# School-Based Interventions for Adolescent Emotional Regulation Post-COVID 19 Within the Scope of Occupational Therapy

*Scoping Review*

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## Abstract

**Introduction:** The COVID-19 pandemic significantly altered youth mental health needs, creating a heightened demand for interventions that support emotional regulation and reduce reliance on punitive discipline. However, the professionals currently responsible for providing these interventions are often overextended, which can significantly limit effective support for adolescents. Although multiple disciplines provide support, occupational therapy practitioners (OTPs) remain underutilized due to limited awareness of their role in addressing mental health. Given the presence of OTPs in school practice, clarifying how OTPs can support emotional regulation is essential and could serve to reduce the strain on existing providers.

**Methods:** A comprehensive search was conducted across several databases, including CINAHL Plus, ERIC, and APA PsycInfo, following the PRISMA-ScR guidelines. Inclusion criteria required studies to occur between 2020 and 2025, address school interventions for adolescents aged 9–19 in countries with similar educational systems to the U.S. Exclusion criteria ruled out studies involving participants with physical or developmental disabilities.

**Results:** The search identified 595 articles, of which 526 were excluded after title and abstract review. After full-text screening, 14 articles met the inclusion criteria. Interventions identified to address emotional regulation included meditation (n=3), dialectical behavior therapy (n=3), mindfulness (n=10), yoga (n=1), interoception (n=1), biofeedback (n=5), and sensory regulation (n=1). OTs were identified as providers in only two of these interventions.

**Conclusions:** There is a sizable opportunity for OTPs to collaborate with interdisciplinary teams to develop school-based emotional regulation programs. OTPs should advocate for their role in these interventions and conduct more research to highlight their value in supporting adolescent mental health.

***Key Words***: self-regulation, occupational therapy practitioner, teenage

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## Introduction

Since the COVID-19 pandemic, negative behaviors and mental health challenges within school systems have increased, reflecting the widespread trauma associated with the pandemic.[1] In the United States, the disciplinary programs in many school systems are structured to penalize adolescents for behaviors that are perceived as deviant and unwanted, rather than addressing the primary cause of behaviors. This approach can lead to reinforcement of negative behaviors rather than addressing them constructively.[2] There is a growing need for school-based professionals who are equipped to provide interventions that promote emotional health and mitigate problematic behaviors. Equipping students with the skills and abilities to self-regulate

promotes de-escalation of behaviors before disciplinary action, such as classroom removal, is needed.[3] Emotional regulation refers to the use of strategies to manage one's own emotions and behaviors. For the purposes of this review, self-regulation and emotional regulation will be used interchangeably referring to actions that help an individual achieve a stable emotional state to achieve well-being.[4]

Occupational therapy helps individuals throughout the lifespan participate in meaningful daily activities or occupations, which can be defined as tasks that people "need to, want to and are expected to do" such as improving school participation.[4] Occupational therapy practitioners (OTPs) promote participation in occupations by addressing performance patterns, routines, and performance skills, and self-regulation.[4] Occupational therapy is present in schools nationwide, and schools account for 20% of the OTP workforce in America.[5] Occupational therapy practitioners have powerful potential to create intervention programs to improve the students' understanding of their behaviors and enhance their self-regulation.[3,6] They can develop programs for educators that would help school personnel identify the root cause of behaviors, increasing their ability to assist students in regulating emotions.[7] Designing a program to promote self-regulation and emotional regulation of students falls withing the scope of occupational therapy, which is outlined in the *Occupational Therapy Practice Framework-4* (OTPF-4). The OPTF-4 guides and defines the scope of practice of OTPs and supports the provision of emotional health services in schools, including those related to addressing self-regulation, emotional and psychosocial functions, improving health and wellness, well-being, and prevention of further challenges.[4] Despite their potential, OTPs are often underutilized in designing universal tier-1 intervention programs for emotional regulation.[3] This may be due to limited awareness among school personnel and OTPs of the full scope and capabilities of occupational therapy services in the school setting.

To investigate this topic, a scoping review was completed to identify school-based interventions for emotional regulation that fall within the scope of occupational therapy. A scoping review was selected due to the limited availability of literature addressing how OTPs can best provide these services. The objectives were to identify school-based interventions for emotional regulation, determine which interventions fell within the scope of occupational therapy, and to identify the providers who most frequently deliver the interventions. The specific question that was researched was: What interventions for emotional regulation are being provided to adolescents in school-based settings post-COVID-19 that fall within the scope of occupational therapy?

**Scientific Methods**

A protocol was developed and is registered on Open Science Framework.[8] The Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) was used to guide the scoping review. The databases searched included CINAHL, ERIC, Academic Search Complete, Education, SocINDEX, Psychology and Behavioral Science Collection, Nursing and Allied Health, and APA PsychInfo through the EBSCO platform. Keywords utilized in the search included: teen* or adolescen*; emotional regulation; self-regulation or co-regulation; school* or education* or school-based; intervention or program or treatment or therapy or strategy. All searches were conducted in 2025. After the initial search, filters were applied for the age range of adolescents, English language, and published between 2020 and 2025. Articles from 2020-2025 were examined to gain a better understanding of the emotional regulation interventions occurring in schools post-COVID-19 pandemic.

Articles were included in the review if they were published in a peer reviewed journal, written in English, focused on emotional regulation interventions and took place in a school system with similar structure to school systems in the United States (such as Australia, Europe, South America, or North America). The studies were in English to ensure that mistranslation does not occur, which would have changed the interpretation of the article. Other criteria required literature to be focused on individuals considered adolescents (9-19 years old), and interventions must have occurred in school settings. Articles were excluded if they focused on young adults (19+ years old), elementary-aged children (8 years and younger), interventions provided in countries/continents dissimilar to America, or those that included a compounding variable of physical health conditions or developmental disabilities, such as cerebral palsy or intellectual disabilities, since this would complicate emotional regulation abilities. All articles identified in peer-reviewed journals were included to gather the largest base of quality evidence that examined interventions that addressed emotional regulation within the schools.

