporting SEL goals (Jennings & Greenberg, 2009). Research indicates that teachers with higher emotional intelligence, stronger self-efficacy for SEL implementation, and more positive attitudes toward SEL produce better student outcomes. These findings underscore that SEL represents not merely a curriculum to deliver but a set of practices and relationships requiring substantial teacher capacity.

Professional development characteristics predict implementation quality and outcomes. Single-session trainings prove insufficient for developing the knowledge, skills, and beliefs necessary for effective implementation. Multi-session training sequences combined with ongoing coaching, collaborative planning time, and performance feedback produce significantly better implementation and student outcomes compared to training alone (Domitrovich et al., 2009). The duration and intensity of professional development needed varies with teacher baseline capacity and program complexity, but substantial investment is consistently necessary.

School organizational factors influence SEL implementation and effectiveness. Schools with strong administrative support, positive organizational climate, and strategic integration of SEL with other school initiatives demonstrate better implementation quality and student outcomes (Durlak & DuPre, 2008). Administrative support includes providing necessary time, resources, and expectations for implementation while addressing competing demands and initiatives. Organizational climate encompasses shared values supporting student social-emotional development, collaborative professional relationships, and collective efficacy for impacting student outcomes.

Program characteristics moderate effectiveness in predictable ways. The SAFE framework (Sequenced, Active, Focused, Explicit) identifies design features associated with enhanced effectiveness (Durlak et al., 2011). Programs providing sequenced, connected activities produce larger effects than disconnected lessons. Programs employing active learning methods engaging students directly outperform didactic approaches. Programs maintaining focused attention on social-emotional skill development produce better outcomes than programs addressing multiple objectives without sufficient time for skill mastery. Programs using explicit instruction with clear learning objectives show advantages over programs relying on implicit socialization.

Sociocultural context moderates SEL effectiveness, though research examining cultural variations remains limited. Emerging evidence suggests that programs developed and evaluated primarily in Western, middle-class contexts may require cultural adaptation for optimal effectiveness in diverse settings (Jagers et al., 2019). Cultural variations exist in emotional expression norms, social relationship patterns, communication styles, and values regarding individual versus collective orientation. Culturally responsive SEL acknowledges these variations and adapts content, instructional methods, and expected outcomes accordingly. Preliminary evidence suggests culturally adapted programs produce stronger effects among culturally diverse populations, though rigorous research remains sparse.

V. DISCUSSION

5.1. Integration and Interpretation of Findings

The accumulated evidence synthesized in this review provides robust support for SEL's positive impact on both proximal academic outcomes and distal life trajectories. Effect size estimates from multiple meta-analyses converge on small

to medium magnitude improvements in academic achievement ($d = 0.27-0.33$), representing approximately 10-15 percentile point gains. While modest in absolute terms, these effects accrue across student populations and persist over time, producing substantial cumulative impact. Longitudinal studies extending into adulthood demonstrate that SEL participation predicts significantly better educational attainment, employment outcomes, mental health, and reduced criminal justice involvement, with effect sizes and odds ratios indicating practically meaningful advantages.

These findings challenge traditional educational paradigms that conceptualize academic and social-emotional development as separate domains. Instead, the evidence supports an integrated perspective recognizing that cognitive learning and social-emotional competencies develop interdependently. Students who cannot regulate emotions, manage stress, navigate social relationships, or maintain motivation inevitably struggle academically, regardless of instructional quality. Conversely, academic success requires not merely content knowledge but also metacognitive awareness, persistence through challenges, help-seeking when confused, and collaborative learning—all social-emotional competencies directly targeted by SEL interventions.

The mediational evidence illuminates specific pathways through which SEL enhances outcomes. Self-regulation improvements enable students to maintain attention, control impulses, and manage frustration during challenging academic tasks. Enhanced classroom behavior and engagement increase time-on-task while creating more conducive learning environments. Improved relationships with teachers provide social support, increase help-seeking, and enhance motivation. These mechanisms operate simultaneously, creating cascading effects that amplify over time. The persistence of effects into adulthood likely reflects that early-developed social-emotional competencies continue supporting adaptive functioning across life domains, from workplace performance to relationship quality to mental health.

The substantial heterogeneity in effect sizes across studies, while complicating simple conclusions, provides valuable insights regarding implementation requirements. The three-fold difference in effect sizes between high-fidelity and low-fidelity implementations underscores that SEL effectiveness depends critically on implementation quality rather than simply program adoption. This pattern has important implications for educational policy and practice, suggesting that substantial investment in teacher preparation, ongoing coaching, time allocation, and organizational support is necessary for realizing SEL's potential benefits.

