“How Can I Help You Learn?” Incorporating Emotions into Parents’ Support of Young Children’s Self-Regulated Learning at Home and School During a Prolonged Crisis

Lihi Sarfaty1, Adar Ben-Eliyahu,1 & Ruth Sharabany12

1University of Haifa

2Academic College Tel-Aviv Jaffa

**Abstract**

**Background.** Recognizing the importance of emotion regulation within the integrated self-regulated learning framework, young students require external regulation (other-regulation and co-regulation prompts) to acquire self-regulated learning (SRL). Our focus was on examining learning strategies within a self-regulated learning framework, monitoring learning outcomes, such as in math and literacy. This process requires parents to draw on their knowledge about learning (i.e., metacognition, metaemotion, and metabehavior).

**Aims.** Two studies investigated parental external regulation of children’s SRL strategies in changing educational settings.

**Study 1
Method.** Participants included 357 mothers who were surveyed about their own and their 1st–3rd graders’ SRL in three learning conditions: during at-school learning (T1 - May 2019); during at-home learning using online applications (the first COVID-19 lockdown – T2 - April 2020); and upon returning to at-school learning (T3 - June 2020) when children resumed at-school learning.

**Results.** Regression and mediation coefficients were estimated for parent metaprocesses associated with child SRL mediated through external regulation. During at-home learning there were stronger associations between parental metaemotion, metabehavior, and co-regulation with their children’s SRL including reappraisal. Co-regulation was positively associated with reappraisal at T2 and was maintained at T3.
**Study 2**

**Method.** Participants included 311 parents (49%fathers), who were surveyed when their children were confined to at-home learning (the third COVID-19 lockdown – T1 - February 2021) and after the return to routine at-school learning (T2 - July 2021). Additionally, 143 children (38.6% first graders) of these parents responded to questions regarding how they felt about their social, math, and language abilities.

**Results.** Within and across time effects investigated associations between T1 and T2 using cross-lagged models. Metaprocesses were associated with SRL strategies and language skills through other-regulation, but only metacognition was associated with SRL strategies through co-regulation. Three complex indirect associations from all three metaprocesses at T1 with child reappraisal and language skills at T2 suggest that parent knowledge about learning can shape how children regulate their emotions.

**Conclusion.** Parent metaprocesses shaped the prompts they used to guide their young children’s SRL strategies and learning outcomes, including emotional reappraisal related to learning.

**One Sentence Summary:**

Identifying parental supports for distance learning that contribute to children’s learning during crisis.

**Keywords:**

Metacognition, metaemotion, metabehavior, self-regulated learning, external regulation, young children, elementary school, pandemic, crisis

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1. **Introduction**

Knowledge acquisition drives human development from a very young age as young children seek to organize and understand the world around them (Gopnik, 1996). To assist their children, parents use their own knowledge about how learning transpires to support their children’s development. This form of knowledge about knowing or cognitions was defined as *metacognition* several decades ago (Flavel, 1979). Current work has expanded this form of knowledge to incorporate emotions (i.e., metaemotion) and behaviors (i.e., metabehavior; Ben-Eliyahu, 2019; Efklides, 2011). Parents may draw on this knowledge base when supporting their children, especially during emotionally charged circumstances such as disruptive crises (e.g., the COVID-19 pandemic). In order to protect physical health during a crisis, children may be compelled to remain under social isolation at home and engage in remote learning. This new learning context, where educators are not physically present, shifts the responsibility for supporting their child’s learning to parents. Parents have to bridge the gaps between what their child knows and can do, and what their child needs to learn to complete their educational tasks, known as scaffolding (Vygotsky, 1978). In such frequently changing contexts, emotion regulation emerges as a critical learning component. To examine how parents support these shifts, the current study focused on the role of emotion regulation, investigating the following research question: How does parental knowledge shape their support for their young children’s learning during different and changing times and learning situations? In light of our interest in supporting learning, we used the integrated self-regulated learning framework (iSRL; Ben-Eliyahu & Bernacki, 2015) as described below and considered emotion regulation to be an integral part of SRL strategies (Ben-Eliyahu & Linnenbrink-Garcia, 2013, 2015; Boekaerts, 1996 ). Below, we describe SRL, followed by a description of the parent-child regulatory dynamics.

Our theoretical approach draws from several conceptual models to create a synergy of complex parent-child dynamics that incorporates emotion regulation. We set out to empirically investigate the notion that parents’ knowledge shapes parent-child dynamics by considering how parent’s *metaprocesses*, defined as the knowledge and proficiency about learning (Ben-Eliyahu et al., 2024), shape their dynamics in supporting their young children’s learning (see Figure 1). We consider parents’ knowledge from an educational psychology perspective, expanding metacognition to include emotional and behavioral knowledge and proficiency (i.e., metaemotion and metabehavior).

We integrated a developmental approach (Sameroff, 2010) with external regulation during learning (Oshige & Hadwin, 2011) (see Figure 1 middle circle). Our perspective to parent-child dynamics stems from an interaction of Sammerof’s (2010) developmental approach with Hadwin and colleagues’ work concerning external regulation during learning (Oshige & Hadwin, 2011; Hadwin et al., 2018; Perry et al., 2002, 2017), which we term the *regulation internalization model* (RIM). Our focus was on examining learning strategies within a self-regulated learning framework, monitoring learning outcomes, such as in math and literacy.

**1.1. *Theoretical background: An integrated self-regulated learning (iSRL) approach***

***SRL strategies***

Self-regulated learning (SRL) refers to a range of strategies learners use to set goals, monitor, and execute actions to complete their learning tasks (Pintrich, 2004; Winne & Hadwin, 1998; Zimmerman, 2000). SRL has been investigated as comprising cognitions, emotions, and behaviors that advance learners toward learning goals set by the learner or by caring adults such as parents and teachers (Ben-Eliyahu & Bernacki 2015; Ben-Eliyahu & Linnenbrink-Garica 2013; Perry et al., 2002). For example, learners may sense when they are unfocused on the task and, as a solution, intentionally shift their attention to maintain their learning; this *attention regulation* is a type of *cognitive SRL*. Similarly, learners may plan what, where, and when to study certain topics, thereby shaping their behaviors; this *planning* is a type of *behavioral SRL*. As emotions are an inseparable part of learning, emotion regulation is also engaged when completing an achievement task (Harley et al., 2019). *Emotion SRL* may take the form of *reappraisal* or *suppression* (Ben-Eliyahu & Linnenbrink-Garcia, 2013). Reappraisal refers to reframing the task to experience more positive and less negative emotions, such as when a learner tells themselves that a frustrating task will soon be over, thereby reframing the perception of the task to alleviate negative emotions. Suppression is activated when one inhibits the emotional response, such as when a learner diminishes their anger concerning a mundane, repetitive task the teacher assigned.

