Emotion Regulation and Social Participation in Childhood and Adolescence: Systematic Review

Emily Ann Matchett, Mollie Ripple, Monica Militar, Hanan Khalil, Holly Scarborough, Karen Ratcliff, Claudia Hilton*

Occupational Therapy Department, University of Texas Medical Branch, USA

*Corresponding author: Claudia Hilton, Occupational Therapy Department, University of Texas Medical Branch, USA


Received Date: 15 September, 2020; Accepted Date: 30 September, 2020; Published Date: 07 October, 2020

Abstract

**Background:** Social participation is important for quality of life and flourishing and is a problem for many children. It is not clear which skills, other than social skills, might support social participation. This review summarized the literature examining the relationship between emotion regulation and social participation in children and adolescents.

**Method:** An exhaustive literature search was performed using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. Records were identified through Google Scholar, PubMed, Scopus, Cochrane and PsychInfo databases. Inclusion criteria for this systematic review allowed for participants aged zero to 21 years old in articles published in the last 10 years. Typically, developing participants and those with a variety of diagnoses were included.

**Results:** Thirteen of the 14 reviewed studies found significant relationships between emotion regulation and social functioning. Nine found correlations between emotion regulation and social competence and four found emotion regulation to be a predictor of later social competence. Emotion regulation themes specifically related to social participation were: general emotion regulation strategies, self-awareness, temperament, emotional control/lability, and use of specific emotion regulation strategies.

**Conclusions:** Emotion regulation skills are related to a child’s social participation. Additionally, emotion regulation skills early in life may be predictive of later social competence. This systematic review found moderate evidence to support these relationships. Emotion regulation skill development in conjunction with social skills training for children and adolescents with social participation difficulty provides a more holistic strategy to address social participation challenges.

**Keywords:** Behavior regulation; Emotion regulation; Self-regulation; Social competence; Social skills

Introduction

Emotion regulation is defined as the process of managing and modifying one’s internal state and/or outward behavior in different situations [1]. It is demonstrated when an individual remains in control when things do not happen as planned, when the individual remains calm during stress, and while the individual is navigating social interactions. The construct of emotion regulation has been developed from several psychological disciplines contributing to life experiences which include health, personality, cognitive, developmental, clinical, biological and social psychology.

Emotional regulation includes how people decide which emotions to express, when and how they are influenced by emotion, and the way they choose to express emotions. How an individual approaches emotions, acceptance, tolerance, and access to emotion regulation strategies is crucial to positive interaction with life circumstances and behaviorally adapting to meet one’s needs [2]. Emotion regulation supports self-regulation which promotes changes of behaviour to obtain goals [3]. Emotion regulation is intricately intertwined with one’s behavioral responses and implicated in difficulty navigating social interactions [4]. Social and emotional development are at the core of growth and development [4] and vital for social competence, quality of life, and ultimately, are important for one’s ability to flourish [5]. Previous related reviews have focused on the relationship between emotion regulation and aggression [6], emotional intelligence and aggression [7], and measures of social and emotional skills in children [8]. Other reviews have evaluated different aspects of emotion regulation [9-11], but none have
explicitly examined the relationship between emotion regulation and social participation. Because of the importance of emotion regulation and social interaction for flourishing, the focus of this review is to examine the relationship between emotion regulation and social participation. Difficulty with emotion regulation negatively impacts an individual’s coping skills and functioning, causing difficulties in cognitive flexibility, emotional transitions, and self-reflection [12]. Chronically, emotion dysregulation is associated with mental illness symptomatology. Adolescents with reduced emotion regulation experience increased symptoms of depression and problem behaviors [13]. Childhood dysregulation, even before early manifestation of a psychiatric disorder, increases the risk for adulthood substance use, suicidal ideation and behavior, and overall decline in functioning [14]. In contrast, mature and positive emotional and social skills are related to improved self-efficacy in adolescence [15].

The ability to regulate emotions is a critical factor for a child’s classroom success [16,17]. Rydell, Thorell and Bohlin (2007) [18] found that children who were unsuccessful in managing their emotions adopted more aggressive behaviors in school settings, as well as in other specific social functioning contexts. Additionally, ineffective regulation of negative emotions, specifically fear, is linked to behavior problems and high social anxiety in young children [19]. Furthermore, emotional and social skills during the transition to kindergarten are foundationally predictive of future social and academic functioning in a school setting. Early school adjustment is influenced by the child’s positive social experiences, with each positive social experience having a cumulative contribution [20]. These studies support the importance of children’s social and emotional skill development because of their strong influence on school functioning. It is important to examine the relationship between the components of emotion regulation and social participation. For this paper, emotion regulation will be defined as the process of managing and modifying one’s internal state and/or outward behavior to meet contextual demands and personal needs. The purpose of this systematic review was to better understand the constructs that comprise emotion regulation that are related to social participation. With this information, practitioners will be better prepared to develop interventions targeting specific emotion regulation skills in children.