Search results were exported into Rayyan,[9] and duplicates were removed. Three reviewers then screened titles and abstracts to eliminate articles that did not meet inclusion criteria. Reviewers screened articles independently to improve

overall rigor. If a disagreement regarding inclusion occurred, the article was discussed between reviewers until a consensus was reached. The principal investigator then excluded articles through full-text review if they failed to meet inclusion criteria. Articles obtained through previous searches that met inclusion criteria were added to the final review.

A data extraction table in Table 1 was created with information related to outcomes gathered from the articles. The data extracted from each article included: citation, aim/purpose of the study, intervention type, intervention specifics, provider delivering the intervention, overall results/impact of the article, how the intervention aligns within the scope of occupational therapy, and the level of evidence. The OTPF-4 was utilized during the data extraction to determine the intervention type and alignment within the scope of occupational therapy.[4] The approaches to intervention include self-regulation, activities, education/training, and prevention.[4] The level of evidence of each article was identified using AOTA's levels of evidence.[10]

Intervention specifics were included to determine length of the intervention, participants, and specific intervention characteristics. The column referencing occupational therapy scope refers to occupations, performance skills, and performance patterns addressed by both the specific interventions and the field of occupational therapy identified using the OTPF-4.[4] The provider delivering the intervention was extracted from articles to analyze which individuals are currently completing mental health interventions in schools and who OTPs must collaborate with to provide effective treatment. The level of evidence was included in this chart to identify the rigor of each article included in the review. Lastly, the negative and positive impact on the children's emotional regulation identified to easily categorize articles to show changes in emotional regulation.

Intervention type and the occupational therapy scope was determined by referencing the OTPF-4[4]. Intervention specifics regarding participants, dosage, and strategies were extracted from each article. The providers delivering the intervention were extracted from either the explicit stating of the provider in the article or the discipline of the authors if this information was not readily available. Levels of evidence were also extracted using critical reasoning according to AOTA's levels of evidence.[10]

**Results**

The PRISMA-ScR chart in Figure 1 shows the articles included in the review used to gather evidence for the objectives of the scoping review. The search results returned 2, 708 articles which was reduced to 732 articles after the date filter was applied. After 137 duplicates were removed, the titles and abstracts of 595 articles were screened, 526 articles were eliminated for not meeting inclusion criteria. A full-text review was then conducted on the remaining 69 articles. Of these, 58 were excluded for dissimilar country (n=11), wrong population (n=18), pre-COVID (n=9), wrong setting (n=5), and no emotional regulation intervention (n=15). This left 11 articles that met the inclusion criteria, and an additional three articles were identified through hand searching reference lists, resulting in a total of 14 articles that were included in the final review.

*Intervention Type*

Interventions that were identified from the 14 studies were categorized according to the intervention approaches identified in the OTPF-4. The four different approaches for intervention used within schools included education/training, activity-based intervention, prevention strategies, and self-regulation. Across all studies, interventions rarely utilized a single type; instead, most incorporated multiple, overlapping strategies to support the development of emotional regulation in adolescents. Despite variations in delivery methods, all 14 studies included interventions aimed at developing self-regulation skills to improve emotional responses. The primary goal of most of these programs was to build skills for the students to improve their abilities to self-regulate, preventing escalation in behaviors in the future.

Education and training was a consistent intervention approach utilized in all 14 studies to ensure that individuals understood how to complete self-directed emotional regulation when those providing the interventions were not present. The interventions provided education to inform students and teachers of methods that would promote the best outcomes. Thirteen studies reported intervention approaches related to completing activity-based interventions including meditation (n=3),[14,20,21] breathing exercises (n-=2),[19,23] sensory exercises (n=2),[3,17] video games that teach regulation skills (n=1),[13]and psychoeducation/coping skill training (n=8).[3,12-13,16-18,21,23] Together, these approaches provided both the foundational understanding and repeated practice necessary for skill acquisition and generalization.

A smaller subset of studies incorporated prevention-focused strategies and routine-based interventions, with four studies specifically targeting the development of healthy habits and daily routines.[16,19,22-23] While these interventions were not provided by OTPs, they fall within the scope of occupational therapy since therapists work with clients to create healthy habits and routines to promote overall health and well-being. Additionally, four interventions targeted these routines to allow adolescents to support emotional regulation, promoting overall future management.[3,15,18-19] These approaches emphasized the integration of emotional regulation strategies into students' everyday lives, supporting long-term sustainability of skills.

**Figure 1**

*PRISMA-ScR-Chart*[11]

Visual representation of the PRISMA-ScR process that illustrates total number of articles gathered, article exclusions for respective reasons, and the final number of articles included.

