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Review

Assessing parental emotion regulation in the context of parenting: A systematic review

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ABSTRACT

Despite a need for developmental and clinical research to understand how parents regulate their emotions in the context of parent–child interaction, empirical studies of parental emotion regulation (ER) have predominantly relied on general models and measures of adult ER. To address this gap, the present systematic review aimed to identify studies that examined parental ER in the context of parenting, and to evaluate how ER was defined and operationalized, how specific measurement contexts were established, what types of methods were involved, and the state of evidence on their reliability and validity. A systematic search in five databases yielded 91 studies that adopted assessments capturing different facets and processes of parental ER, highlighting the importance of conceptual clarity in integrating empirical findings and developing new research. Results also suggested that most studies relied on a single method or source to assess parental ER, and further evidence is needed to support the reliability and validity of many measures. Compared to general measures of adult ER, the assessments identified in this review were situated within the recollection of past parenting experiences and real-time actual or hypothetical parenting situations, allowing researchers to capture parenting demands and accommodate developmental characteristics in parent–child relationships. This review presents a toolbox for researchers interested in examining parental ER as context-specific processes and provides recommendations to move the field in a more conceptually sound and methodologically rigorous direction.

Introduction

It is almost impossible to discuss the experience of parenting without considering the emotions it involves, positive and negative, transient and persistent, internally experienced and externally displayed. Over the past three decades, parental emotion has received increasing attention in developmental research, with growing focuses on how ebbs and flows of emotions organize ongoing parenting

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behaviors (Leerkes & Augustine, 2019) and how parenting-related emotions may accumulate and contribute to more pervasive forms of parenting difficulty (Deater-Deckard, 2004; Mikolajczak, Gross, & Roskam, 2019). The role of emotion in parenting, and thus in parents' ability to construct an optimal environment for children's development, has spurred research and clinical endeavors to understand and improve parents' regulation of emotions (Hajal & Paley, 2020). As researchers have noted, emotions, even those of negative valence, can serve important functions in the motivation to parent; however, when not appropriately regulated, they can also interfere with appropriate parenting (Dix, 1991).

Recent meta-analyses suggest that individual differences in parents' emotion regulation (ER), which encompasses ER ability or difficulty and the use of presumably adaptive or maladaptive strategies, are associated with variations in parenting and the risk for child maltreatment (Lavi, Ozer, Katz, & Gross, 2021; Zimmer-Gembeck, Rudolph, Kerin, & Bohadana-Brown, 2022). Most studies of parental ER adopted measures that draw on the global models of adult ER and assess trait-like ER ability, difficulty, or habituated strategy-use that are not specific to parenting. Although this body of research has begun to establish the important role of parental ER in parenting competence, evidence suggests that global ER among parents is not strongly or consistently associated with the same construct measured in parenting-related contexts (Brenning et al., 2020; Chung & Kim, 2017; Lorber et al., 2017), and it is not yet clear which bears more predictive value in different research questions related to parenting. Given the unique affective nature and demands of parent–child interaction, global models and measures of ER may not fully capture how parents regulate emotions during parenting. This question of ecological validity is critical for addressing developmental considerations in parenting research and for designing and evaluating prevention components that target parental ER to improve parenting, and thus warrants more empirical examination.

While the predominant global approach to parental ER has provided a foundation for evaluating its overlaps with or distinctions from context-dependent processes, there has not been a clear map for assessing ER *in the context of parenting*. Parenting-specific measures of ER have been adopted in some studies, but they varied widely in how ER was conceptualized and operationalized, how parenting contexts were established for the assessment, and the type of methods involved. These conceptual and methodological variations can be a challenge for researchers to identify assessments that are most appropriate for their work or to integrate findings from existing research. To address this gap, this systematic review synthesizes assessment approaches and tools used to capture parental ER in the context of parenting. In addition to summarizing and critically appraising the characteristics of the assessments and the evidence of their reliability and validity, we highlight what unique perspectives this literature offers and discuss how developmental considerations have been and should be addressed in the research of parental ER, that is, how the assessment contexts and approaches capture unique parenting challenges and demands at children's different developmental stages.