Methods

This literature search was conducted by a research team using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines from the American Occupational Therapy Association [21]. Searches were conducted in Google Scholar, PubMed, Scopus, Cochrane and PsychInfo databases. Search terms included the population and the variables. The population was defined using search terms such as <children OR child* OR pediatrics OR adolescence OR adolescents OR school aged>. The variables were emotion regulation and social skills impairment. Emotion regulation was searched using the key words, emotional regulation, self-regulation, dysregulation, emotion, or emotional intelligence. Social participation was searched using the key words, social skills, social participation, peer relations, social competence, social impairment, or social awareness. (Figure 1) presents the search flow with number of initial records identifies through searching using the above terms, the number of records screened and assessed for eligibility based on inclusion criteria. The searches were limited to the most recent 10 years, from 2009 or later to ensure its current relevance for the pediatric population. Other inclusion criteria were children and/or adolescents, children with attention deficit disorder/attention deficit hyperactivity disorder (ADD/ADHD), Down syndrome, learning disabilities, Oppositional Defiant Disorder (ODD) and autism spectrum disorder (ASD). Studies involving adults and publications 10 years or older, systematic reviews, and articles that were not relevant to the review were excluded. Levels of evidence were determined based on the PRISMA guidelines from the American Occupational Therapy Association [21]. See (Table 1) for details about levels of evidence and (Figure 1) for Search Flow Diagram.

**Figure 1:** Search Flow Diagram.

Levels of Evidence

<table>
<thead>
<tr>
<th>Level of Evidence</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level IA</td>
<td>Systematic review of homogeneous RCTs (similar population, intervention, etc.) with or without meta-analysis</td>
</tr>
<tr>
<td>Level IB</td>
<td>Well-designed individual RCT (Not a pilot or feasibility study with a small sample size)</td>
</tr>
<tr>
<td>Level 2A</td>
<td>Systematic review of cohort studies</td>
</tr>
<tr>
<td>Level 2B</td>
<td>Individual prospective cohort study, low-quality RCT (e.g., &lt;80% follow-up or low number of participants; pilot and feasibility studies); ecological studies; and two-group, nonrandomized studies</td>
</tr>
<tr>
<td>Level 3A</td>
<td>Systematic review of case-control studies</td>
</tr>
<tr>
<td>Level 3B</td>
<td>Individual retrospective case-control study; one-group, nonrandomized pre-posttest study; cohort studies</td>
</tr>
<tr>
<td>Level 4</td>
<td>Case series (and low-quality cohort and case-control study)</td>
</tr>
<tr>
<td>Level 5</td>
<td>Expert opinion without explicit critical appraisal</td>
</tr>
</tbody>
</table>

Note. RCT = randomized controlled trial.

### Table 1: Levels of Evidence.

#### Results

Using Google Scholar, the initial search resulted in 1,303,262 articles and six articles were chosen for the review. An exhaustive search was done in the following databases. In PubMed, initial search results totalled 640 articles and two were chosen to review. In Scopus, 1071 articles were initially identified and three were chosen to review. The Cochrane search identified 24 initial articles and none were chosen to review because they were systematic reviews, irrelevant or duplicates. The PsychInfo search initially identified 10 articles and three were chosen. At the end of the search process, 14 articles met the inclusion criteria and were reviewed. Ten of the reviewed studies included participants who were exclusively from newborn to 12 years old [22-30]. Two of the studies examined exclusively adolescent participants from ages 12 to 21 years [31,32]. Two studies included participants who were both children and adolescents ranging from four to 14 years old [33] and five to 17 years old [34].

#### Levels of Evidence

Fourteen studies were included in the systematic review to examine the relationship between emotion regulation and social skills impairment among children and adolescents. Of the 14 reviewed articles, four were Level 2B [25,28,29,32] and 10 were Level 3B [22-24,26,27,30,31,33,34,], with no Level 1, 4 or 5 studies. Given that this systematic review is studying the relationship between two variables, Level 1 evidence would likely not be feasible because these studies cannot randomly assign emotion regulation ability or social participation.