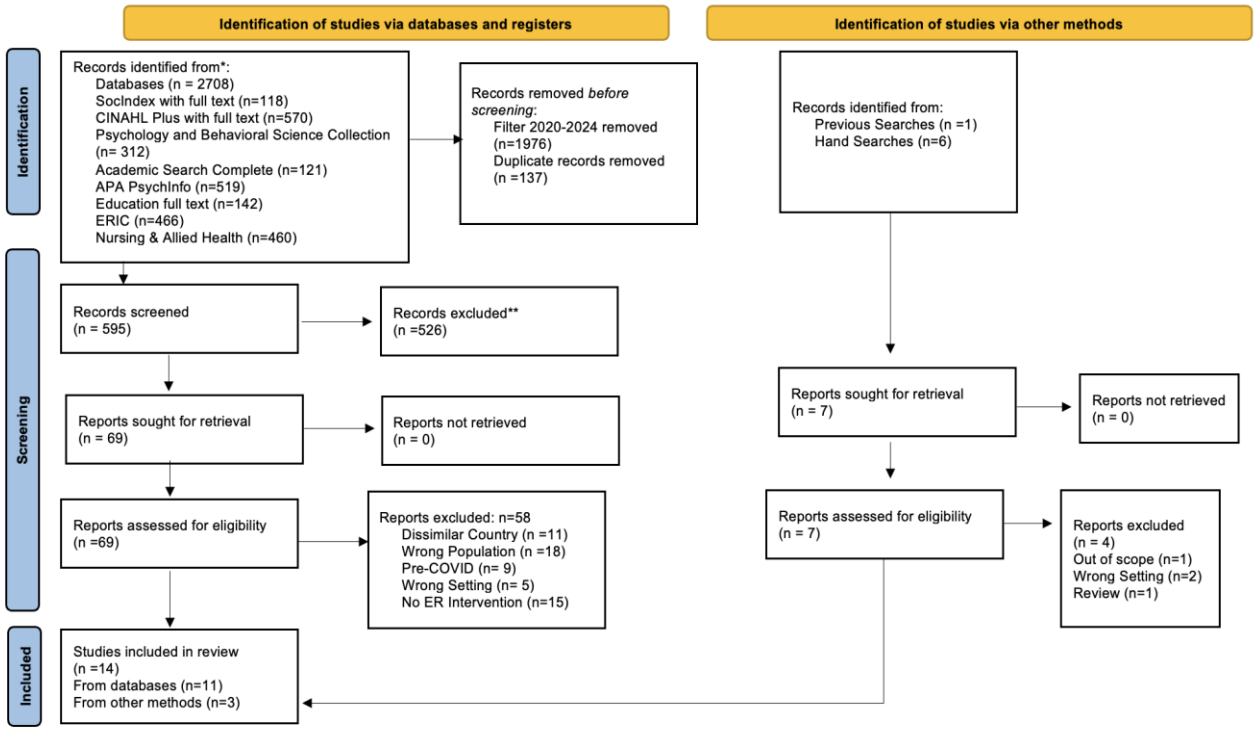


**Table 1.** Data extraction table.

| Citation | Aims/Purpose | Intervention Type | Intervention Specifics | OT Scope | Intervention Provider | Level of Evidence | Positive Impact | Negative Impact |
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| Atkiss & Stringer, 2023[12] | Determine what is needed to implement STEPS-A and how it affects social-emotional competencies | Training<br><br>Self-regulation<br><br>Activities | *Population*<br>44 participants in 2 groups (secondary school students)<br><br>*Dosage*<br>6 group sessions over 6 weeks delivered<br><br>Original program (30 lessons; 50 minutes each) | Emotional regulation<br><br>Social and emotional health promotion and maintenance<br><br>Psychosocial mental functions | Trained teachers/staff facilitators | Mixed methods pre-post within subjects<br><br>3B | X Developed coping skills | |

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| | | | *Intervention Strategies*<br>"Skills Training for Emotional Problem Solving for Adolescents: (STEPS-A)"<br><br>DBT | Temperament and personality<br><br>Emotional | | | | |
| David & Fodor, 2022[13] | Evaluate the REThink therapeutic game and its effects on emotional regulation | Self-Regulation<br><br>Activities | *Population*<br>142 children (mean age 12.84 years old); 10-16 year olds<br><br>*Dosage*<br>Dosage not specified<br><br>*Intervention Strategies*<br>REThink online game; CBT<br><br>Focus on emotional recognition, consequences of well-being, the relationship between beliefs/emotions/behaviors, neutralizing irrational thoughts, problem-solving, happiness, relaxation | Emotional regulation<br><br>Psychosocial mental functions<br><br>Temperament and personality | Self-administered in video-game format; Control group: counsellors, support groups | RCT pre-post measurement<br><br>1B | X<br>Positive impact on overall depressive mood and emotional regulation | |
| Gomes et al., 2021[14] | Examine the effect of TM on anxiety and regulation | Self-Regulation Activities<br><br>Training | *Population*<br>168 public education 5-9th grade students in Portugal (9-16 years old)<br><br>*Dosage*<br>3-month post test<br><br>*Intervention Strategies*<br>Transcendental Meditation (TM)<br><br>"Quiet Time Program"<br><br>TM group and control group | Emotional regulation<br><br>Social Participation<br><br>Social & emotional health promotion & maintenance<br><br>Psychosocial mental functions<br><br>Spirituality | Psychologist | Quasi-experimental<br><br>Pre-post Control group<br><br>3B | X<br>Overall decrease in anxiety, increase in pro-social behaviors (both groups), and improved resilience | |
| Green et al., 2022[15] | Examine SPARK program effectiveness (communi | Prevention<br><br>Self-regulation | *Population*<br>372 9-12th graders (both alternative and general ed schools) | Emotional regulation<br><br>Social Participation | Peers trained by behavioral health | RCT pre-post measurement<br><br>1B | X<br>Improved communication/problem-solving/ | |