Conceptual models of parental ER in the context of parenting

ER has drawn increasing interest in psychological research over the past three decades, with theories and empirical evidence suggesting that it plays a role in supporting a range of psychosocial functions and may be a transdiagnostic factor implicated in many mental disorders (Compas et al., 2017; Cole, Michel, & Teti, 1994; Lincoln, Schulze, & Renneberg, 2022). Various definitions and models of general adult ER have been offered in the literature. Their scope and implications have been discussed in previous reviews (Bloch, Moran, & Kring, 2010; Gratz, Dixon, Kiel, & Tull, 2018) and are, therefore, not the focus here. Instead, we build upon a relatively broad definition of ER informed by previous models – *the processes of engaging cognitive and/or behavioral actions (including actions to engage external forces) to modulate components of emotional responses (*e.g.*, appraisals, subjective experiences, physiological responses, behavioral tendencies and behaviors) and/or the associations among them* – and review theoretical perspectives that specifically address parenting demands in parental ER.

There is consensus among researchers that ER can be context-dependent; that is, the choice and effects of strategies, how ER unfolds on a moment-to-moment basis, and the ability to manage emotions appropriately may vary by context-specific goals and demands (Aldao & Tull, 2015; Gratz et al., 2018). In interpersonal contexts, individuals often bear in mind relationships and other people's well-being when regulating their own emotions (e.g., English, Lee, John, & Gross, 2017). The affective model of parenting (Dix, 1991; Dix & Branca, 2003) suggests that parents' emotions are activated, and their ER is directed, by various concerns oriented to parents' own well-being, their children's well-being, and other factors (e.g., co-parenting). Unique from other relationships, most parents hold it as their responsibility to promote the development and well-being of their children who have not yet achieved full independence. Parental ER is thus part of a hierarchical system of providing care, monitoring, and socialization, in addition to serving parents' own well-being or personal goals.

As parents juggle various goals in parenting contexts (Hastings & Grusec, 1998), they often need to find priorities or fit multiple goals into a functional system in the regulation of their emotions. For example, a parent may inhibit frustration and attend to a crying baby first, before engaging in self-care activities to reduce negative feelings. Managing to attend to the baby may also promote the parent's feeling of contentment and self-efficacy, in turn helping with reducing frustration. Meanwhile, models of regulatory difficulties underlying at-risk parenting point to conflicts among various demands or goals. Parenting demands, or even typically non-demanding parenting tasks, may be experienced as distressing for some parents due to hostile attributions of child behaviors or unrealistic expectations about parenting (Azar & Weinzierl, 2005; Milner, 2003). Such internal demands may overwhelm parents' regulatory capacity, such that they are unable to prevent negative feelings from compromising their parenting (Lavi et al., 2021). Parents may also form maladaptive patterns of regulation, including turning to harsh, controlling parenting or disregarding parental responsibilities to curb their own distress (Borelli, Burkhart, Rasmussen, Smiley, & Hellemann, 2018; Skowron et al., 2013; Smith, 2003).

These models and findings highlight the unique demands and challenges for parents that are not necessarily addressed by global models of adult ER. Although trait-like measures of ER capture important variabilities, the extent to which they represent how parents

regulate emotions in the context of parenting needs to be further examined. Thus, assessing parental ER as *context-specific* processes is critical for investigating the ecological validity of research findings as well as informing clinical practices that target parental ER to improve parenting competence.