#### Themes

The 14 articles collectively included 3,271 participants. Of the 14, 13 articles had results suggesting an association between emotion regulation skills and social skills and/or social participation. Nine of the studies found correlations between emotion regulation and social skills [22,24-26,28,32-34] and three studies found emotion regulation to be a predictor of social skills or indicators of social skills, such as peer acceptance or friendship quality [23,29,31] while one study found temperament soothability and shyness to predict peer relations rather than emotion regulation. The themes identified in the results of the studies were: use of general emotion regulation strategies, temperament, self-awareness, emotional control/lability and specific emotion regulation strategies. Table 1 displays more details about the articles reviewed. Following are descriptions of the themes, which are in order of the strength of evidence supporting them.
<table>
<thead>
<tr>
<th>Author/Year</th>
<th>Level of Evidence</th>
<th>Theme(s)</th>
<th>Participants</th>
<th>Outcome Measures</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spritz et al. (2010) [26]</td>
<td>3B Cohort study</td>
<td>Emotional Control/Lability General Emotion Regulation Strategies</td>
<td>44 participants 3.5 - 5.5 years old (43 - 67 months old)</td>
<td>C-TRF SB:IV-4 ERC STRS SSRS Standard sociometric interview protocol developed by Denham &amp; McKinley (1993)</td>
<td>Emotional lability and general emotion regulation scores were related to the child’s social skills as rated by teachers. General emotional regulation was associated with student-teacher closeness and emotional lability was associated with student-teacher conflict.</td>
</tr>
<tr>
<td>Berkovits et al. (2016) [27]</td>
<td>3B Descriptive study</td>
<td>General Emotion Regulation Strategies</td>
<td>108 participants 4 – 7 years old Diagnosis of ASD</td>
<td>ERC CBCL SSIS WPPSI-III CASL-2 SRS ADOS-2</td>
<td>Emotion dysregulation predicted increased social and behavioral difficulties across time whereas higher emotional regulation scores predicted improved social skills one year later.</td>
</tr>
<tr>
<td>Berkovits &amp; Baker (2014) [28]</td>
<td>2B (longitudinal two groups)</td>
<td>General Emotion Regulation Strategies</td>
<td>174 participants 113 typically developing 61 with developmental delay 7, 8 and 9 years old</td>
<td>SB:IV ERC CBCL</td>
<td>Emotional dysregulation was significantly correlated with teacher-rated and mother-rated social problems across ages 7 to 8 and 8 to 9 in the typically developing group alone. Overall a stronger relationship between emotional regulation and social outcomes were found in the typically developing group than in the developmentally delayed group.</td>
</tr>
<tr>
<td>Blair et al. (2015) [29]</td>
<td>2B (longitudinal cohort study)</td>
<td>General Emotion Regulation Strategies</td>
<td>356 participants 5, 7 and 10 years old Children at risk for developing behavioral problems in the future</td>
<td>ERC SSRS Friendship Quality Questionnaire Sociometric nomination procedure created by the authors</td>
<td>Emotional regulation was predictive of social participation outcomes of peer acceptance and self-rated friendship quality.</td>
</tr>
<tr>
<td>McKown et al. (2009) [34]</td>
<td>3B 2 cohort studies General Emotion Regulation Strategies</td>
<td>284 participants 5 – 17 years old Study 1: 158 typically developing children between ages 4 to 14 Study 2: 126 clinic-referenced children between ages 5 to 17</td>
<td>CATS MEPEF Posture and gait recognition (Heberlein, Gla ̈escher, &amp; Adolphs, 2004, 2007) Strange Stories NEPSY II ToM Empathetic self-report scale adapted by Spinrad et al. (1999) CASL SSRS DAVNA TOPS BASC</td>
<td>Self-regulation via parent and teacher report was associated with social competence. Furthermore, self-regulation was a predictor of social competence.</td>
<td></td>
</tr>
<tr>
<td>Citation</td>
<td>Study Type</td>
<td>Participants</td>
<td>Measures</td>
<td>Findings</td>
<td></td>
</tr>
<tr>
<td>-----------</td>
<td>------------</td>
<td>--------------</td>
<td>----------</td>
<td>----------</td>
<td></td>
</tr>
<tr>