Thus, whereas studies have traditionally focused on the cognitive-behavioral aspects of learning, current work has also incorporated emotions and their regulation as inherent to learning (Boekaerts, 1996 ; Ben-Eliyahu, 2019; Efklides, 2011). Recognizing cognition, behaviors, and emotions as critical learning elements facilitates defining and identifying the role of each type of SRL strategy, contributing to a holistic learning process. The ability to monitor, shift, and adjust each of these components to calibrate to the ongoing trajectory of learning tasks is a critical part of SRL that eventually leads to task completion and internalization of learning.

The knowledge of when and how to apply SRL strategies is critical. Thus, the integrated self-regulated learning model (iSRL; Ben-Eliyahu & Linnenbrink-Garcia, 2015) proposes that such knowledge––i.e., metaprocesses––may contribute to the implemented SRL strategies (Ben-Eliyahu et al., 2024). Such knowledge develops with time as learners grow and mature, therefore providing support for knowledge building and SRL strategy use in childhood is especially critical.

**1.2. *Metaprocesses: Knowledge about learning***

*Metaprocesses* is a general term that refers to one’s knowledge about how to shape a range of outcomes, such as emotional experiences or memory (Ben-Eliyahu, 2019; Ben-Eliyahu et al., 2024). The work on metaprocesses initially focused on knowledge about knowing or cognitions, identified as *metacognition* (Flavel, 1979). *Metacognitive knowledge* refers to having a broad understanding and identification of cognitions and cognitive strategies. For example, the knowledge that saying a letter name out loud helps encode it into memory and improve letter recognition. In general, metacognition substantially impacts academic achievement (Dent and Koenka 2016).

Metaemotion was initially defined and measured as a component of parental dynamics and parental coaching, addressing its emotional components (Gottman et al. 1996; Mendonça 2013).[[1]](#footnote-1) The novelty in the recognition that emotional competencies take part in academics and assist learners in regulating their emotions and cognitions during learning––and having knowledge about these by way of metaemotion provides the strategies they implement (Ben-Eliyahu et al., 2024). Drawing on metaemotion may be especially critical in emotionally fraught contexts, such as learning during a global pandemic or in volatile households. There is a recognition that cognitive processes and emotions are intermixed (Fiedler and Beier, 2014; Mather, 2009; Pekrun, 2006). However, there is a lacuna in our understanding of how emotion regulation together with knowledge relate to achievement. Thus, the current work seeks to fill this gap.

Knowledge and knowhow about behaviors is termed *metabehavioral knowledge*, encompassing understanding how to shape behaviors (Ben-Eliyahu, 2019; Ben-Eliyahu et al., 2024). It is common acknowledge that behaviors shape and are also shaped as part of learning. For example, forethought and planning on when and where to execute a range of behaviors enable better learning performance and outcomes (Bronson, 2000; Zimmerman, 2006). Applying these complex forms of perspective-taking requires maturity and experience, which young children are just developing. To this end, caring adults have a crucial role in scaffolding children’s development (Mermelshtine, 2017; Perry, 2019; Sameroff, 2010; Vygotsky, 1978 ). Using abstract thought, adults can consider the influences and adjustments needed to enhance learning strategies as part of the forethought phase and ongoing monitoring, especially in response to possible barricades to learning. Adults knowledge of these strategies serve as external regulation that facilitates and contributes to their children’s learning, as delineated below.

**1.3*. Parents’ role in their children’s learning: Applying a regulation internalization model***

Parent-child dynamics play a primary role in supporting and guiding young children, often determining their children’s achievement outcomes (Patall et al., 2008). Usually, children do not regulate effectively on their own. Parents may provide experiences that prompt internalization of self-regulation through a family of dynamics broadly termed *external regulation* (Shonkoff & Phillips, 2000). Child development literature has traditionally described external regulation as an act of others directly controlling the child (Kopp, 1982; Sameroff, 2010; Schunk & Zimmerman, 1998), as well as engaging in a scaffolding dialogue such as verbal support by others, to foster self-regulation (Hadwin et al., 2005; Hutchinson et al., 2021; Rojas-Drummond & Mercer, 2003; Vygotsky, 1978). By providing external regulation aligned with the child or task, parents can foster self-regulation in children who are still developing (Gärtner et al., 2018b; Karreman et al., 2006; Sameroff, 2010; Thompson-Schill et al., 2009).However, when external regulation is misaligned with the child’s learning needs, it can also undermine the development of their adaptive self-regulation.For example, parent communication of a controlling nature, such as power-assertive limit-setting activities, has been found to be related to their child’s poorer self-regulation (Karreman et al., 2006). Therefore, identifying and defining prompts of external regulation to enhance children’s self-regulation are critical. Doing so becomes particularly beneficial when education shifts to the home through remote learning, such as during a pandemic. In extreme circumstances such as these, emotions and their regulation may become critical for learning; thus, managing these learning situations is the focus of the current work.

To conceptualize and measure parent supports for their child’s learning through a developmental lens, we sought to push forward current paradigms by proposing a regulation internalization model (RIM: see Figure 2): RIM presents a synergetic relationship (Greene, 2022) between the developmental scholarship on self-regulation (e.g., Sameroff, 2011) and work on learning strategies (e.g., Hadwin & Oshige, 2011). *Self-regulation* theories derive from a developmental perspective, focusing on control abilities such as executive functions, effortful control, and adjustment of thoughts, feelings, and actions for attaining personal goals and exhibiting appropriate behavior (Kopp, 1982; Zachariou & Whitebread, 2019; Zimmerman, 2000). A developmental perspective describes an active process of ongoing interchanges between the child's self-regulation and external regulation through the intervention of others (e.g., family, peers, and teachers; Vygotsky 1978; Sameroff, 2010). The dynamic of other-regulation and self-regulation was initially unpacked in Sameroff's regulatory model within his unified theory of development (Sameroff, 2010). Sameroff’s model suggests that people external to the self play a critical dynamic role in the development of self-regulation. We broaden this conceptualization of external regulation by applying a lens from the SRL framework to consider different types of supports in a parsimonious model (Greene, 2022).

Complementing the developmental approach, SRL theories stem from educational psychology, highlighting higher-order capacities such as metacognition that focuses on cognitive strategies or other metaprocesses such as metaemotion (Ben-Eliyahu, 2019; Hutchinson et al., 2021; Mendonca, 2013). Hadwin and Oshige (2011; Hadwin et al., 2018) described engaging in metacognitive monitoring and evaluation as supports for the learner's regulatory control of learning. This engagement occurs within an interaction and can include asking questions, providing feedback, or offering guidance to help learners reflect on their thinking, mainly using metacognitive questions and suggestions. Therefore, an educational perspective highlights adults’ role in shaping young children’s metacognitive knowledge development through verbal interaction.