Examining parental ER in developmental research

Studying parental ER as context-specific processes warrants the consideration of how different developmental stages pose unique demands that may influence parents' experience and regulation of emotions. As children's capacities and needs change with age, the range and nature of activities parents engage in with their children, as well as the balance of power in parent–child dyads, typically shift. For example, parenting in infancy often involves intense but repetitive practices of attending to infant cues and meeting their basic physical and emotional needs (e.g., feeding, rocking baby to sleep, synchronizing vocal and facial cues). As children's mobility and cognitive capacity grow in the next few years of life, they start to gain autonomy and engage in a wider range of activities. However, with limited ability to regulate emotions and behaviors, they also create a wider variety of challenging situations for parents, who are tasked with teaching their children rules and sociocultural expectations and scaffolding the development of children's self-regulation (Kochanska, Coy, & Murray, 2001; Verhoeven, van Baar, & Deković, 2019). As children move through middle-childhood and adolescence, the time spent outside homes increases; although children may still expect parents to be emotionally available (Kerns, Tomich, & Kim, 2006), the negotiation around autonomy and boundaries leads to conflicts and stress for many families (Branje, 2018).

Given these evolving shifts, research examining parental ER should attempt to capture the typical emotionally demanding parenting situations at a given developmental stage. Meanwhile, developmental changes in parents' concerns, expectations for their children, and parenting goals can all influence when and how parents experience and regulate specific emotions. Furthermore, sociocultural backgrounds, as well as other factors that may influence parenting demands, goals, and parental ER (e.g., children's special needs), should also be considered when examining parental ER in developmental research. Parents raise their children to survive and thrive in their specific environments (Raval & Walker, 2019; Umaña-Taylor & Hill, 2020). Parenting situations that are emotionally demanding in one group may be less relevant or involve different parenting goals in other groups, ultimately directing how parents manage their own emotions so that their emotions and parenting practices align with these goals. This points to the need of examining parental ER as context-specific processes in addressing related research questions, rather than conceptualizing and assessing it as a universal, context-irrelevant ability.

The present study

An emerging body of research has started to assess parental ER in context-specific approaches. Some adapted self-report measures of adult ER to be situated within parenting experiences (e.g., Brenning et al., 2020; Pottie & Ingram, 2008), while others incorporated observational or psychophysiological measures to capture real-time facets and effects of ER in the moment of parenting (e.g., Morelen, Shaffer, & Suveg, 2016; Waters, Karnilowicz, West, & Mendes, 2020). However, there has not been a comprehensive synthesis of these assessment approaches to evaluate their theoretical foundations, methodological approaches, and the state of evidence on their reliability and validity. This may present as a barrier for researchers interested in examining parental ER in parenting contexts and as a result, turn them to the widely used global measures of adult ER. To address this gap, we conducted a systematic review of studies that assessed parental ER in the context of parenting, aiming to answer the following questions: (1) What were the research questions studies sought to address through assessing parental ER in the context of parenting? (2) How did studies conceptualize and operationalize parental ER in the context of parenting? (3) What were the methodological approaches involved in the assessments of parental ER? (4) Did studies provide evidence on the reliability and validity of parental ER assessments, and if so, how? (5) What were the specific parenting contexts in which parental ER was assessed? Did these contexts reflect the unique demands of parenting at children's different developmental stages, and if so, how? Finally, we highlight some key aspects of findings from this literature and summarize the characteristics of the study samples, before discussing the scope and limitations of our understanding of parental ER in parenting contexts and making recommendations for the field moving forward.

Material and methods

Literature search

A comprehensive search was conducted using five databases that cover literature in psychology, health, and related disciplines (i.e., CINAHL, PsycINFO, MEDLINE, Embase, and ProQuest Dissertations & Theses) in December 2021. No limit was set on the date of publication. The search aimed to identify articles that examined parental ER empirically. Thus, two groups of terms were combined to capture the target subjects or population (*parent*, mother*, father*, maternal, paternal, caregiv**) and the construct (*emotion* regulat*, emotion* manag*, emotion* control, affect* regulat*, anger management, self-regulat*, self-control, cognitive control, inhibitory control, impulse control, regulat* strateg*, physiolog* regulat*, behavior* regulat*, arousal regulat*, neural regulat*, cognit* regulat**). Records that included a parent term in the title or as a subject heading AND an ER term in the title, abstract, or as a subject heading were identified (see Supplementary Materials for the search syntax). The terms were particularized based on previous reviews related to ER and ER assessments (Crandall, Deater-Deckard, & Riley, 2015; Lavi et al., 2021; Nigg, 2017; Weiss, Thomson, & Chan, 2014).