<td>Miller et al. (2010) [30]</td>
<td>3B Nonrandomized cohort study</td>
<td>60 participants, 3.4 - 5.2 years old, 45% Caucasian, 17%</td>
<td>“The Observer” Emotional displays/dysregulation codes (adapted from Miller &amp; Olson, 2000); Social engagement codes (Fantuzzo, Coolahan, Mendez, McDermott, &amp; Sutton-Smith, 1998); ERC, SSRS, CBS, PBQ, CAS</td>
<td>Observed dysregulated behavior in the classroom was associated with more social conflict behaviors.</td>
<td></td>
</tr>
<tr>
<td>Jankowski &amp; Rękosiewicz (2013) [32]</td>
<td>2B 3 groups non-randomized study</td>
<td>1151 participants, 15 – 21 years old</td>
<td>DERS, SPQ-S1</td>
<td>The study found that there is a relationship between social participation and emotion regulation by presenting the association between marginalization and segregation and lower emotional awareness. Conversely, higher levels of awareness were associated with assimilation.</td>
<td></td>
</tr>
<tr>
<td>Bunford, Evans &amp; Langberg (2018) [31]</td>
<td>3B Cohort study</td>
<td>180 participants, 12 – 16 years old, Diagnosis of a subtype of ADHD, Academic or social impairment, IQ of 80 or above, Do not meet criteria for diagnosis of pervasive developmental disorder, bipolar disorder, psychosis, substance dependence other than tobacco, or obsessive-compulsive disorder</td>
<td>P-ChIPS, DBD, IRS, DERS, ERICA, CBCL, SSIS-RS</td>
<td>In adolescents with ADHD, self-awareness was a significant predictor of self-rated and parent-rated social skills. Moreover, emotional control was a significant predictor of parent-rated social skills.</td>
<td></td>
</tr>
<tr>
<td>Seguin &amp; MacDonald (2016) [35]</td>
<td>3B Cohort study</td>
<td>31 first grade students</td>
<td>ERC, The Colorado Child Temperament Inventory, The School Social Behavior Scale Second Edition</td>
<td>The study did not find a relationship between ERC emotion regulation constructs and social behavior. However, the emotionality was associated with social behaviors, in agreement with the findings of Garner and Waajid (2012).</td>
<td></td>
</tr>
<tr>
<td>Citation</td>
<td>Study Type</td>
<td>Participants</td>
<td>Measures</td>
<td>Outcomes</td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>------------</td>
<td>--------------</td>
<td>----------</td>
<td>----------</td>
<td></td>
</tr>
<tr>
<td>Goldsmith &amp; Kelley (2018) [33]</td>
<td>One group, non-randomized</td>
<td>145 participants 5-17 years old Diagnosed with ASD</td>
<td>ERQ, AQ</td>
<td>The demonstration of better emotion regulation through use of the strategy “reappraisal” was associated with less severe ASD symptoms and social impairments.</td>
<td></td>
</tr>
<tr>
<td>Trentacosta &amp; Shaw (2009) [22]</td>
<td>Cohort study</td>
<td>122 males 8.2 - 10.7 years old</td>
<td>CBCL Delay of gratification cookie task (Marvin, 1977) Peer sociometric interview/nomination procedure (adapted from Coie, Dodge, &amp; Copputelli, 1982)</td>
<td>Findings showed an association between emotion self-regulation strategy of active distraction and peer rejection and antisocial behavior. Peer rejection was associated with later antisocial behaviors.</td>
<td></td>
</tr>
<tr>
<td>Ogelman &amp; Fetihi (2019) [23]</td>
<td>Randomly sampled cohort study</td>
<td>95 participants Mean age 5 years, 6 months old</td>
<td>SERS SSES Picture Sociometry Scale Child Behavior Scale</td>
<td>Emotion regulation strategies had predictive effect on coping with peer pressure, aggressiveness and social preference</td>
<td></td>
</tr>
<tr>
<td>Penela et al. (2015) [24]</td>
<td>Longitudinal study</td>
<td>257 participants Behavioral inhibition and temperament assessed at age 2 and 3 years old Emotional regulation strategies assessed at 5 years old Social competence assessed at 7 years old</td>
<td>Behavioral observations of the children’s temperament, social competence and strategy use Play Observation Scale (modified) Disappointment Paradigm TBAQ</td>
<td>More active emotion regulation strategies (such as problem solving and cognitive restructuring) are associated with higher levels of social competence, specifically in children who are highly behaviorally inhibited.</td>
<td></td>
</tr>
</tbody>
</table>