5.2. Theoretical Implications

The empirical findings have important theoretical implications for understanding human development, learning processes, and educational interventions. First, the evidence strongly supports integrative developmental models emphasizing reciprocal relationships between cognitive, social, and emotional development. Traditional stage theories conceptualizing these domains as separate developmental trajectories prove inadequate for explaining observed patterns. Instead, the findings align with dynamic systems perspectives emphasizing that development emerges through continuous interactions between multiple interrelated capacities.

Second, the long-term outcome evidence supports life-course perspectives emphasizing that early competency development creates trajectories that cascade across developmental periods and life domains. Small early advantages in self-regulation or social competence compound over time through multiple mechanisms, including enhanced academic performance enabling educational advancement, stronger relationships providing social support and opportunities, and effective emotion regulation preventing mental health problems. These cascading processes produce substantial long-term effects from relatively modest initial interventions.

Third, the implementation research underscores that educational interventions operate as complex systems rather than simple cause-effect relationships. Program effectiveness depends not only on curriculum content but on teacher capacity, organizational support, implementation fidelity, and contextual alignment. This complexity requires moving beyond simplistic "what works" questions to more nuanced understanding of how, for whom, and under what conditions interventions produce effects. Ecological frameworks emphasizing person-context interactions prove essential for understanding these patterns.

5.3. Practical Implications

The findings have direct implications for educational policy and practice. First, the evidence provides strong justification for investing in evidence-based SEL programming as a core educational priority rather than a supplementary enhancement. The magnitude and persistence of effects, combined with the comprehensive nature of benefits extending across academic and life domains, support SEL as foundational to educational effectiveness. Cost-benefit analyses revealing substantial economic returns further strengthen the case for investment.

Second, the research clearly indicates that effective SEL implementation requires substantial systemic support rather than superficial curriculum adoption. Schools implementing SEL must provide comprehensive multi-session teacher training with ongoing coaching, allocate sufficient instructional time, integrate SEL with other school initiatives, and maintain organizational commitment over multiple years. Half-hearted implementation or rapid cycling through successive initiatives will produce minimal benefits. District and school leaders must recognize that SEL represents a fundamental shift in educational approach requiring sustained commitment and resources.

Third, the moderator research suggests that one-size-fits-all approaches prove inadequate. Programs require adaptation to developmental stage, cultural context, and student needs while maintaining fidelity to core design principles. Elementary programs should emphasize foundational competencies like emotion recognition and basic self-regulation through concrete, activity-based instruction. Adolescent programs should address more complex competencies like perspective-taking and ethical decision-making while acknowledging developmental needs for autonomy and identity formation. Cultural adaptation should attend to variations in emotional expression, social norms, and values while maintaining focus on core competencies.

Fourth, the mediational evidence suggests specific implementation strategies for enhancing effectiveness. Programs should explicitly teach self-regulation strategies including emotional awareness, cognitive reappraisal, and behavioral management techniques. Instructional approaches should emphasize active learning through role-play, cooperative activities, and real-world application rather than didactic instruction. Integration with academic instruction provides opportunities for practicing social-emotional competencies in authentic contexts while demonstrating relevance. Consistent reinforcement throughout the school day, beyond designated SEL lessons, supports generalization and maintenance.

5.4. Limitations and Methodological Considerations

While the evidence base provides substantial support for SEL's effectiveness, important limitations warrant acknowledgment. First, many studies employ quasi-experimental designs introducing potential selection bias and confounding variables. While statistical controls partially address these concerns, causal inference remains more tentative than for true randomized experiments. The field would benefit from additional large-scale RCTs examining both short-term and long-term outcomes.

Second, measurement challenges complicate interpretation, particularly for social-emotional competency outcomes. Reliance on self-report and teacher ratings introduces potential biases from social desirability, limited self-awareness, and rater effects. Performance-based assessments of emotional intelligence and social competence remain relatively uncommon in large-scale studies due to administration demands. Development and validation of efficient, objective measures would substantially advance the field.

Third, attrition in longitudinal studies introduces potential bias if dropout is differential across conditions or participant characteristics. While sophisticated statistical techniques partially mitigate this concern, it cannot be entirely eliminated. Future research should prioritize retention strategies and employ advanced missing data methods.

Fourth, publication bias may inflate apparent effectiveness if null findings are underreported. Meta-analyses examining this possibility through funnel plots and fail-safe N calculations suggest modest bias that does not fully account for observed effects, but this concern cannot be dismissed. Pre-registration of studies and publication of null findings would address this limitation.

Fifth, most research evaluates programs in school settings with students experiencing typical development. Evidence regarding effectiveness for students with special needs, including those with identified emotional or behavioral disorders, developmental disabilities, or trauma histories, remains more limited. These populations may require adapted approaches or more intensive intervention.