 Thus, *external regulation* may be viewed as an umbrella term for the various dynamics that regulate the child originating from external resources––i.e., *other-regulation*, *co-regulation*, and *shared regulation––*and in which adults actively help children build and cultivate self-regulation skills (Bronson, 2000; Grolnick & Farkas, 2002; Kopp, 1982; Landry et al., 2000; Martinez-Pons, 1996; Zimmerman, 2000). It is, therefore, critical to differentiate between these three primary dynamics that can shape the development of regulation. Other-regulation and co-regulation occur in one-on-one interaction, whereas shared regulation occurs within the group setting. Briefly, shared regulation refers to groups working together on tasks by continuously self-regulating each other, all seeking to attain the group’s goals (Hadwin et al., 2018; Järvelä & Järvenoja, 2011; McCaslin & Vriesema, 2018; Panadero & Järvelä, 2015). We focus on one-on-one external regulation in RIM to unpack the nuances relevant for the dynamics between adults and young children learning. To this end, we confined our focus to other-regulation and co-regulation prompts that parents use to support their young children’s learning.

When caregivers elicit thinking and knowledge formation about regulation from their children, they foster self-regulation. They assist in its internalization by applying metaprocesses, a dynamic we labeled *co-regulation*. In co-regulation, the interaction advances knowledge about how one functions by way of adult-child dynamics. Co-regulation prompts differ from other forms of verbal communication, where the adult instructs the child what to do or how to adjust their emotions or cognitions. In other-regulation, a person external to the child acts or advises them what to do; in this way, they act upon them to achieve regulation (Sameroff, 2010).

Contrasting with co-regulation, other-regulation refers to an adult telling a child how to adjust and monitor; thus, the regulation is guided by another person outside the self. Caregivers traditionally rely on other-regulation to impart practical-didactic support to guide children such as “please put your books in your bag” (Bindman et al., 2013). Especially with very young children, parents act on behalf of their children because the latter simply cannot act independently (Bronson, 2000; Kopp, 1982; Sameroff, 2010). As children gain more self-regulation skills, adults take a step back, utilizing language over actions to support the children’s emerging responsibility (Grolnick & Farkas, 2002; Sameroff, 2010).

Co-regulation is more complex, as it involves the dynamics that emerge within an interaction between two people regulating each other toward a joint goal or task. They may work together at any point of the regulatory cycle: jointly setting goals or planning, tracking progress, applying strategies, and considering effectiveness while regulating each other (Hadwin et al., 2018; McCaslin & Vriesema, 2018). The co-regulation dynamic comprises two components during which there is a back-and-forth between the adult and child: adult prompts and the child’s enactment (Hadwin et al., 2005; Hadwin et al., 2018). The prompt is aimed at inculcating the child with knowledge of how to self-regulate, taking into account the child's zone of proximal development[[2]](#footnote-2) (Hadwin & Oshige, 2011; McCaslin, 2009; McCaslin & Vriesema, 2018; Vygotsky, 1978). The child's response demonstrates their adoption of part of the self-regulation. Without this second component of child enactment, there is only partial co-regulation dynamic in which the adult uses co-regulation prompts. *Co-regulation prompts* are the conscious efforts of others to support the child's metaprocesses and bring about their internalization of regulation skills. The self-regulated adult leads the interaction, aiming to teach the child how to internalize regulation and become independent – hence, the *regulation internalization model*. In RIM, we focus on the nuances that differentiate other-regulation from co-regulation events and moments that advance the child’s thinking about their own learning strategies and, as such, manifest the origins of higher psychological processes that foster the internalization of regulatory capacity (Hadwin & Oshige, 2011; McCaslin, 2009).

**1.4. *The current study***

In the current study, we applied a nuanced approach to investigating parents’ external regulation of their child’s learning across several learning contexts, identifying specific accompanying emotional strategies. We utilized the unique learning context imposed by the COVID-19 pandemic to consider how parents’ metaemotion contributes to external regulation (Figure 1). By examining emotion regulation, as part of learning strategies, we extend prior work finding that parental beliefs and characteristics are associated with their children’s achievements, behaviors, and other SRL (Coleman & Karraker 2003; Roskam & Meunier 2012; Sroufe 1995),

The growing interest in young children’s SRL became especially relevant during the COVID-19 pandemic crisis, since more than 91% of students worldwide–about 1.6 billion children and youth–had to engage in distance learning (Erdmann & Hertel, 2019; Miks & McIlwaine, 2020.)[[3]](#footnote-3). Younger children require scaffolding and social interaction to learn and develop (Perry, 2019; Vygotsky, 1978). We examined how parents’ metaprocesses are associated with children’s outcomes when mediated by external regulation. This novel contribution advances the field of SRL (see Figure1).

We sought to examine how parent supports for learning of their first-through-third grader offsprings shifted due to the COVID-19 social isolation that consigned distance learning to be a personal and parental responsibility (see Table 1 for methodology and COVID-19 timeline). In Study 1, initial measures were taken pre-COVID in May 2019 (Time 1 - T1) during routine at-school learning. The second wave measures were administered during a government-mandated COVID-19 lockdown (April 2020: Time 2 – T2). Of particular interest at T2 were changes that occurred during the pandemic’s onset, accompanied by much uncertainty and stress as [country blinded for review]. Schools reopened in May 2020, remaining open through the end of the school year (July 1st). We investigated how mothers’ learning supports of external regulation were associated with child outcomes during these times; we surveyed mothers again (June 2020: Time 3 – T3) regarding their supports of their children’s SRL during the return to school when the lockdown was lifted.

During all three time points, questionnaires were distributed online through personal and social media using a snowball methodology to recruit participants, enabling comparison across these different times. In Study 2, we deepened this investigation by including fathers, mothers, and child reports during two time points using a repeated measures methodology.

***1.5 Research questions and hypotheses***

 We focused on the associations among parents’ metaprocesses, their regulation support, their children’s SRL and learning outcomes. Our primary research question regarded the association of parents’ knowledge about learning (metaprocesses) with their child’s SRL. We expected that these associations would change due to the contextual change as parents role transformed into face-to-face educators, subject to the chronology of the pandemic. In this way, distance learning resulting from the pandemic was considered a moderating variable.

Hypotheses:

H1. Parents’ metaprocesses will predict their children’s use of SRL, especially within a domain: (a) Parents’ metaemotion will be associated with emotional SRL, (b) metabehavior with behavioral SRL, and (c) metacognition with cognitive SRL.

H2. Parents’ use of external regulation will be associated with their child’s SRL. (a) Given the parents can observe their child’s behaviors, other-regulation will shape behavioral SRL. (b) Co-regulation will be associated with more internal processes, such as emotional SRL and cognitive SRL.

H3. These associations (noted in H1 and H2) will shift, subject to contextual changes (normalcy versus pandemic) and types of learning (distance-learning versus school-learning) so that associations during at-home learning (compared to baseline) will require parents to draw on their knowledge to be more active regulators.

**2.0. STUDY 1**

**2.1. METHOD**

**2.1.1. Participants**

Following approval by the [blinded for review] University’s Ethics Committee in [country blinded for review], 357 mothers signed a consent form and completed online questionnaires concerning their 1st, 2nd, or 3rd grader offspring. If they had more than one child in these age groups, they were asked to focus on the youngest one. Eighty-eight mothers completed the study questionnaires in May 2019 in a routine at-school learning condition (T1 - pre-COVID-19), 105 completed the study questionnaires in April 2020 during the first lockdown of the COVID-19 pandemic (T2), and 164 at the end of June 2020 after children had returned to school for about two months (T3). All samples were comparable in their demographics. Most parents had higher education degrees. The mean age across different sample groups ranged from 38.9 to 40.7 years (see Table 1).