General Emotion Regulation and Social Participation

Three level 2B studies [24,25,29] and four level 3B studies [26,27,30,34] used emotion regulation as a variable relating to social participation. These studies examined the participants’ overall emotion regulation scores, while other studies separated subcomponents of emotion regulation to study its relationship with social participation. All studies found a relationship between emotion regulation constructs and participation socially for children. Spritz et al. (2010) [26] studied the relationship between emotion regulation and social outcomes among preschool Head Start students aged 3.5 to 5.5 years and found that emotion regulation scores on the ERC correlated with student-teacher closeness on the Student-Teacher Relationship Scale (STRS).

Emotion regulation was also a predictor of social participation in the classroom, including initiating interactions, following instructions, and exhibiting positive conflict resolution with peers. A study of Head Start students, ages 3.4 to 5.2 years old, demonstrated that teacher observed dysregulation correlated with greater peer conflict and antagonism and less cooperation in the classroom [30]. Dysregulation was defined as either emotionally negative behavior or hyperactive behavior. The children who exhibited higher levels of dysregulation also expressed more anger and negative affect than the children with low levels of dysregulation. The study found that displays of dysregulation in the classroom were brief, overall, but the individual differences correlated with significantly different social participation outcomes. In a similar age group [25], found that positive emotionality was a significant predictor of social competence. Positive emotionality was described as an aspect of emotion-related self-regulation. The term, positive emotionality, was used to describe the ability to maintain positive feelings when faced with challenging academic and social situations. The study concluded that positive emotionality was related to social participation outcomes in preschool children both in the classroom and at home. In a longitudinal study that tested children at age five, seven and ten, emotion regulation scores on the ERC were predictive of social outcomes (Blair et al., 2015) [29]. The social outcomes were peer acceptance and friendship quality. Peer acceptance, specifically within the school setting, was measured by rankings made by classmates and friendship quality was measured using a self-report questionnaire. Through these assessments, the study examined both self-perceived and peer-perceived social participation, which were both predicted by emotion regulation.

Berkovits et al. (2016) [27], found that a mother’s report of emotion regulation on the ERC in four to seven-year-olds was predictive of fewer externalizing and internalizing behaviors, and greater social skills one year later. Change in social skills, measured by the Social Skills Improvement System (SSIS), indicated that emotion regulation had a positive impact on the chances for a child to succeed in social participation attempts. The study also found that emotion dysregulation longitudinally related to a decline in social skills. This study included children with ASD as they aged from age four to seven. In another study, seven to nine year-old typically developing children were compared to children with developmental delays using mother and teacher reports to study the relationship between social competence and emotional dysregulation (Berkovits & Baker, 2014) [28]. The study assessed how deficits in emotion regulation were related to social development and whether there was a differential relationship between the two developmental groups. Mother-reported measures showed a significant correlation between emotion dysregulation and social problems in both control groups. However, within teacher-reported measures, there was a significant correlation between emotion dysregulation and social problems only within the developmentally delayed group. In the typically developing group, emotion dysregulation was a predictor of change in social problems from age seven to eight and eight to nine. Through parent and teacher reports using the Behavioral Assessment System for Children (BASC), McKown et al. (2009) [34] measured self-regulation, revealing it to be associated with social competence in children aged five to 17 years. Social competence indicators included polite manners, eye contact, empathy and other desirable social behaviors as described by the BASC. Children in the study were selected through a clinic where parental concerns about behavioral, social, academic and emotional functioning were addressed. Most of the children had diagnoses of ASD, ADHD, learning disorders and/or anxiety and mood disorders.

Specific Emotion Regulation Strategies and Social Participation

Use of specific emotion regulation strategies was examined in four level 3B studies [22-24,33]. Goldsmith and Kelley (2018) [33], in their study of male participants, ages five to 14 years with a diagnosis of ASD, found that greater use of reappraisal as an emotion regulation strategy predicted lower scores on the social skills subscale of the Autism Quotient (AQ), indicating less social impairment. Reappraisal was defined as modification of one’s cognitive and emotional experience to an event/situation. The social skills subscale of the AQ specifically measures the person’s ability to form and maintain friendships, their desire for social interaction and their enjoyment of social occasions. Suppression,
or masking and concealing an emotional experience, which are other emotion regulation strategies, did not significantly predict social functioning.