In addition to the search through databases, potentially relevant articles were identified from existing reviews on parental

functioning that came up in the search (see Supplementary Materials for a list of existing reviews) and the included studies in the present review. In total, the search yielded 41,211 records from databases and 26 from other sources, among which 18,315 were removed for reasons including duplication and ineligible study types (e.g., case reports, animal studies). As a result, 22,922 records were further considered for preliminary screening. A flow diagram following the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA; Page et al., 2021) is presented in Fig. 1.

Furthermore, because the term *distress tolerance*, which overlaps conceptually with ER, was not included in the original search, a supplementary search was conducted in March 2023 to identify related studies that may fit the inclusion criteria. However, no additional articles were eligible beyond the studies already included through the original search (see Supplementary Materials, "Literature Search Terms and Syntax" for details on this post hoc search). Another term that has conceptual overlaps with ER, namely *coping*, was also considered (see the same section in Supplementary Materials for details). However, in the parenting literature, coping has been used more broadly and in many studies mapped onto parental behaviors in response to specific child-related situations rather than to parents' own emotions. For example, the commonly used Coping with Children's Negative Emotions Scale (CCNES; Fabes et al., 2002) is focused mainly on parenting behaviors directed toward children's display of negative emotions. Note that one of its subscales (i.e., Distress Reactions) does focus on parents' own emotions, but most of the items capture parents' emotional reactivity, e.g., "feel uncomfortable and embarrassed myself", and thus do not fit the definition of ER in this study.

Inclusion criteria and screening

The 22,922 records were screened for eligibility based on the following inclusion criteria: (1) empirical studies that included parents or caregivers serving a parental role of a child aged 0–18 years; (2) studies that examined parental ER, that is, included measures that map onto, or infer indirectly, parents' modulation of their emotional components (i.e., appraisals, subjective experiences, physiological responses, and/or behaviors or behavioral tendency) or the associations between different components (inferences based on the association between physiological responses and other emotional components were not considered if there was no evidence that ER has occurred; although physiological response is a component of emotion, other physical and psychological activities may also be accompanied by physiological changes); different facets or processes of ER were all considered (e.g., skills or difficulty, use of strategies, efforts); (3) studies that examined parental ER in the context of parenting (through recall or in real-time) in