**2.1.2. *Measures***

All mothers completed a questionnaire regarding themselves and their child. All measures were presented on a 5-point Likert-type scale, ranging from 1 (never) to 5 (always). See Table 2 for reliabilities and Appendix for all items.

**2.1.2.1. *External regulation***

Two scales were used to assess external regulation; co-regulation and other-regulation. We adapted the Teachers’ Self-Regulated Learning questionnaire (T-SRL; Adagideli et al., 2017) to assess co-regulation based on Hadwin and colleagues’ conceptualization (Hadwin et al., 2018; Hadwin & Oshige, 2011). Three items assessed co-regulation (sample item: " During learning/games, I ask my child if he thinks he is doing progressing well//succeeding"), and three items assessed other-regulation (sample item: "I remind my child how to behave during the learning task/game. For example, “It’s your turn; pick up two cards". A CFA on both scales for each measurement time showed good fit (T1: *χ*2(13) = 22.34, *p* = .050; CFI = .94; TLI = .90; RMSEA = 0.09; SRMR = 0.06; T2: *χ*2(11) = 30.14, *p* =.002; CFI = 0.93; TLI = 0.86; RMSEA = 0.13; SRMR = 0.09; T3: *χ*2(13) = 21.81, *p* =.059; CFI = 0.98; TLI = 0.96; RMSEA = 0.06; SRMR = 0.06).

**2.1.2.2. *Meta-processes***

The Metaprocess Questionnaire (Ben-Eliyahu et al., 2024) assessed parents’ metaprocesses in three subscales: metaemotion (five items; sample item:"While dealing with a task, I set myself the emotion that will promote me"), metabehavior (four items; sample item: " When studying, I try to determine which actions will be hard for me to do"), and metacognition (four items adapte from Pintrich et al,. 1991; sample item: ""While doing a task, I try to determine or figure out which concepts or ideas I don’t understand well"). A CFA was run on all three subscales for each measurement time separately, showing good fit (T1: *χ*2(62) = 89.11, *p* < .014; CFI = 0.95; TLI = 0.93; RMSEA = 0.07; SRMR = 0.07; T2: *χ*2 (62) = 94.61, *p* < .005; CFI = 0.96; TLI = 0.94; RMSEA = 0.07; SRMR = 0.06; T3: *χ*2 (62) = 73.32, *p* < .104; CFI = 0.99; TLI = 0.98; RMSEA = 0.04; SRMR = 0.05).

***2.1.2.3. Child outcomes***

Mothers reported their child’s math, language, and social performance by rating their child’s level as at, below, or above their peers’ for each domain. This rating was adopted because, for younger children, their schools provided only verbal non-numeric evaluations, thus aligning the question with the child’s report card evaluations (Kujahinoff, 2019)).

**Self-Regulated Learning.** The participating mothers reported on their child’s learning strategies. Four learning strategies were measured: reappraisal (four items; sample item: " When my child wants to feel less negative emotion (such as sadness or anger), he changes the way his thoughts, for example, he finds a different game or compromises"), and suppression (three items; sample item: " My child controls his emotions by not expressing them"),both representing emotion SRL, attention regulation (four items; sample item: "My child has a hard time concentrating on tasks"), representing cognitive SRL, and planning (four items; sample item: " My child sets a plan for how to go about completing his assignments. For example, he says out loud what he will do"), representing behavioral SRL. A confirmatory factor analysis (CFA) was run on all four scales for each time separately, showing good fit (T1: *χ*2(72) = 88.42, *p* = .092; CFI = 0.96; TLI = 0.94; RMSEA = 0.05; SRMR = 0.08; T2: *χ*2(72) = 81.16, *p* = .215; CFI = 0.98; TLI = 0.98; RMSEA = 0.04; SRMR = 0.07; T3: *χ*2(72) = 102.30, *p* = .011; CFI = 0.96; TLI = 0.94; RMSEA = 0.05; SRMR = 0.07).

**2.2. *Data analysis (Study 1)***

Moderated mediation models in SPSS 27 (Hayes PROCESS, 2013; Model 59) were used to investigate how parent knowledge shapes their parent-child dynamics toward outcomes over time (see Figure 3). Time was entered as a moderation effect of the direct and indirect effects of the mediation models. For each model, co-regulation (M1) as well as other-regulation (M2) were the mediators for a total of 24 models. Within this modeling framework, we estimated direct and indirect effects subject to varying time categories (T1[pre-COVID-19]; T2 [1st lockdown]; T3 [back to school]). Thus, the mediating role of external regulation (M1 and M2) was tested in interaction with time, where T1 (pre-COVID-19) was used as the reference for times T2 and T3. We tested for the main effect of the independent variable, parents metaprocess, and the outcome variable, children's SRL, math and language achievement and social skills (slope c) as well as the mediation effect of slope a \* slope b. **2.3. Results (Study 1)**

Overall, the findings revealed differences in how parents drew on metaprocesses to support their children’s distance learning during the pandemic (T2) and during routine at-school learning (T1 & T3). Correlations, means, and standard deviations (see supplementary materials) showed consistent findings across the three time points. However, during T2 and T3 there were more significant associations with external regulation. Notably, at T2, during the lockdown, co-regulation prompts were positively correlated with most child SRL strategies, math, and social skills, while there were less significant associations with other-regulation. These findings suggest that young children require more metaprocesses support that matches their learning during distance learning as compared with at-school learning. These findings imply that, while some patterns remain, the dynamics between parents' metaprocesses, external-regulation, and children SRL strategies may vary depending on the time point and learning setting (e.g., distance learning vs. in-school learning).

As described in the analysis plan, we used the PROCESS procedure (Hayes, 2013; Model 59) to estimate regression and mediation coefficients (Figure 3). Table 3 presents modeling results for all metaprocess (i.e., metacognition, metabehavior and metaemotion). In Table 3, the first two columns on the left present the associations between the metaprocess and external regulation (slope a). These mediation equations (independent variable to mediator) were identical for all outcomes. The following columns show the association from metaprocess to the child outcome (slope c’). Table 4 presents results from external regulation to SRL (slope b) and the indirect paths (slope a\*b). The significance of the indirect path provides evidence for mediation.

The simple slope *a,* indicating the association between the IV and mediator (see Table 3), shows that metacognition was positively associated with co-regulation (b = 0.50, *p* < .001) and other-regulation (b = 0.31, *p* < .01). The association between metacognition and other-regulation was higher at T3 than at T1 (b=1.28, *p* < .05, respectively). The association between metabehavior and co-regulation was positive (b=0.61, *p* < .001), and it was higher at T2 and T3 than at T1 (b=1.59, *p* < .05; b=1.16, *p* < .05, respectively). Similarly, a positive association was found for metaemotion with co-regulation (b=0.52, *p* < .001); this association was stronger at T2 (b=1.17, *p* < .01) than at T1. Metacognition was consistently associated positively with co-regulation, but this positive effect was stronger at T1 (T1: b=0.50, *p* < .001; T2: b=0.25, *p* < .05; T3: b=0.28, *p* < .05). Similarly, the association of metaemotion with co-regulation was stronger at T1 (T1: b = 0.52, *p* < .001; T3: b = 0.37, *p* < .001). From metabehavior to co-regulation, the effect was positive at T1 (b = 0.61, *p* < .01). As for other-regulation, metacognition was positively associated only at T1 (b = 0.31, *p* < .01).