In another study, the use of less active distraction during a frustrating task predicted greater peer rejection in later middle school years [22]. The study included only male participants from families of low socioeconomic status, ages 8.2-10.7 years old. Active distraction was defined as the ability to shift one’s attention away from a frustrating object or task. Furthermore, higher rates of peer rejection experienced in middle childhood related to more antisocial behavior in early adolescence, so specific strategy use was indirectly related to adolescent social behaviors. Séguin and MacDonald (2018) [35] related to social participation outcomes in preschool children both feelings when faced with challenging academic and social emotionality, was used to describe the ability to maintain positive feelings when faced with challenging academic and social situations. The study concluded that positive emotionality was related to social participation outcomes in preschool children both in the classroom and at home. Séguid and MacDonald (2018) [35] described temperament to be an influential factor related to a child’s overall emotion regulation in first grade. The study assessed the relationships between temperament, emotion regulation, and peer relations. Temperament soothability and shyness were found to predict peer relations whereas emotion regulation did not predict peer relations.

**Self-Awareness and Social Participation**

One level 3B study found self-awareness, a component of emotion regulation, to be correlated to social impairment [31]. The findings were based on adolescent participants with ADHD, aged 12 to 16 years old. Greater self-awareness related to less social impairment during social participation. Similarly in another level 2B study of adolescents aged 15 to 21 years, higher emotional awareness was associated with an assimilated type of social participation, while lower emotional awareness was associated with segregated and marginalized social participation types [32].

**Emotional Control/Lability and Social Participation**

In their level 3B study, [31] determined the emotional regulation subscale of emotional control, in addition to self-awareness, is associated with parent and teacher reports of social impairments. This study indicates a lack of emotional control relates to greater impairment in social participation in adolescents aged 12 to 16 with ADHD. A lack of emotional control was defined as having a low threshold to reach emotional excitability followed by a slow return to baseline. Measures were based on a checklist of observed behaviors. A level 3B study involving Head Start preschool students, aged 3.5 to 5.5 years old, analyzed the relationship between emotion regulation and social participation [26]. The authors found a correlation between preschoolers’ emotional lability, measured by the Emotional Regulation Checklist (ERC), and teacher ratings of the student’s social skills. Specifically, greater emotional lability was associated with lower peer-rated likability and greater teacher-student conflict.

**Risk of Bias**

All of the reviewed articles presented a high risk of selection bias because of non-random selection of participants [22,24-29,30,32-35]. One study had a high risk for performance bias because participants were not blinded and were aware of their group allocations [28]. No studies had a high risk of detection bias since none of the studies required detection of outcomes after an intervention was administered. In most cases, it would not be reasonable to have the subjects/assessors blinded because the subjects were grouped by the presence of a condition. Two articles had a high risk of attrition bias due to missing data from participants who either dropped out or provided incomplete data [24,29]. A high risk of reporting bias was noted in thirteen articles due to the use of questionnaires or parent/teacher report [22,23,25-35]. Table 3 summarizes the risks of bias.
Among 13 of the 14 studies in this review, emotion regulation and social participation variables were found to be significantly related, which generated a moderate strength of evidence. The study that did not support this relationship separated temperament from emotion regulation variables, rather than identifying temperament as a component of emotion regulation [35]. The results indicated that soothability and shyness were the predominant predictors of peer relationships. Of note, soothability included in its construct the behaviors of calming down quickly, being soothed by caregivers, and tolerating frustration well [37], which are outcomes of emotion regulation processes that include modification of the situation and modulation of responses [38]. Another reviewed study also found a relationship between emotionality and social outcomes but included emotionality as a component of emotion regulation [25]. So, although Séguin and MacDonald (2016) [35] did not find a relationship between their emotion regulation constructs and social participation, they did find a relationship between soothability and social participation, which has components of the emotion regulation process inherent in the