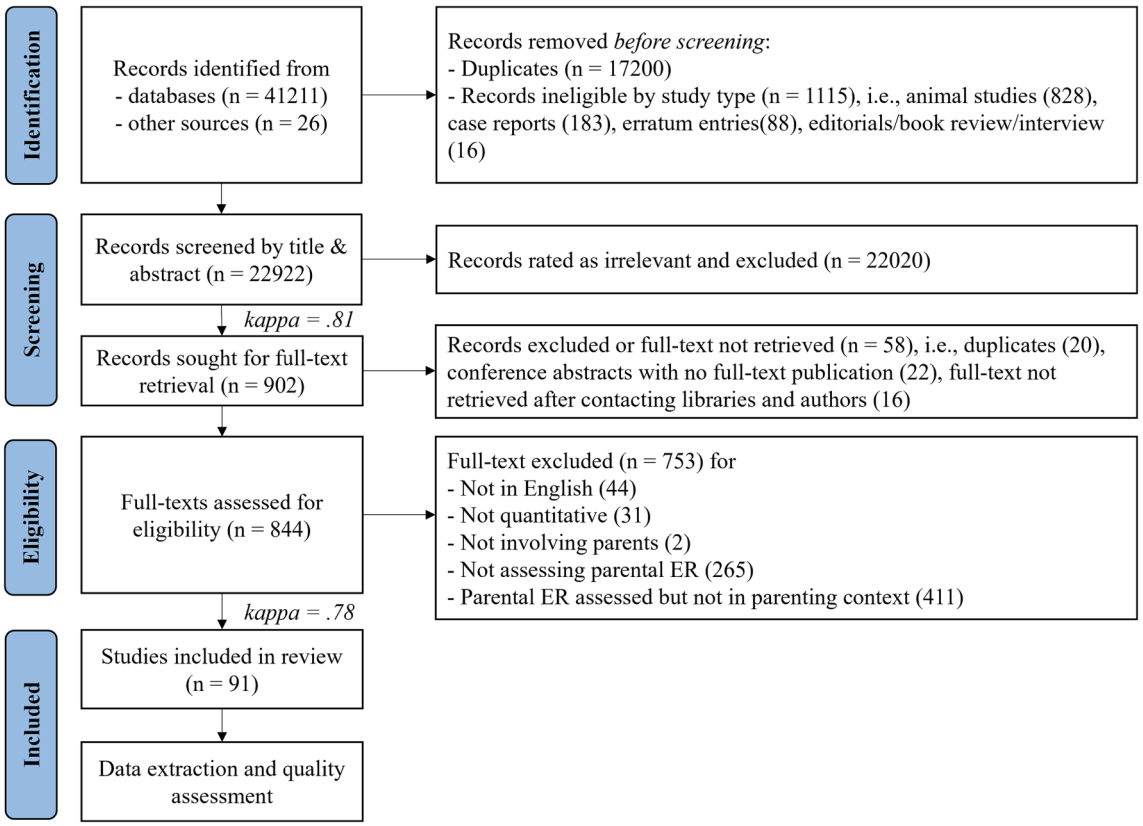

Fig. 1. The PRISMA flow diagram for the present study. *Note.* For conference abstracts, we searched by title and authors for full-texts or related publications; if a full-text was already included in another record or no related publication was located, the corresponding conference abstracts were excluded.

laboratory or natural settings, or through hypothetical parenting vignettes or child-related stimuli; and (4) studies published in English or for which an official English translation was available. Studies were excluded if they assessed parental ER but not specifically in the context of parenting (e.g., using a measure of general adult ER in a sample of parents), if they measured arousal, experience, or other components of emotional reactivity without evidencing attempts of regulation, or if they were not quantitative studies (e.g., qualitative studies or case studies that did not provide summary statistics were excluded). Both published and non-published work (i.e., theses and dissertations) were considered, provided that the full text was accessible through a database or by contacting the author.

Two independent coders first screened the title and abstract of each study to determine its relevance for this review. Following preliminary screening, the full texts of 844 studies were retrieved and further assessed by two independent coders for eligibility. Of these, 753 were excluded based on the criteria (see Fig. 1 for reasons of exclusion), among which 411 were not eligible because they assessed parental ER but not in the context of parenting. Inter-rater reliability was high both for the preliminary screening (kappa = 0.81) and the full-text screening (kappa = 0.78). Any discrepancies between the coders were resolved through discussion and, if necessary, a senior researcher was consulted to assist in reaching a consensus.

In total, 91 studies were included (asterisked in References). Some studies did not label the target construct as "ER" (e.g., some aimed to examine coping), but they were included if the operationalization reflected in the assessment fit inclusion criterion #2. Twelve studies involved two or three eligible assessments of parental ER, resulting in a total count of 107 assessments across the included work (assessments in different studies using the same measure were counted separately, given that there were often adaptations, procedural variations, and differences in psychometric properties). Among the 91 studies, 70 were published in peer-reviewed journals and 21 were unpublished theses or dissertations.