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| | cation, problem solving, decision making, emotional regulation, resilience) | Education /Training | *Dosage*<br>13 sessions<br><br>*Intervention Strategies*<br>Speaking to the Potential, Ability, and Resilience in Every Kind (SPARK)<br><br>Teen mentoring program<br><br>Resilience focused program to reduce risk factors, improved well-being | Social and emotional health promotion and maintenance<br><br>Psychosocial mental functions<br><br>Higher level cognitive functions<br><br>Notices/responds/adjusts | and social work specialists | | decision making<br>Improved emotional regulation skills<br>Improved resilience<br><br>Increased emotional intelligence leading to positive relationship building & sustainability | |
| Kuyken et al., 2022[16] | Determine mindfulness effectiveness on depression risk, SE functioning, and well-being | Education Activities<br><br>Self-regulation | *Population*<br>8376 students in UK ages 11-14 w/ 1 year follow up<br><br>*Dosage*<br>10 30-50 min. sessions<br><br>*Intervention Strategies*<br>Mindfulness<br><br>"MYRIAD:" My resilience in adolescence<br><br>Use psychoeducation, practice exercises, and class discussion to teach | Emotional regulation<br><br>Social and emotional health promotion and maintenance<br><br>Psychosocial mental functions | Specifically-trained teachers | Cluster RCT<br><br>1B | | **X**<br>No difference found in comparison to regular SEL learning that the schools already had in place |
| Mahler et al., 2023[17] | Determine effectiveness of school-based intervention to improve interoception & emotional regulation within ASD pediatric population | Education Training<br><br>Self-regulation | *Population*<br>14 students ages 9-19 with autism<br><br>*Dosage*<br>25 weeklong program in a self-contained school<br><br>*Intervention Strategies*<br>Focus on interception and emotional regulation: specific program: "The Interoception Curriculum: A guide to developing | Interoception<br><br>Emotional regulation<br><br>Social and emotional health promotion and maintenance<br><br>Psychosocial mental functions | Occupational therapists<br><br>Social workers<br><br>Training on curriculum was provided to school staff | One group pre-post test<br><br>3B | X<br>Significant improvement in emotional regulation, emotional awareness, and responses | |

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| | | | mindful self-regulation"<br><br>Body lessons (recognize body cues), emotion lessons (connect body cues to emotions), and action lessons (explore actions to feel good) | | | | | |
| Martinez et al., 2021[18] | To determine if Dialectical behavioral therapy skills training for emotional problem solving for adolescents (DBT STEPS-A) program has an effect on self-regulation and social resiliency of high school students<br><br>Examine if intervention affects perception of DBT | Prevention<br><br>Self-regulation<br><br>Education /Training<br><br>Activities | *Population*<br>94 9th graders in Rural HS in USA (14-16 years old)<br><br>*Dosage*<br>20 lessons in 60-minute increments for 12 weeks during health classes<br><br>*Intervention Strategies*<br>DBT Skills Training for Emotional Problem Solving for Adolescents (DBT STEPS-A)<br><br>Teach skills to cope with emotions, manage stress, make healthy decisions<br><br>Includes: mindfulness, distress tolerance, emotional regulation, interpersonal effectiveness | Emotional Regulation<br><br>Social participation<br><br>Social and emotional health promotion and maintenance<br><br>Psychosocial mental functions | School counselors | Pre-post nonequivalent groups quasi-experimental design<br><br>2B | X<br>Higher social resiliency was predictor of overall gains<br><br>Differences found between races and genders<br><br>Improved social resiliency, emotional regulation, and acceptance | |
| McLeod & Boyes, 2021[19] | Measure the effects of a classroom social emotional study skills intervention on the ability of students to reduce test anxiety and manage emotions | Prevention<br>Self-regulation<br><br>Education /Training | *Population*<br>105 high school students ages 14-17 in rural Alberta<br><br>*Dosage*<br>50 minute sessions; 2x/week for 1 semester<br><br>*Intervention Strategies*<br>"TestEdge Skills-based classroom program"<br><br>Utilization of biofeedback | Emotional regulation<br><br>Psychosocial mental function<br><br>Social and emotional health promotion and maintenance<br><br>Temperament and personality | Psychologist | Quasi-experimental explanatory mixed methods<br><br>Pre-post control group<br><br>2B | X<br>Self-efficacy increased<br><br>Decreased future social stress<br><br>Better overall outcomes of treatment group vs. | |

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| | | | (breathing and HR) mixed with SEL skills<br><br>Components: self-efficacy, self-esteem, social awareness, heart-focused breathing<br><br>Mindful exercises to control HR and RR | | | | control group<br><br>Improved reading comprehension<br><br>Students perceived improvement in coping and self-efficacy<br><br>Decreased feelings of worry and negative outlook | |
| McMahon et al., 2021[20] | Determine the overall effects of a Kudalini after school yoga program on the emotional dysregulation and overall mental functioning of adolescents | Education /training<br><br>Activities<br><br>Self-regulation | *Population*<br>119 students ages 11-14 in 4 different schools throughout North Carolina (were recommended to program)<br><br>*Dosage*<br>6 week program – Two 40 min classes each week with 52 students in yoga group and 66 in other group<br><br>*Intervention Strategies*<br>After school yoga program: Kudalini yoga-physical postures, breathing, and meditation (specific combinations are part of protocol)<br><br>Mantra, breath practice, warm ups, specific posture sequence, meditation, relaxation, and an ending song<br><br>Specific schools were worse or better suited for the intervention | Emotional regulation<br><br>Social & emotional health promotion & maintenance<br><br>Psychosocial mental functions<br><br>Energy<br><br>Temperament & personality | Interdisciplinary team (parents, social workers, teachers, counselors)<br><br>Actual sessions were teachers who were trained | Non-randomized control trial<br><br>3B | X<br>Decrease in anger, stress, depression, and fatigue (from one yoga session)<br><br>Decrease in emotional dysregulation | |