5.5. Future Research Directions

Several research priorities emerge from this review. First, long-term longitudinal studies examining developmental trajectories from early childhood through adulthood with comprehensive outcome assessment would provide critical insights into how, when, and for whom SEL produces enduring effects. Such studies should include repeated assessments of both social-emotional competencies and diverse outcomes, enabling sophisticated examination of mediational pathways and cascading effects over time.

Second, research examining implementation strategies for enhancing effectiveness and sustainability would inform practice. Comparative studies evaluating alternative professional development approaches, examining optimal dosage and intensity, and identifying strategies for maintaining implementation fidelity over time would address critical practical questions. Implementation science frameworks emphasizing factors operating at multiple system levels provide useful guidance for this research.

Third, investigation of cultural variations and adaptation requirements would support effectiveness across diverse contexts. This research should move beyond simply examining whether effects differ across demographic groups to understanding how cultural values, norms, and practices influence how social-emotional competencies are understood, expressed, and developed. Participatory research approaches engaging diverse communities in program adaptation and evaluation would enhance cultural responsiveness.

Fourth, neuroscience research examining neural mechanisms underlying SEL effects would advance theoretical understanding while potentially identifying biomarkers predicting intervention responsiveness. Neuroimaging studies examining changes in brain structure and function associated with SEL participation could elucidate mechanisms through which interventions influence cognition, emotion, and behavior. Such research should be theoretically grounded and avoid reductionism that neglects social-contextual influences.

Fifth, economic analyses examining long-term return on investment across diverse populations and intervention approaches would inform policy decisions regarding resource allocation. While existing cost-benefit analyses demonstrate favorable returns, additional research examining economic outcomes across longer timeframes, diverse populations, and varied implementation approaches would strengthen evidence for investment decisions.

Sixth, research examining integration of SEL with other educational reform efforts would address practical implementation questions. Studies evaluating coordinated approaches combining SEL with academic interventions, trauma-informed practices, restorative justice approaches, or comprehensive school reform models could identify synergies and optimal integration strategies.

VI. CONCLUSION

This comprehensive review synthesizes substantial evidence demonstrating that social-emotional learning interventions

produce meaningful improvements in both academic achievement and long-term life outcomes. Meta-analytic evidence from hundreds of studies involving hundreds of thousands of students reveals consistent positive effects on academic performance, with effect sizes ranging from 0.27 to 0.40 standard deviations. These academic benefits extend across multiple indicators, including standardized test scores, grade point averages, and graduation rates, and remain evident across diverse student populations and school contexts.

The long-term longitudinal evidence proves even more compelling, demonstrating that enhanced social-emotional competencies developed through childhood SEL participation predict significantly better life trajectories extending into adulthood. SEL participants show substantially higher educational attainment, enhanced employment outcomes, better mental health, and dramatically reduced criminal justice involvement compared to non-participants. Cost-benefit analyses reveal that every dollar invested in evidence-based SEL programming returns multiple dollars in societal benefits through these improved outcomes.

Understanding of mechanisms through which SEL produces these effects has advanced substantially, with evidence implicating multiple pathways including enhanced self-regulation, improved classroom behavior and engagement, stronger relationships, and reduced psychological distress. These mechanisms operate simultaneously, creating cascading effects that amplify over developmental time and extend across life domains.

Critical examination of moderating factors reveals that SEL effectiveness depends fundamentally on implementation quality, teacher capacity, organizational support, and contextual alignment. Programs implemented with high fidelity, delivered by well-prepared teachers, and supported by strong organizational commitment produce substantially larger effects than superficial implementations. This pattern underscores that realizing SEL's potential requires substantial, sustained investment rather than cursory curriculum adoption.

The accumulated evidence supports reconceptualizing SEL not as a supplementary program but as a foundational educational approach essential for developing the competencies necessary for success in school and life. The artificial distinction between academic and social-emotional learning proves counterproductive; optimal educational environments address both simultaneously, recognizing their interdependence. Moving forward, educational systems should prioritize evidence-based SEL implementation as a core component of comprehensive efforts to promote student development, while continuing to advance understanding through rigorous research addressing remaining questions regarding mechanisms, implementation, and cultural responsiveness.

The implications extend beyond education to broader considerations of human development and societal well-being. In an increasingly complex, interconnected world requiring sophisticated interpersonal collaboration, rapid adaptation to change, and management of stress and uncertainty, social-emotional competencies prove essential for individual flourishing and collective success. Educational investments in developing these competencies represent not merely school improvement strategies but fundamental commitments to human capability and potential.

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