Data extraction and quality assessment

The included studies were carefully reviewed, and data were extracted on: (1) basic publication information (i.e., title, journal, publication year); (2) sample characteristics (i.e., location of data collection, sample size, parent and child gender/sex and age, parental race and ethnicity, socioeconomic characteristics, and community versus selected samples); (3) study aims and findings involving parental ER; (4) definition and operationalization of ER; (5) whether the assessment involved inference of ER (based on variations in or associations among measures of emotional components) and types of measures involved (e.g., self- or informant-report, observational or interview-based coding, physiological measures); (6) how the parenting context was established in the assessment (e.g., recall of parenting experiences in everyday life, real-time parent–child interaction tasks, hypothetical parenting vignettes or child-related stimuli); (7) other details of the assessment (e.g., number of items included in the measure, length of the interaction task, indicators of reliability). Data were extracted by one coder, and a second coder independently reviewed and verified the results. Conflicts at this stage were resolved through discussions between the coders.

Quality assessment was conducted using a form informed by widely-used tools and guidelines, including the SIGN checklist for cohort studies (Scottish Intercollegiate Guidelines Network, 2012), the risk of bias in outcomes measures guidelines in the COSMIN tool (Mokkink al., 2020), the Crowe Critical Appraisal Tool (Crowe, 2013), the Cochrane guidelines (Higgins et al., 2022), and the aims of this review (see the Supplementary Materials for the form). For each study, two independent coders rated: (1) the clarity of and consistency between the definition and operationalization of the ER-related construct, and (2) participant and/or researcher blinding (when applicable). For each assessment, the coders rated (1) the consistency of data collection and analysis procedures across participants, (2) the information of reliability and validity provided in the article, and (3) the degree of specificity of the assessment regarding parenting contexts and demands. Given the wide range of study designs, assessment approaches, and types of methods involved in the included studies, the quality assessment form was not intended for generating a summary score for each study. Instead, we analyzed the results as relevant to the aims of this review to understand the state of the field (e.g., definition issues, reliability and validity evidence) and make recommendations for future studies. Conflicts in ratings were resolved through discussions between two coders and consultation with a senior researcher on the team when needed.

The inter-rater reliability across the form was high (weighted overall kappa = 0.84). However, the reliability was low for one item regarding the consistency of data collection procedures across participants (kappa = 0.52). Discussions revealed that due to the wide range of methods involved in different studies, it was challenging for coders to consistently identify what steps or parts of data collection they should assess. Similar issues arose for assessing data processing and analysis procedures. Thus, we did not report the final ratings of these two items; instead, in the discussion of methodological issues, we describe the inconsistencies in data collection and analysis procedures that coders identified to be considered by future studies.

Results

Key information extracted at the study level (n = 91) is presented in Table S1 (Supplementary Materials), and the assessments of parental ER included in this review are summarized in Table 1, sorted by operationalizations and the types of methods involved. As shown in Fig. 2, the number of studies that examined parental ER in parenting contexts has been increasing since the 2010s. This trend is consistent with observations from a recent systematic review on the associations between parental ER and parenting, in which most studies adopted general measures of adult ER (Zimmer-Gembeck et al., 2022). Thus, the increase may be driven by a growing interest in parental ER in general, speaking to the need for this review.

Table 1
Assessments of Parental ER in Parenting Contexts.