Next, we examined the direct effects of metaprocesses (metacognition, metabehavior, and metaemotion) on child outcomes (slope c’). As presented in Table 3, positive effects were found for all three metaprocesses with reappraisal and behavioral SRL. The association of metacognition with reappraisal was stronger at T2 than at T1. Looking at the interaction with time, metabehavior, and metaemotion revealed a positive association with reappraisal at T3. For behavioral SRL, metabehavior and behavioral SRL were positively associated at all three times, whereas metaemotion was positively associated with behavioral SRL at T3 as well as at T1.

Next, we investigated the association between the mediators and the outcomes (slope b). Co-regulation and other-regulation were positively associated with children’s attention, reappraisal, behavioral SRL, math and social skills for all metaprocesses (metacognition, metabehavior and metaemotion; see Table 4). Regarding child attention, co-regulation revealed a positive effect only at T2, whereas negative effects were found for other-regulation at T2 and T3. Only co-regulation was positively associated with child reappraisal at T2 and T3. For child behavioral SRL, co-regulation revealed positive effects for metacognition and metabehavior models at T2 and T3, whereas the metaemotion model revealed a positive effect only for T2. Notably, other-regulation and child behavioral SRL were negatively associated at T2.

For child math skills, in the metacognition and metabehavior models, co-regulation was positively associated with math skills only at T2, whereas in the metaemotion model, co-regulation revealed positive effects at T2 and T3. For all three metaprocess models, other-regulation was negatively associated with math skills at T2 and T3. Notably, for all metaprocesses, only co-regulation was positively associated with child social skills at T2 and T3.

Finally, we examined the indirect effects in the mediation path models (Figure 3; slope a\*b). Table 4 presents the results of these analyses. In looking at co-regulation as a mediator of the association of metacognition with child outcomes, metacognition was positively associated with child attention and math skills at T2, whereas reappraisal, behavioral SRL, and social skills were associated at both T2 and T3. These findings demonstrate that co-regulation did not mediate the associations between metacognition and outcomes pre-COVID T1. Looking at the mediation model for metabehavior on child outcomes through co-regulation, significant effects regarding child attention were revealed at T2, whereas reappraisal, behavioral SRL, and social skills revealed significant effects at T3. This means that only co-regulation mediated the associations between metabehavior and child attention at the 1st lockdown T2 and the associations between child reappraisal, behavioral SRL, and social skills when the children went back to school (T3). Metaemotion was associated with reappraisal and social skills through co-regulation only during T3. A summary of significant mediation paths presented in Figure 4.

**2.4. Study 1 Discussion**

Study 1 investigated mothers’ reports of their children during three time points that differed in their remote learning formats, resulting in different expressions of parent involvement. We unpacked how parent metaprocesses shape the child-parent dynamics regarding learning strategies and skills. Significant mediation paths were found at T2 when families went into survival mode during the COVID-19 lockdown. We found that parents drew mainly on their knowledge of cognitive and behavioral strategies to support their children’s at-home learning. Upon returning to school, still under pandemic restrictions, these dynamics were partially maintained, along with metaemotion as an additional factor shaping academic-emotional and social-emotional strategies. This carry-over effect is notable as it suggests that parents who use their knowledge to shape their interaction with their children may internalize new strategies, developing their parenting to match changing requirements. While our study focused on contextual constraints, the same process may apply to natural changes as children develop. The role of metaemotion at T3 is of particular interest as it may indicate that when people are in survival mode, they may be more focused on functioning, adopting a behavioral-cognitive learning approach. However, the finding that metacognition was associated with reappraisal emotion SRL suggests that emotion regulation may play a critical role in learning.

These novel findings were somewhat limited in their generalizability, given the cohort data collection effort. To remedy this, we used a two-point repeated-measures longitudinal design in Study 2. This allowed us to ascertain how parents contribute to learning from mid-year to year’s end. A second limitation of Study 1 was that the participants were only mothers. Fathers’ parenting role was not expressed in Study 1. In the social distancing condition during the COVID-19 lockdowns, both parents worked from home and had a role in their children’s learning. In Study 2, both fathers and mothers reported on their children. An additional constraint of Study 1 was that there was no input from the children. This methodological limitation was due to the inability of the researchers to approach the children due to the families’ social isolation. In Study 2, after receiving parental consent, we asked children simple questions to which they could respond. This allowed us to receive direct indicators from the children.

**3.0. STUDY 2**

**3.1. *Method***

**3.1.1. *Participants***

Following approval by the [blinded for review] University’s Ethics Committee in [country blinded for review], 311 parents (49% fathers) completed online questionnaires after signed consent. Participants were recruited through an online panel. Most parents had higher education degrees and the mean age ranged from 38.9 to 40.7 years, with detailed demographic information in Table 1. Parents were asked to respond to the questionnaires concerning their 1st, 2nd, or 3rd grader, and if they had more than one child in these age groups, they were asked to focus on the youngest one. 311 parents completed the study questionnaires in February 2021 the third COVID-19 lockdown (T1-at-home learning). 153 completed the study questionnaires in July 2021, after the return to routine at-school learning (T2). All samples were comparable in their demographics. Additionally, 143 children (38.6% first graders) of these parents responded to three questions regarding how they felt about their social, math, and language abilities. The survey measures were identical to those used in Study 1. The only change was the addition of three questions for children . See Table 1 for methodology and demographics.

**3.2. *Results***

Descriptive statistics reveal that while some associations between parents' metaprocesses and child SRL strategies remain consistent across time, others may vary depending on the specific context (see the supplementary materials). The consistent positive associations of metaprocesses and external regulation with child behavioral SRL and reappraisal highlight the importance of these strategies for children's learning. Notably, negative correlations between child reports and mother reports for math and social skills were found at T2.

To investigate the associations for parents during the 3rd lockdown (T1) and back to school (T2), we examined a mixture of within- and across-time effects using path models in structural equation modeling that incorporates autoregressive effects and time-lagged associations (Little, 2013). These models are detailed in Figure 5, using different arrow types: Narrow arrows for within-time direct effects, dashed arrows for indirect effects, double-line arrows for autoregressive association over time, and bold arrows for cross-lagged cross-time associations. Two types of mediation effects are presented using dashed arrows: (i) at each time point, external regulation mediates the effect of metaprocesses with child outcomes (mediation-T1 and mediation-T2); (ii) longitudinal mediation, whereby external regulation at T1 or T2 mediates the effect of the metaprocesses at T1 with child outcomes at T2, either directly or through their association with T1 child outcomes.