### Table 3: Risk of Bias Table.

<table>
<thead>
<tr>
<th>Reference</th>
<th>Selection Bias</th>
<th>Performance Bias</th>
<th>Detection Bias</th>
<th>Attrition Bias</th>
<th>Reporting Bias</th>
</tr>
</thead>
<tbody>
<tr>
<td>Berkovits, &amp; Baker (2014) [28]</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Berkovits, Eisenhower &amp; Blacher (2016) [27]</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>?</td>
</tr>
<tr>
<td>Blair, Perry, Obrien, Calkins, Keane, &amp; Shanahan (2015) [29]</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Bunford, Evans, Langberg, (2018) [31]</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Goertz-Dorten, Benesch, Berk-Pawlitzek, Faber, Hautmann, Hellmich, . . . Doepfner (2018)</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Goldsmith &amp; Kelley (2018) [33]</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Jankowski, Pawel &amp; Rękosiewicz, Małgorzata. (2013) [32]</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>McKown, Gumbiner, Russo &amp; Lipton (2009) [34]</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Miller, Gouley, Seifer, Dickstein &amp; Shields (2010) [30]</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Salavera, Usán, &amp; Jarie, (2017) [17]</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Séguin &amp; MacDonald (2016) [35]</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>Siregar, Rachmadtullah &amp; Pohan, (2018) [36]</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Spritz, Sandberg, Maher &amp; Zajdel (2010) [26]</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>?</td>
</tr>
<tr>
<td>Trentacosta &amp; Shaw (2009) [22]</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>-</td>
</tr>
</tbody>
</table>

Note: - = high risk of bias; + = low risk of bias; ? = unclear risk of bias.

**Discussion**

Among 13 of the 14 studies in this review, emotion regulation and social participation variables were found to be significantly related, which generated a moderate strength of evidence. The study that did not support this relationship separated temperament from emotion regulation variables, rather than identifying temperament as a component of emotion regulation [35]. The results indicated that soothability and shyness were the predominant predictors of peer relationships. Of note, soothability included in its construct the behaviors of calming down quickly, being soothed by caregivers, and tolerating frustration well [37], which are outcomes of emotion regulation processes that include modification of the situation and modulation of responses [38]. Another reviewed study also found a relationship between emotionality and social outcomes but included emotionality as a component of emotion regulation [25]. So, although Séguin and MacDonald (2016) [35] did not find a relationship between their emotion regulation constructs and social participation, they did find a relationship between soothability and social participation, which has components of the emotion regulation process inherent in the
construct. This suggests that the study actually supports aspects of emotion regulation as being predictors of social outcomes.

Ten of the studies found relationships between emotion regulation skills in childhood and later social competence [22-25,27-29,33,35]. This suggests that emotion regulation skills may be necessary for success in social participation. Understanding how emotion regulation and social skills are related can help guide treatment plans by encouraging practitioners to adopt a holistic view when habilitating emotional dysregulation and poor social participation. Practitioners can utilize these findings by incorporating emotion regulation interventions into social skills training or prior to social skills training in order to maximize improvements in social participation among children and adolescents. Specific components of emotion regulation that were found to predominantly relate to social participation were use of emotion regulation strategies, temperament, emotionality, self-awareness, emotional control, emotional lability, and observed emotion regulation. Although the studies used a variety of constructs and assessments to measure and define emotion regulation, all used constructs that fit the above common themes.

**General Emotion Regulation Strategies**

With two level 2B and four level 3B studies, the theme of general emotion regulation strategies had the strongest evidence supporting its relationship with social participation [26-30,34].

The studies examining this theme suggest that parents and teachers who spend a significant amount of time with the children have valuable insight into the child or adolescent’s behaviors and can identify behaviors that most significantly impact the child or adolescent’s social participation. Practitioners can use this knowledge by targeting specific dysregulated behaviors of concern as reported by teachers and/or parents in order to impact the child’s social participation.

**Self-Awareness**

Self-awareness was the next strongest theme because it was supported by one level 2B [32] and one level 3B [31] study, with a collective total of 1,331 participants. The studies included participants, aged 12 to 21 years, suggesting that self-awareness is related most to the social participation of adolescents; Sebastian, Burnett and Blakemore (2008) described how neuroanatomical changes during adolescence contribute to the development of self-awareness. The development of the prefrontal cortex in adolescence supports that self-awareness requires a higher level of executive functioning specific to older children. Practitioners may implement self-awareness interventions for adolescents with social impairments to improve their social participation.

**Temperament**

Temperament was supported by a level 2B [25] and a level 3B [35] study, with a total of 105 participants between the two studies. Emotionality, as a factor of temperament, was found to be specifically applicable in preschool to first grade. Because this theme was generalizable only to younger children, it is possible that it is a more foundational component of emotion regulation that is the basis of other emotion regulation skills, such as self-awareness and the use of specific strategies. Temperament was found to be a strong predictor in aspects of social functioning including relationships with others and managing positive behaviours. Practitioners can utilize interventions that promote positive emotionality, equated to temperament in several articles, and soothability during challenging situations, particularly for the age range of preschool to first grade, in order to improve the child’s social competence [35].