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| Miller et al., 2023[21] | Provide overview of implementation of district-wide DBT program intervention | Education Training<br><br>Activities<br><br>Self-regulation | *Population*<br>Population not specified<br><br>*Dosage*<br>No information provided about dosage of intervention itself<br><br>*Intervention Strategies*<br>Completed in self-contained classroom<br><br>DBT<br><br>Client-centered, meditation<br><br>Used to develop: new behavioral skills, improve motivation, generalize skills, structure environment for success<br><br>Utilized skills group, coaching, consultation team, comprehensive team and individual counseling<br><br>Modules included: mindfulness, interpersonal effectiveness for healthy relationship building, tolerating stress, regulating emotion, and "middle path" | Emotional regulation<br><br>Social & emotional health promotion & maintenance<br><br>Psychosocial mental functions<br><br>Temperament & personality | School psychologists, counselors, social workers trained school staff<br><br>Interdisciplinary team | Descriptive/ Case study<br><br>5 | No intervention results reported | No intervention results reported |
| Pfirman et al., 2023[3] | Analyze importance of OT in wellness and prevention | Self-regulation<br><br>Activities<br><br>Education /Training<br><br>Prevent | *Population*<br>Individuals 12-17<br><br>*Dosage*<br>3 year duration<br><br>*Intervention Strategies*<br>Focus on use of interdisciplinary team and multi-tiered support to solve student issues<br><br>Social-emotional skills training | Emotional regulation<br><br>Social and emotional health promotion and maintenance<br><br>Psychosocial mental function<br><br>Sensory functions | OT with multi-disciplinary staff (social workers, teachers, administrators, etc.) | Case Series<br><br>4 | X<br>85% increase in student self-regulation<br><br>Increased interventions provided by over 500%<br><br>80% access to | |

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| | | | Multi-sensory approach<br><br>Goal setting, coping strategies, behavioral modifications<br><br>Trauma-sensitive interventions<br><br>Prevention and wellness focused (staff team created) | | | | care for MH | |
| Saarinen et al., 2021[22] | Determine effectiveness of mindfulness intervention to improve depression symptoms | Self-regulation<br><br>Education /Training | *Population*<br>369 participants 6-8th grade (12-15 years old) in Finland<br><br>*Dosage*<br>45 min. weekly meeting with practices assigned for home; 9 week school based<br><br>6 month follow up conducted<br><br>*Intervention Strategies*<br>Mindfulness based intervention<br><br>Areas of intervention: stress management, sleep, screen time, experiential relaxation, emotional awareness, attention, emotional regulation | Sleep & rest<br><br>Symptom & condition management<br><br>Psychosocial Mental Functions<br><br>Temperament & personality<br><br>Attention | "trained and certified mindfulness facilitators" | RCT<br><br>1B | X<br>Decreased depressive symptoms | |
| Schussler et al., 2020[23] | Determine how the program affected the student's stress and well-being, how they experienced the program, and if the students continued the | Training<br><br>Self-Regulation Activities | *Population*<br>134 11th graders in first cohort, then 255 in second cohort<br><br>*Dosage*<br>12 lessons, 45 minutes sessions, 8 weeks<br><br>*Intervention Strategies*<br>Mindfulness program: "BREATHE" (body awareness, | Self-regulation Emotional regulation<br><br>Social and emotional health promotion and maintenance<br><br>Psychosocial mental functions | Trained teachers | Systematic case study<br><br>Quantitative and qualitative data<br><br>Pre-post quantitative data<br><br>4 | X<br>Overall improvement in rumination, stress, attention/self-regulation, and well-being<br>Mixed results depending on individual | |

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| | practices in their lives | | reflections, emotions, attention, take it as it is, healthy habits of the mind, empowerment<br><br>9 targeted for interviews<br><br>Completed mindfulness training, workbooks, audio files of mindfulness<br><br>Results: needed stress management and used the techniques, improved social interaction, improved attention | Attention<br><br>Social participation<br><br>Temperament and personality | | | Stress management biggest impact | |
| Vetsad & Tharaldsen, 2021[24] | Determine the experience students had with ROBUST<br><br>If/how what was learned help to cope with academic stress | Self-Regulation<br><br>Education | *Population*<br>545 8th grade students<br><br>*Dosage*<br>20 sessions; each topic 4 sessions, 60 min. Sessions<br><br>*Intervention Strategies*<br>Focus group interviews<br><br>"ROBUST:" improve social-emotional competence to improve ability to cope with academic stress<br><br>Relationship skills, emotional regulation, mindfulness, growth mindset, problem solving | Emotional regulation<br><br>Social and emotional health promotion and maintenance<br><br>Psychosocial mental functions<br><br>Social participation<br><br>Notices/responds/adjusts | Teachers | Qualitative semi-structured interviews<br><br>4 | X<br>Mixed results depending on student. Most found mindfulness, problem solving, and growth mindset as supportive | **X**<br>Emotional regulation and relationship skills were more difficult to utilize |

The data extraction chart in Table 1 summarizes information found in each of the 14 articles related to the interventions provided, the provider of the intervention and the alignment within the scope of OT practice.

Overall, the interventions demonstrated several consistent patterns. Most programs combined education with active skill practice to promote the development and generalization of self-regulation skills. Additionally, interventions frequently emphasized embedding strategies within daily routines to support long-term use. Despite variation in specific techniques, the collective findings highlight a shared focus on building practical, transferable emotional regulation skills that align closely with occupational therapy approaches to promoting participation and well-being.