 Table 5 shows the direct effects for each of the metaprocess models. Outcome indicators are presented in columns labeled T1 and T2. Autoregressive effects were assessed for co-regulation, other-regulation, and child outcomes, showing a strong positive association. Cross-lagged associations were estimated between metaprocesses and co-regulation and other-regulation; all were non-significant except for metabehavior and co-regulation, which revealed a positive association. Similarly, cross-lagged effects were estimated between co-regulation and other-regulation with the child outcome. These effects were found to be non-significant except for the metabehavior model, which revealed significant negative cross-lagged associations between other-regulation with reappraisal and other-regulation with suppression.

All metaprocesses (metacognition, metabehavior, and metaemotion) at T1 were associated with other-regulation, but only metacognition and metaemotion were positively associated with co-regulation. Note that some cross-lagged effects were set to zero (β = 0) to reduce the model’s complexity based on preliminary tests of these cross-lagged associations. Shaded cells in Table 5 reveal consistent model correlations for all models: co-regulation-T1 with other-regulation-T1; other-regulation-T2 with co-regulation-T1 and T2; other-regulation-T1 was found not to correlate with co-regulation-T2. In addition to these effects, auto-regressive mediation was found for metabehavior-T1 through metabehavior-T2 predicting child behavior SRL-T2 (effect = .06 [.01,.18] *p* <.05) and social skills-T2 (-.07, [-.22,-.02] *p* <.05), and metaemotion-T1 through metaemotion-T2 predicting child behavior SRL-T2 (.15,[.05,.25] *p* <.01).

Table 6 presents all of the significant mediation effects. Our focus was on the association between metaprocesses exogenous variables at T1 and child outcomes as dependent variables at T2. Overall, all three forms of metaprocesses-T1 were positively associated with both forms of external regulation to reappraisal-T1 and T2. However, only metaemotion-T1 was found to be associated with suppression-T2, mediated through suppression-T1. Notably, only metacognition-T1 was associated with attention SRL-T2 through external regulation-T1 or attention SRL-T1, whereas metacognition-T1 to behavior SRL-T2 was mediated through co-regulation. These findings suggest that parents draw on their knowledge about cognitions to share with their children, discussing with them how to regulate their attention. The way parents express these supports shapes the children’s later attention regulation. However, the parents’ knowledge about cognitions is applied through co-regulation prompts to shape behavioral SRL. In contrast, social skills were predicted by metabehavior and metaemotion, whereas language skills required parents to draw on all of the metaprocess forms.

Examining the direct and indirect effects of parental metaprocesses on children's self-reported math and language achievements, we found six positive mediations (see Figure 6). Parents' metaprocesses during the third lockdown (T1) were associated with their use of other-regulation at T1, which significantly predicted other-regulation at T2, ultimately influencing children's math and language achievements upon returning to school (T2). These findings suggest that parents with higher levels of metaprocesses during the lockdown provided more directive support for their children's learning, which, in turn, predicted their children's achievement when they returned to school. Notably, three negative mediations were also found between parents' metacognition and metabehavior at T1 and children's achievement through parents' metaprocesses at T2. Metacognition at T2 mediated the association between parent metacognition at T1 and math achievements (β = -.10, SE= .04, p= .019, 95% CI [-.20, -.03]). Conversely, metabehavior at T2 mediated the associations between parent metabehavior at T1 and both math (β = -.08, SE=.04, p= .028, 95% CI [-.18, -.02]) and language (β = -.07, SE=.04, p=.04, 95% CI [-.16, -.02]) achievements. These results indicate that high levels of parent metacognition and metabehavior are associated with lower levels of their respective metaprocesses, yet still predict children's achievement. The correlations and cross-lagged results varied somewhat for each metaprocess model from the models that examined child outcomes based on parent reports, and are presented in the supplementary materials.

**3.3. *Discussion***

To assist their children, parents must use their own knowledge about how to learn to support their children’s development from a young age and through their years in school. This form of metaprocesses is considered beneficial as the metaprocesses are expected to trigger parent conversations with their children about strategies rather than instructing the child what to do without explanation. Study 2 findings suggest that parents’ metaprocesses foster their use of co-regulation prompts, which, in turn, promote the children’s use of regulation strategies and learning outcomes. Considering the emotional aspects of this parent-child communication, it seems critical that parents can support their children’s use of reappraisal SRL to adjust their emotions during learning, particularly when learning contexts are impacted by extreme situations such as crises. Notably, child suppression was not supported by parent co-regulation prompts but rather by the child’s own suppression at T1.

Similar patterns were found with children's self-reports, the data suggests that parents predominantly relied on their knowledge of cognitive, behavioral and emotional strategies to provide external regulation, which subsequently contributed to their children's academic achievements. These findings enhance our understanding of how extreme circumstances, such as lockdown, stress the importance of directive support (other-regulation) for learning outcomes (Dignath & Veenman, 2021). Notably, the negative mediations observed between parents' metacognition and metabehavior at T1 and children's achievement through parents' metaprocesses at T2 suggest that when parents must support their children's learning and acts as the main teaching source, they draw more from their own knowledge to engage in a way they never required before. Interestingly, metaemotion showed no negative mediations, possibly due to the increased need for parental involvement in children's social and emotional states following the return to school.**4.0. General Discussion**

Emotion regulation has become a research topic in achievement settings such as learning and instruction, especially in recent years, as the global atmosphere has become intense (Ben-Eliyahu, 2019; Harley et al., 2019). The current work aimed to add to the literature on emotions and emotion regulation strategy use as a component of learning and ascertain how parents can support their young children’s learning, especially during extreme learning conditions. In primary school, parents play an essential role in their children’s learning, and this role was augmented during the COVID-19 pandemic when remote learning was imposed. In Study 1, we reported on three cohort samples in different time-bound contexts: the first was pre-pandemic at-school learning, the second was at-home learning during the lockdown, and the third was when children returned to at-school learning. In Study 2, we used a repeated measures longitudinal design to consider how parents’ supports during the lockdown shaped the at-school learning when the children returned to school two months later. Overall, the findings suggest that parent metaprocesses were especially relevant for young children in shaping the parent-child dynamics when their children began to learn in the home during lockdown (Study 1 [T2] and Study 2). These dynamics were partially maintained when children returned to school, revealing consistency in some associations.

Focusing on the emotional constructs, some cross-domain and within-domain associations were revealed. Notably, in Study 1, co-regulation prompts mediated the association of metacognition with reappraisal SRL, behavioral SRL, and social skills-T2 and T3, but not pre-COVID (T1). Interestingly, upon the return to school, the use of metabehavior was associated with reappraisal SRL, behavioral SRL, and social skills through co-regulation prompts. Metaemotion was associated with reappraisal SRL and social skills through co-regulation prompts only at T3. These findings suggest that parents draw on their metaprocesses to advance their conversation about learning strategies with their children. In turn, this conversation fosters the children’s use of SRL strategies and enhanced social skills. Especially when following a crisis as they attempt to return to their routine. However, Study 1 was limited by cohort, requiring further investigation to discern the longitudinal effects using a repeated measure design as applied in Study 2.