Operationalization *Method*	Assessment	Inferred[a]	Child Age Range in Included Studies	Context: Setup	Context: Rating[b]	Evidence on Reliability in the Included Studies	Source of Information on Validity Discussed	Included Studies
Ability or difficulty in managing emotions								
Parent self-report	Interpersonal Mindfulness in Parenting Scale (IM-P) – Non-Reactivity (or Self-Regulation in Parenting) subscale[c]	/	Across all age groups	*Recall* - When parent felt upset with child, challenging parenting situations, and parenting in general	H	*Internal consistency*: Cronbach's αs < 0.70 for the 2-item English version, αs = 0.76 - 0.84 for the 4-item English version, 0.70 for the 6-item English version, 0.71-0.74 for the 5-item Dutch version, 0.71 - 0.74 for the 6-item Chinese version, 0.61 - 0.86 for the 8-item Portuguese version (one study reported McDonald's omega = 0.62) *Test-retest reliability*: $r = 0.66$ across 2 weeks for the 6-item Chinese version	Across the included studies, information was provided for all versions on: - Internal structure (factor analysis) - Associations with theoretically relevant variables	Brown, 2016; Chaplin et al., 2021; Clapp, 2018; de Bruin et al., 2014; Duncan, 2007; Gouveia et al., 2019; Laifer et al., 2021; Meers, 2013; Moreira & Canavarro, 2017; Moreira & Canavarro, 2018; Moreira & Canavarro, 2020; Moreira et al., 2018; Moreira et al., 2019; Pan et al., 2019; Park, 2020
	ACT Evaluation and Instrument Guide - Emotional and Behavioral Regulation subscale (designed for evaluating the ACT Program)	/	3–8 years (target age of the ACT Program) except for one study (1–7 years)	*Recall* - When parent felt upset or angry with child and when child misbehaved	H	*Internal consistency*: Cronbach's α = 0.78 across 7 items (from one sample)	- Content (directly mapped onto the ACT program content) - Internal structure (factor analysis) - Associations with theoretically relevant variables	Altafim & Linhares, 2019; Altafim, de Oliveira, & Linhares, 2021; Altafim, McCoy, & Linhares, 2021; Altafim et al., 2018; Belotti et al., 2019
	Parental Acceptance and Action Questionnaire (PAAQ) - Inaction subscale	/	6–18 years	*Recall* – When child experienced negative emotions	H	*Internal consistency*: Cronbach's αs = 0.52 - 0.74 across 9 items *Test-retest reliability*: $r = 0.68$ across intervals ranging from 20 to 115 days	- Internal structure (factor analysis) - Associations with theoretically relevant variables	Cheron et al., 2009; Giuseppone, 2018; Glazer, 2017
	Parent Emotion Regulation Scale (PERS) – Lack of Emotional Control subscale	/	1–15 years	*Recall* – When parent felt negative emotions in parenting	H	*Internal consistency*: Cronbach's αs = 0.69 - 0.70 across 5 items	- Content (expert ratings on item relevance, specificity, clarity, and representativeness) - Internal structure (factor analysis) - Associations with theoretically relevant variables	Carona et al., 2021; Pereira et al., 2017
	Regulating Emotions in Parenting Scale (REPS) – Adaptive Strategies subscale[c]	/	1–18 years	*Recall* – When parent felt upset with child and parenting in general	H	*Internal consistency*: Cronbach's α = 0.87 across 10 items	- Content (inputs from experts and parents) - Internal structure (factor analysis) - Associations with theoretically relevant variables	Rodriguez & Shaffer, 2021

(*continued on next page*)

Table 1 (*continued*)

Operationalization *Method*	Assessment	Inferred[a]	Child Age Range in Included Studies	Context		Evidence on Reliability in the Included Studies	Source of Information on Validity Discussed	Included Studies
				Setup	Rating[b]			
	Emotion Regulation Inventory – Dysregulation subscale (adapted from Roth et al., 2009)	/	16–27 months	*Recall* – When parent felt negative emotions about parenting	L	*Internal consistency*: Cronbach's α = 0.72 across 4 items	–	Brenning et al., 2020
	Parental Anchoring Scale - Self-Control subscale	/	6–12 years	*Recall* – When child behavior was challenging and emotionally-provoking	H	*Internal consistency*: Cronbach's αs = 0.82 - 0.88 across 6 items	- Content (inputs from experts) - Internal structure (factor analysis) - Associations with theoretically relevant variables	Kahn et al., 2019
	Emotions and Communication in Parenting Questionnaire – Emotion Regulation subscale	/	4–6 years	*Recall* – When child was non-compliant	H	*Internal consistency*: Cronbach's α = 0.70 across 4 items	- Content (directly mapped onto the skills taught in a parenting program that was evaluated, inputs from experts) - Internal structure (factor analysis) - Associations with theoretically relevant variables	Somaraki et al., 2021
	Parenting Competence Scale for Parents with Young Children (PCS-YC) - Self-Regulation subscale	/	0–6 years	*Recall* – When parent felt upset with child and parenting in general	L	*Internal consistency*: Cronbach's α = 0.78 across 3 items	- Content (inputs from experts) - Internal structure (factor analysis) - Association with a criterion item	Martínez-González et al., 2018
	Emotion Management Strategies Questionnaire[c]	/	6–8 years	*Recall* – When parent felt negative emotions during parenting	M	*Internal consistency*: Cronbach's α = 0.81 across 10 items	–	Fabrizio et al., 2015
	Emotional and Social Parenting Competence Scale - Emotional Self-Regulation Abilities subscale	/	1–18 years	*Recall* – Parenting in general	NA	– (7 items)	–	Martínez-González et al., 2016
	Parental Emotion Regulation in the Sibling Context Questionnaire - Dysregulation subscale	/	4–8 years	*Recall* – When children had agonistic sibling interactions	H	*Internal consistency*: Cronbach's αs = 0.82 - 0.87 across 7 items	- Internal structure (factor analysis) - Associations with theoretically relevant variables	Ravindran et al., 2015
	Parental Emotions Questionnaire - Perceived Extent of	/	0–18 years	*Recall* – During a stressful incident with child in the past 2 weeks	M	–	–	Levenbach, 1997