*Interventions Provided*

A range of interventions targeting emotional regulation within school settings were identified across the reviewed articles. These include mindfulness interventions (n=10),[12,14,16,18-24] interoception and sensory regulation (n=2),[3,17] mentoring (n=2),[13,15] cognitive behavioral therapy (CBT) or dialectical behavioral therapy (DBT) (n=4).[12-13,18,21]

*Mindfulness.* Mindfulness-based strategies were most frequently identified. Mindfulness can be defined as any practice that focuses on bringing oneself to the present moment.[25] Ten of the reviewed articles incorporated mindfulness-based strategies within their intervention.[12,14,16,18-24] These programs typically incorporated practices such as yoga, meditation, deep breathing, biofeedback, and psychoeducation.[12-14,17-20] Several programs used meditation or biofeedback training to lower heart rate and respiration rates.[14,19,21-23] One program mentioned the implementation of after-school yoga practice.[20] Many articles mentioned the use of a specific mindfulness curriculum including BREATHE,[23] REThink online game,[13] STEPS-A,[12,18] and the Quiet Time Program.[14] These curricula included the use of modules discussing the purpose of mindfulness or the incorporation of mindfulness exercises during lessons.[12,16,18-19,23-24]

*Cognitive Behavioral Therapy/Dialectical Behavioral Therapy.* In addition to mindfulness, specific therapy approaches were incorporated as part of the intervention strategies by four authors. CBT is a specific therapy approach that focuses on altering thinking patterns that interfere with self-regulation.[26] David and Fodor utilized a CBT-based computer game in their intervention to assist with self-regulation.[13] While DBT is a specific type of therapy that assists individuals with accepting where they are in life.[26] Several articles utilized DBT in various ways, such as DBT therapy sessions and specific DBT-based curricula.[12,18,21] While many of the intervention strategies utilized components of DBT, such as mindfulness, the articles in this section are the only ones that specifically mentioned DBT as a strategy during implementation. Occupational therapy practitioners receive foundational training in cognitive and behavioral approaches through mental and behavioral health courses; however, additional training may be indicated to fully implement these methods in school-based settings.

*Sensory/Interoception.* Sensory-based approaches and interoception were included as strategies as part of emotional regulation interventions in two studies.[3,17] Sensory regulation refers to the practice of managing one's senses to allow one to control their behaviors. Pfirman and colleagues utilized a variety of approaches to self-regulation, including multi-sensory strategies to promote not only sensory regulation, but also self-regulation.[3] Interoception is one of the senses in the body, and it refers to the ability to distinguish between differing sensations inside the body, such as when someone is hungry. Mahler and colleagues utilized an interoception curriculum that assisted with self-regulation.[17]

*Peer Mentoring/Social Learning.* Beyond individual skill building, some articles utilized peer mentoring and/or social learning was included as part of the intervention strategy in two articles.[13,15] This intervention strategy relies on the incorporation of peers to assist in the learning process through sharing and social modeling methods. David & Fodor utilized support groups to aid with social learning by allowing students to observe one another and hear others' strategies for self-regulation.[13] Green and colleagues implemented the strategy of peer mentoring where the peer leaders were trained to provide the interventions themselves.[15] While most interventions were provided in group settings, these were the only two that used social learning as a specific strategy.

*Intervention Providers*

OTPs were identified in only two studies working as a provider on multidisciplinary teams delivering interventions focused on interoception and sensory-based approaches across a multi-tiered system.[3,17] Teachers were most often reported as the provider of emotional regulation interventions.[12,16,23-24] Multidisciplinary teams were the second most frequently reported provider.[3,17,20-21] Members of these multidisciplinary teams typically included teachers, social workers, psychologists, parents, and counselors.[3,17,20-21] OTPs were included in two of the four multidisciplinary teams reported in this review.[3,17] There were no studies that reported OTPs as sole providers. Other providers of interventions included psychologists,[14,19] counselors,[13,18] teachers,[12,16,22-24] and trained peers.[15] Figure 2 provides a graphic representation of the providers and teams that delivered the interventions in the studies.