The revealed longitudinal associations in Study 2 suggested that some relationships were robust. All three forms of metaprocesses during the lockdown were positively associated with both forms of external regulation to reappraisal SRL, both as within-time associations during the lockdown (T1) and also across-time when children returned to school (T2). However, only parental metaemotion during the lockdown (T1) was associated with suppression when children returned to school (T2), mediated through suppression-T1. This finding is interesting because it was not revealed in the cohort analyses (Study 1), perhaps because during a specific time point, reappraisal SRL may contribute to resiliency building, whereas suppression is generally considered a maladaptive form of emotion regulation. However, when considered over time, suppression SRL may be beneficial, especially when coping with a crisis that requires withholding negative emotions during academic work. Prior work has shown that in aversive situations, there may be value in suppression SRL, at least within learning contexts (Ben-Eliyahu & Linnenbrink-Garcia, 2013).

Interpreting these findings necessitates the consideration of context. The COVID-19 pandemic required learners and their support networks to exhibit high flexibility under changing environments. Whereas teachers were required to reinvent their teaching, especially for younger students who require scaffolding, parents were required to take on instructional roles. Prior work found that cooperation between parents and teachers (mesosystem) was associated with better academic outcomes for first-grade children (Cook et al., 2018). In the current work, we focused on parents’ knowledge about learning strategies and how this knowledge is associated with children’s use of SRL strategies. However, because learning does not exist in a vacuum devoid of the zeitgeist, we considered the broader contextual influences as a precursor that may shape SRL, especially when viewed through the lens of the academic emotional learning cycle (Ben-Eliyahu, 2019), according to which the relationships between different emotional constructs are shaped by factors external to learning.

Coupled with the finding that parents applied more metabehavior in 2020 (Study 1-T2), it appears that when learning under stressful conditions, parents assume the additional roles of planning and monitoring behaviors. Given that many families have more than one child, a working parent, and only a single computer at home, parents are charged with juggling the use of technologies and making themselves available to help their children complete assignments, all the while managing their own tasks. Such situations require seeing the larger picture to ensure functionality, which relies on digital communication with the outside world for both online social and pedagogical communication. Applying the reasoning that SRL is a limited resource (Ben-Eliyahu, 2019; Schmeichel & Baumeister, 2004), children’s regulatory resources are freed from having to regulate behaviors when they are under social isolation, and in this way, they are more available for employing cognitive SRL.

This suggests that stressful situations require more fine-tuning to influence emotions, behaviors, and cognitions. Consistent with prior work, which found domain-specific parent self-efficacy as more predictive of child outcomes than were general competence beliefs (Coleman & Karraker 2003), we also found that parents’ metaemotion was associated with their children’s SRE, and parents’ metabehavior was associated with their children’s SRB, though only in 2020. In stressful situations, when children feel a lack of control, they may need parental support to restore a sense of security (Sroufe, 1995) and structure. Our findings suggest that this security and structure may be offered through other-regulation, whereby parents provide direct guidance on what the child should do. Parents who are attuned to their children may employ domain-specific strategies. In this sense, co-regulation, which emphasizes cognitive support in the form of knowledge building, was positively associated with cognitive SRL; in contrast, other-regulation was negatively associated with cognitive SRL only in 2020. A similar contextualization was found in prior work examining the role of parental involvement in children's self-regulated learning. For instance, Pino-Pasternak and Whitebread (2010) found that parental behaviors that encouraged children's autonomy and provided cognitive support were positively associated with children's self-regulated learning behaviors. Similarly, Neitzel and Stright (2003) reported that children of mothers who provided more cognitive support and less directive control exhibited higher levels of self-regulated learning during problem-solving tasks.

Study 2 found a within-domain association for metacognition-T1 associated with attention SRL-T2 through external regulation-T1 and attention SRL-T1. These are within-domain associations, as the predictor and predicted variables are both cognitive in nature. A cross-domain association was found for metacognition-T1 predicting behavior SRL-T2 through co-regulation. In both cases, parents' use of their knowledge on how to adjust one's cognitions – i.e., metacognition – was positively associated with co-regulation prompts regarding SRL strategies. However, other-regulation was a mediator only with attention SRL. Parents drew on their knowledge about cognitions to instruct their children on how to regulate their attention; however, they discussed how to support behaviors by eliciting conversation that promotes the children’s internalization of learning strategies.

Children's reports on their social, math, and language abilities highlighted the significant role of metaprocesses and the use of other-regulation for children's academic outcomes during stressful situations such as the lockdown. The findings reveal that parents predominantly relied on their cognitive, behavioral, and emotional knowledge to provide other-regulation, which subsequently contributed to their children's academic achievements. This [emphasizes](https://www.powerthesaurus.org/emphasizes/synonyms) how extreme circumstances, like lockdowns, stress the importance of directive support for learning outcomes (Dignath & Veenman, 2021). Notably, negative mediations were observed between parents' initial metacognition and metabehavior and children's later achievement through parents' later metaprocesses, suggesting that when parents become the primary educators, they draw more heavily on their own knowledge, adapting their support when perceiving their children's academic struggles (Pomerantz & Eaton, 2001). Interestingly, metaemotion showed no negative mediations, possibly due to the increased need for emotional support when children got back to interacting with peers and teachers. These results indicate that parental involvement should be adaptive and responsive to children's changing needs across different educational contexts (Grolnick & Slowiaczek, 1994), with the use of parental metaprocesses varying depending on whether learning occurs remotely or in traditional classroom settings. Contrary to the notion that metacognitive parents are more likely to promote autonomy in their children's learning (Joussemet et al., 2008; Roskam, 2015), our findings suggest that in different learning situations, there is more room and need for direct instructional support. This research supports the idea that enhancing parental metaprocesses could be a valuable target for interventions aimed at improving children's academic performance (Pino-Pasternak & Whitebread, 2010).

**4.1. *Limitations and future directions***

This study’s importance notwithstanding, several limitations need to be considered. Paradoxically, these limitations are also the reasons that enabled us to conduct this study swiftly and in a timely manner to enable a quasi-experiment for direct comparison of young children’s learning during normalcy and high-stress pandemic times. First, our data were derived from mother’s reports of themselves and their children. Whereas children’s self-reports would have been valuable, this was not feasible due to social isolation and time constraints. An extension of this study would survey fathers along with mothers. Moreover, children’s ability ratings were provided by their parents, whereas teachers’ reports of grades and children’s SRL could have furthered our understanding and provided a fuller picture of children’s SRL. These limitations notwithstanding, they do not detract from the importance of this study for the field of SRL and for understanding how to support children’s learning during times of crisis when their primary educator becomes their parents.