**Specific Emotion Regulation Strategies**

The use of specific emotion regulation strategies was related to social participation in four level 3B studies, making it the fourth strongest theme [23,24,33]. The specific strategies having a positive impact on social participation were reappraisal and active distraction/active strategies. Alternatively, passive strategies, where the child disengages from the environment, such as self-soothing behaviors and passive tolerance, were found to relate negatively to social participation [24]. Suppression did not predict social functioning outcomes. These findings suggest that practitioners should focus on teaching their pediatric clients to reappraise situations assessed as negative and to actively engage in the environment in order to regulate their emotions. One of the studies examining this theme also found that at age five, peer relationships were related to the child’s ability to recognize emotional regulation strategies. Therefore, practitioners can use strategies to practice recognizing and identifying emotional regulation strategies with younger children, while teaching them to generate adaptive emotional regulation strategies themselves. According to the studies examining emotional regulation strategies, it is generalizable for ages four to ten.

**Emotional Control and Emotional Lability**

Helping the child develop emotional control may also have an impact on social participation. This theme included studies with participants from the age of 12 years and older, so evidence suggests its appropriateness for adolescents, similar to the skill of self-awareness. This may indicate that emotional control and self-awareness are more developmentally advanced skills than those that were generalizable only to young children, such as emotionality and emotional lability because of the requirement for...
requisite skills such as cognitive flexibility, which is dependent on frontal lobe development [39]. This theme has a lower strength of evidence to support it, with one level 3B study [31] with 180 participants. A child’s ability to reduce emotional lability may also have a positive impact on social participation, particularly within the preschool population. Emotional lability was the least supported theme, with one supporting level 3B article including 44 participants [26]. The study definition of emotional lability was involuntary manifestations of emotional arousal, which were measurable through mood swings, angry reactivity, and emotional intensity.

The authors discussed how children’s control over their emotional lability was a key factor in determining likability by peers and future conflict between the student and the teacher. For a child to be successful during social participation among peers, it is important for them to develop control over their emotional lability through emotional regulation.

Strengths and Limitations

A strength of the articles reviewed was that data were obtained through a variety of assessment tools, such as: interviews of peers, teachers or parents, questionnaires, standardized assessments, self-report, and observations, providing a range of perspectives to support the validity of the findings. The studies included in the review also covered a wide age range from early childhood through late adolescence. In addition, consistent results were found in the articles reviewed with 13 out of the 14 indicating a relationship between social participation and emotional regulation. A limitation of this study was the lack of consensus on emotional regulation components. The theme of emotional lability was not a strong theme, with only one study with 44 participants. However, with a more consistent definition of emotional regulation, the themes might have been better supported and streamlined.

Recommendations for Future Research

This review examined emotion regulation as a construct combining managing and modifying one’s internal state and/or outward behavior in different situations [1]. Several theorists have separated the constructs of emotional, cognitive and behavioral self-regulation [40-42]. Further research is needed to contribute to the strength of clinical evidence regarding these developing constructs describing aspects of self-regulation. Randomized control trials are needed to examine the importance of interventions addressing these factors for increasing social participation. Further studies are needed to examine and differentiate these factors in children and adolescents with specific conditions who may be prone to emotional dysregulation or lack of social participation such as ASD, ADHD, learning disorders and/or anxiety and mood disorders. Longitudinal research would provide more information about associations and predictive patterns between emotional regulation and social competence at different points of development in response to a combined emotional regulation training and social skills training program.

Conclusions

Emotion regulation was found to have a significant relationship with social participation among children and adolescents who were typically developing or who had diagnoses of ASD, ADHD, learning disorders and/or anxiety and mood disorders. General emotion regulation strategies, self-awareness, temperament, emotional control, and use of specific regulation strategies were the studied themes that demonstrated relationships with social participation in recent literature. In practice, clinicians/practitioners and educators can utilize these components of emotion regulation to focus remediation strategies to support social participation and facilitate social skill development in children and adolescents. To address their clients’ social participation, it is important for practitioners to facilitate development of emotion regulation skills. These skills are significant predictors of mental health and school functioning [18] and ultimately the ability to flourish in life [5]. Practitioners can provide strategies to cultivate positive emotional regulation responses or prevent dysregulation. Emotion regulation education in conjunction with social skills training for children and adolescents provides a more holistic strategy to address social participation challenges.

References