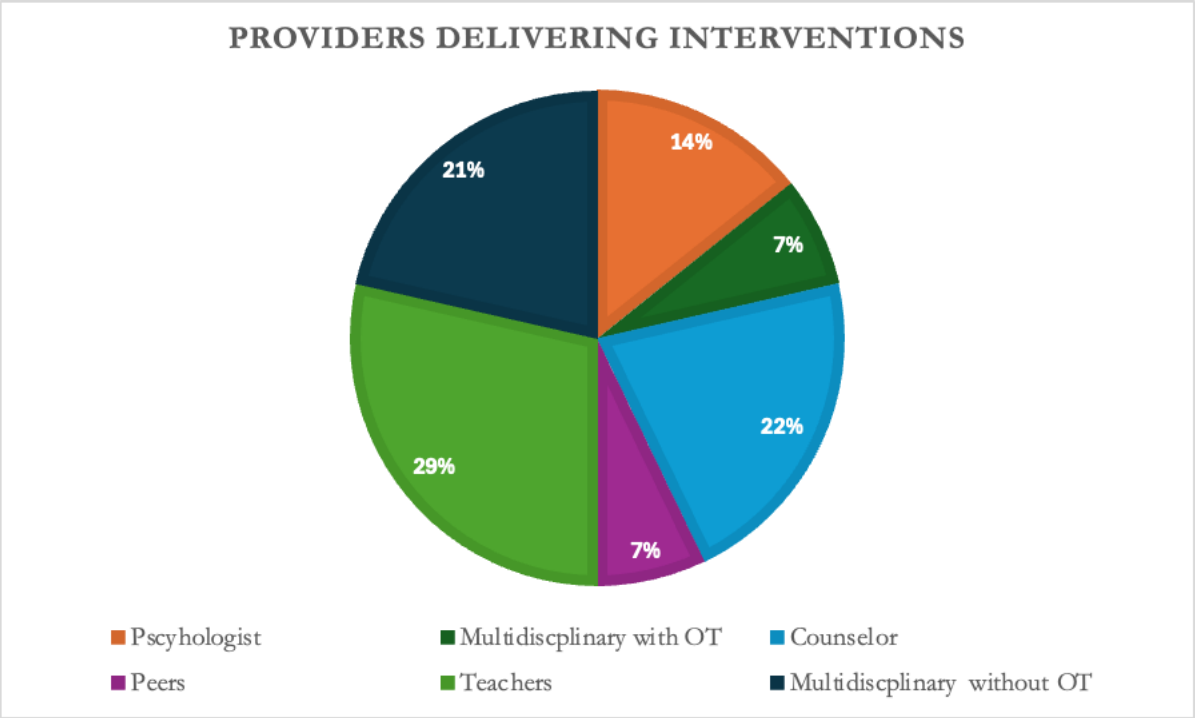


**Figure 2.** Providers delivering interventions. Visual representation of the distribution of the type of providers that delivered interventions in the 14 studies analyzed.

*Occupational Therapy Scope*

These interventions address many performance factors and occupations. These can be categorized as emotional regulation, social and emotional health promotion and maintenance, psychosocial mental functions, sensory functions, temperament and personality, higher-level cognitive functioning, ability to notice/respond/adjust, social participation, spirituality, interoception, energy, sleep, attention, and symptom and condition management.[4] These topics address body functions, performance skills, and occupations themselves. Furthermore, these interventions also promote the development of various performance patterns, such as incorporating skills into their daily routines to develop habits to promote overall function and well-being.[4] Figure 3 depicts the various areas the interventions fell within the OTPF-4.[4] The data extraction chart in Table 1 shows the alignment between each article and the area of occupational therapy scope with which the interventions align.

## Discussion

This scoping review examined school-based emotional regulation interventions for adolescents that were implemented following the COVID-19 pandemic and explored how these interventions aligned within the scope of occupational therapy. The findings in the results support that there are a wide range of interventions being implemented in schools to support emotional regulation; however, OTPs are rarely identified as the providers of these services. Overall, it is apparent that there is a shift in focus to provide self-regulation interventions within schools due to the identified growing mental health need.

Several overarching patterns emerged from the included studies. First, the majority of programs focused on developing self-regulation skills through mindfulness approaches, cognitive or behavioral-based strategies such as CBT or DBT, peer mentoring, social learning or sensory-based and interoceptive strategies. While these approaches were different in methodology, they shared a common goal of supporting adolescents in identifying emotional experiences, applying appropriate coping strategies, and ultimately regulating their behavioral responses. A secondary pattern that emerged from analysis of the articles revealed that all interventions, including those requiring more advanced training, aligned with multiple domains within the scope of occupational therapy according to the OTPF-4.[4] Another pattern that emerged, related to the delivery model, as most interventions were provided within a group or full-class settings, either

during or after school. Implementation of these interventions was primarily conducted by teachers, counselors, and other school personnel rather than occupational therapists.

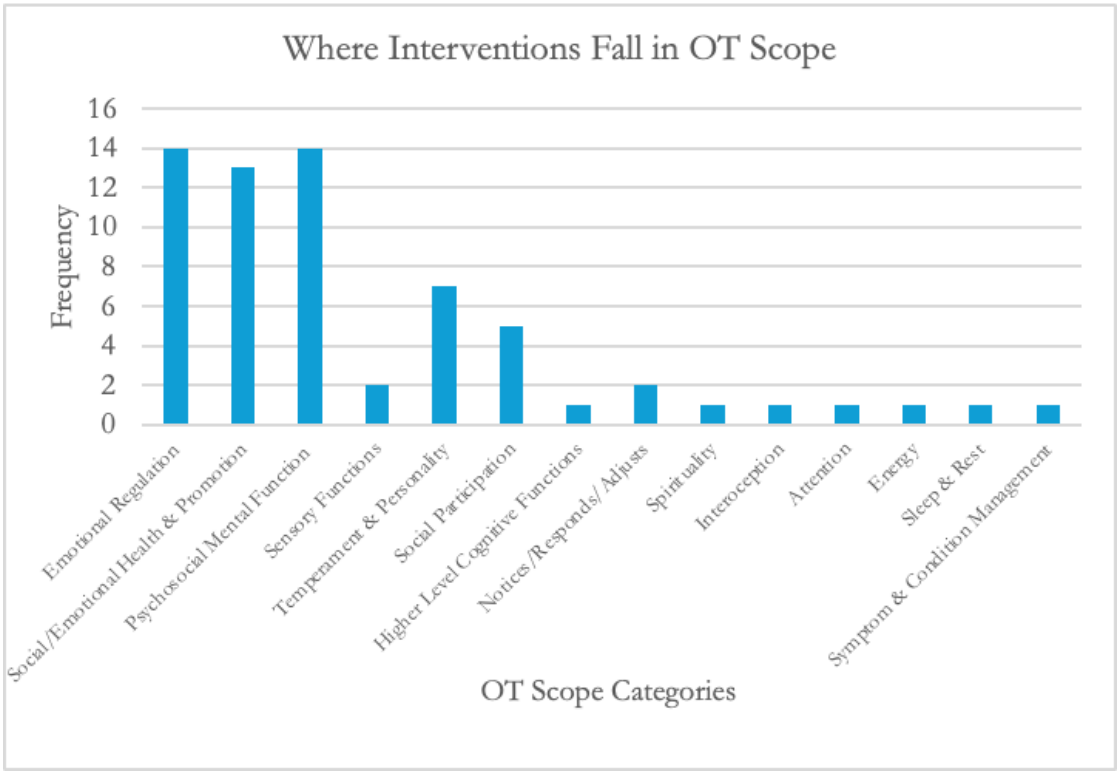


**Figure 3**. Occupational therapy scope. Visual representation of the frequencies in which interventions fell within the OT scope based on the OTPF-4.