At young ages, children acquire learning strategies along with basic knowledge. To prevent negative repercussions of the crisis on children’s education and long-term economic and social ramifications in education, it is critical to understand how to best support children’s growth and development of academic-type learning. Accommodating this crisis effectively will help maintain formal schooling benchmarks of skills, such as reading acquisition, reading comprehension, math skills, and following instructions, all internationally recognized skills, as reflected in the globally administered PISA exams (Schleicher, 2019). It is crucial that learning is maintained for children and youth, but also for adults, who are expected to adhere to new behaviors and who also comprise the workforce of scientists who seek to analyze and find solutions for such pandemics and health issues (Taubenberger & Morens 2006; Webby & Webster 2003). Therefore, a critical extension of the present work would be to investigate how SRL processes are supported in youth and adults.

The COVID-19 pandemic has dramatically increased the number of children living in a prolonged crisis in their homes. Parents have become pivotal in maintaining necessary at-level learning, especially for young children who require assistance during the regular school year and even more with distance learning during these uncertain times. Through the use of metaprocesses and by supporting SRL, parents can enrich their children’s learning and enhance the development of 21st-century skills in the hope that when crises strike, we will know not only how to deal with them but also grow as individuals, as a family, and as a human race. To prevent irreversible gaps in learning among different populations (Heckman, 2006), educators may provide aids to parents and children to support children’s learning in the face of the imposed situation.

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**APPENDIX: SURVEY INSTRUMENTS**

**Instructions:** We are interested in situations that transpire between mother and child regarding educational play, homework, and/or online learning (e.g., puzzles, memory games, reading, arithmetic games, and zoom lessons). In the following questions, please think about such situations with your child. When you are unsure, please refer to the child’s learning tasks or educational games.

Child ESRL -reappraisal

1. When my child wants to feel less negative emotion (such as sadness or anger), he changes the way his thoughts, for example, he finds a different game or compromises.
2. When my child wants to feel more positive emotion (such as joy or amusement), he changes the way he thinks about the situation. For example, he changes it to something funny.
3. When my child wants to feel more positive emotion (such as joy or amusement), he changes what he is thinking about; for example, he finds a game that he likes.
4. When my child is facing a stressful situation, he makes himself think about it in a way that will calm him down; for example, he says to himself calming words such as “it will be all right, I am a hero.”

Child ESRL- suppression

1. My child controls his emotions by not expressing them.
2. When my child feels negative emotions, he makes sure not to express them (does not express negative emotions).
3. My child keeps his emotions to himself.

Child CSRL

1. My child has a hard time concentrating on tasks.
2. My child can’t keep track of what he is thinking about during tasks.
3. During learning, it is difficult for my child to think about one subject.
4. During learning, my child misses important information because other things keep him busy for example, additional tasks that need to be completed.

Child BSRL

1. My child sets a plan for how to go about completing his assignments. For example, he says out loud what he will do.
2. Before my child begins a assignment, such as a drawing, he considers all the different things he needs in order to complete this task.
3. My child sets his daily agenda. For example, he determines what he will do in the afternoon (2019: meet with a friend or go to the park; 2020: participate in a zoom meeting).
4. My child keeps track of what is left to do in his assignment. For example, he asks for more time to finish the task.

Parent ESRL - Reappraisal

1. When I want to feel less negative emotion (such as sadness or anger), I change the way I’m thinking about the situation.
2. When I want to feel more positive emotion (such as joy or amusement), I change the way I’m thinking about.
3. When I want to feel less negative emotion (such as sadness or anger), I change my thoughts.
4. When I’m faced with a stressful situation, I make myself think about it in a way that helps me stay calm.

Parent ESRL - Suppression

1. I control my emotions by not expressing them.
2. When I am feeling negative emotions, I make sure not to express them.
3. I keep my emotions to myself.

Parent CSRL

1. I have a hard time concentrating on tasks.
2. I have a hard time following my thoughts during tasks.
3. While learning, I find it difficult to thinking about one subject.
4. I have difficulty keeping my mind on school-related things because I think of other things, such as another assignment.

Parent BSRL

1. I set a plan for how to go about completing my tasks.
2. Before I begin a task, I consider all the different things I need to get done to complete this task.
3. I make lists for work that needs to be accomplished or finished.
4. I keep track of what remains to be done in the task.

Other-regulation

1. I tell my child which strategy to use in order to match the learning task/game. For example, I tell him to put the card back in place so he will not get confused.
2. I stop my child and describe his behavior while telling him how to match himself. For example, “You are not concentrating on the learning task/game, pay attention to your turn.”
3. I remind my child how to behave during the learning task/game. For example, “It’s your turn; pick up two cards.”
4. I show my child what to do more than once.

Co-regulation

1. While learning/playing educational games, I initiate a moment of monitoring (checking-in) and adjusting the learning/playing. For example, I ask him if he is enjoying the game? Does he feel successful in it?
2. I initiate a conversation with my child, during which I check his engagement with the learning/game, “what do we do now?”
3. During learning/games, I ask my child if he thinks he is doing progressing well//succeeding.

Parent Metaemotion

1. While doing a task, I try to understand what will make me feel unpleasant emotions.
2. Every time I do something, I determine which emotion will advance me.
3. When something confuses me during a task, I examine my emotions so I could deal with the task again.
4. While doing a task, I ask myself questions to examine which emotion can advance my task.
5. I try to think what I am supposed to feel from the task at hand.

Parent Metabehavior

1. While doing a task, I try to decide or figure out which actions will be difficult for me to perform.
2. If the task gets difficult, I change my actions.
3. While dealing with a task, I ask myself questions to make sure I am acting and doing things related to the task.
4. I try to think how I am supposed to act on the task at hand.

Parent Metacognition

1. While doing a task, I try to determine or figure out which concepts or ideas I don’t understand well.
2. Every time I do something, I set goals for myself in order to direct my attention and focus.
3. When I become confused about something in the task, I go back and try to figure it out and read about it.
4. When doing a task, I ask myself questions to make sure I understand the task.
5. I try to think about what I am supposed to learn from the task at hand.
1. Metaemotion is part of a family of other emotion related constructs that have been investigated both within and outside of learning situations. Emotions in learning contexts were first studied in schools as emanating from social interactions as social-emotional learning (Zins & Elias, 2007), limiting emotions to a social commodity. Aligned with this view, emotional intelligence appeared to counter the notion that intelligence is limited to academic intellect (Salovey & Mayer, 1990). *Emotion regulation* was used to refer to intentional and automatic processes and strategies aimed at adjusting emotions (Gross & John, 2003). Since then, research has substantiated that academic emotions or achievement emotions, such as happy, anxious, hopeful, or frustrated, play a role in learning (Pekrun & Linnenbrink-Garcia, 2014) and that they too are regulated within learning contexts and during engagement in learning tasks (Ben-Eliyahu & Linnenbrink-Garcia, 2013, 2015; Harley et al., 2019). [↑](#footnote-ref-1)
2. The zone of proximal development (ZPD), as proposed by Vygotsky (1978), represents the current level of performance and skills of individuals and the potential level that they can reach with customized support. [↑](#footnote-ref-2)
3. This is a substantial increase from the typical estimates of 25% of the world’s children that are compelled to confront some sort of passing crisis during routine periods. [↑](#footnote-ref-3)