Occupational therapy practitioners are able to provide services in schools far beyond the presumption of fine motor skill development. Historically, OTPs treatment focus at schools has been on fine motor development with a minor emphasis on social skill development as appropriate for the individual student. However, OTPs have the capacity to address a wider range of needs within the school setting. Emotional regulation and many of the interventions provided in the articles are within the scope of occupational therapy. Even components of interventions based on DBT and CBT can be provided by OTPs, as many aspects of these methodologies (i.e. mindfulness and cognitive reframing) and knowledge of these service delivery models are incorporated into occupational therapy education.[5] In order to implement full CBT and DBT protocols, additional specialized training may be required. Further, OTPs have a different clinical education that introduces a unique perspective on emotional regulation interventions, such as sensory processing interventions.[4] Given their unique clinical training and holistic perspective, OTPs are well-positioned to advocate for their role in delivering interventions that support emotional regulation in adolescents.

Not only can OTPs assist with the provision of the aforementioned interventions, but OTPs can play a much larger role in schools and the provision of mental health. OTPs can utilize their knowledge of sensory processing to create schoolwide, tier 1 sensory breaks within the curriculum to improve overall student engagement in lessons.[27] They can also serve as members of multi-tiered systems of support (MTSS) teams, contributing a broader professional perspective through the addition of an occupational therapy lens. Occupational therapy practitioners' knowledge and background can be applied to PBIS initiatives and schoolwide mental health initiatives as well. Many OTPs in the current workforce are already at or near their workload limits, so incorporating them into this role would require hiring specifically for that purpose. Demand for these positions is increasing, with funding available at both national and state levels through legislation such as ESSA and Ohio's House Bill 123 (Safe Student Act), making OTPs a strong option to help meet staffing needs.[28-29]

Several reasons may contribute to the lack of awareness of occupational therapy's value in providing such interventions for adolescents. First, many commonly used emotional regulation programs that school faculty and administrators are familiar with were originally designed for children aged 4-12.[30] These staff may not be aware of the adapted versions due to the excessive tiered training required to become competent in the various versions of common emotional regulation programs.[31]Since original programs were not designed for adolescents, limited knowledge of interventions for these individuals may exist. However, OTPs have been trained in many of these adapted programs and interventions for emotional regulation through their formal education.[4] Occupational therapy education has had an increased focus on emotional regulation and behavioral analysis in recent years, likely due to the societal call for such a shift. Despite the increased focus on emotional regulation and behavioral analysis placed in recent years, OTPs who have been in practice for many years did not receive this emphasized education. Additionally, experienced OTPs who have not actively applied their training in these areas may have limited experience advocating for the profession's role in emotional regulation and could benefit from continuing education to update and expand their knowledge. Advocating for OT involvement in emotional regulation within schools has to start within the profession before expanding outside of it.

Another reason why there is a limited awareness of occupational therapy's role in emotional regulation interventions for adolescents lies in the limited research. The levels of evidence regarding this research topic are relatively low, especially when considering the levels of evidence for studies that involved OTPs. [3,17]Furthermore, a general lack of research on emotional regulation interventions for adolescents since the COVID-19 pandemic exists. To gather enough data for this scoping review, the principal investigator expanded the original age range from 13-17 years old to 9-19 years old, which is beyond the typical adolescent age range. OTPs should focus on researching and publishing interventions for emotional regulation in the adolescent population post-COVID-19 pandemic due to the lack of occupational therapy-specific literature.

*Limitations*

Several limitations of this scoping review were identified. One limitation of the study is that interventions completed in Asia, Africa, and Antarctica were excluded, which may have limited the breadth of information. Another limitation was the time range investigated since only 5 years were included (2020-2025). Further, a small number of studies were included (n=14), and the studies had significant variability in designs and outcomes. Studies also lacked a standard definition of emotional regulation, which is a consistent issue within this field of research. The last major limitation identified was the excluded populations, such as those with physical and developmental disabilities as these individuals may also struggle with emotional regulation.

*Future Directions*

Occupational therapy practitioners need to advocate for their ability to provide emotional regulation services within the school system, especially for older students. Occupational therapy practitioners who are already providing interventions for emotional regulation for the adolescent population should contribute to the evidence base and disseminate research findings. As more detailed information becomes available, a systematic analysis of the effectiveness of interventions would be beneficial. Additionally, OTPs should collaborate with those who are already providing emotional regulation interventions in school to promote their value and share their unique clinical, holistic perspective. Occupational therapy practitioners have the potential to design tier 1 interventions that can support services and remove a workload burden on mental health professionals within schools. This may mitigate the number of adolescent students who require higher tiers of intervention to maintain emotional regulation by providing them with the necessary tools.

**Conclusions**

The scoping review shows how OTPs can be utilized to promote emotional well-being for adolescents in the school systems. Occupational therapy practitioners can address emotional regulation and provide support for overextended school personnel by addressing performance skills, occupations, and performance patterns that are all within the occupational therapy scope of practice. Occupational therapy practitioners should advocate to be included in interdisciplinary teams providing emotional regulation interventions to promote well-being of adolescents and promote the profession's distinct value. This advocacy is especially important with the growing legislative and societal support for the dedication of resources to emotional well-being of the youth. Expanding education for OTPs, school staff, and administrators, alongside strengthening interdisciplinary collaboration, will be critical to advancing emotional regulation services for adolescents. These efforts can help ensure that occupational therapy practitioners are fully

integrated into interdisciplinary teams, enhancing service delivery and supporting the emotional well-being of youth while reinforcing the profession's distinct value.

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