(*continued on next page*)

Table 1 (*continued*)

Operationalization *Method*	Assessment	Inferred[a]	Child Age Range in Included Studies	Context		Evidence on Reliability in the Included Studies	Source of Information on Validity Discussed	Included Studies
				Setup	Rating[b]			
	Control (single-item)							
	State-Trait Anger Expression Inventory (STAXI) – Anger-Control subscale (adapted from Spielberger, 1996)	/	4–12 years	*Recall* – When parent felt angry with a child that was difficult to deal with	L	*Internal consistency*: Cronbach's α was not specified for the subscale, but was between 0.82 and 0.90 across 7 items	–	Tobe et al., 2022
	Parent Anger Management – Mother report	/	10–14 years	*Recall* – When child behavior was anger-provoking	H	*Internal consistency*: Cronbach's α = 0.66 across 4 items	–	Coatsworth et al., 2010
	Parent Anger Scale (in Korean; adapted from Gavita et al., 2011) - Anger Management Difficulty subscale	/	0–5 years	*Recall* – When parent felt angry with child	H	*Internal consistency*: Cronbach's α = 0.75 across 3 items	–	Chung & Kim, 2017
	Subjective Experience of Parenting Scale - Regulation of Anger subscale	/	0–18 years	*Recall* – When parent felt angry with child	NA	*Internal consistency*: Cronbach's α = 0.75 across 3 items	–	Benjamin et al.,1996
	Humboldt State University (HSU) Parenting Survey – Anger Management subscale	/	3–8 years	*Recall* – When parent felt angry with child	NA	– (2 items)	- Content (directly mapped onto the ACT program content) - Internal structure (factor analysis)	Porter & Howe, 2008
	Violence Indicators on Anger Management	/	Not specified	*Recall* – When parent felt angry while dealing with child	H	– (2 items)	–	Maalouf & Campello, 2014
	Maternal Anger Survey – Feeling of Control over Anger and Anger Management Goal Achievement subsections	/	2–6 years	*Recall* – During a recent anger-provoking incident with child	H	*Internal consistency*: Correlation between 2 items measuring Feeling of Control over Anger, $r = 0.54$; Anger Management Goal Achievement subsection included 13 items related to different goals, which were not theorized to measure a common underlying construct, thus internal consistency was not assessed	–	Krueger, 1996

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Table 1 (*continued*)

Operationalization *Method*	Assessment	Inferred[a]	Child Age Range in Included Studies	Context		Evidence on Reliability in the Included Studies	Source of Information on Validity Discussed	Included Studies
				Setup	Rating[b]			
	Anger Control (single-item)	/	1.5–4 years	*Recall* – When parent felt angry with child	NA	–	–	Frude & Goss, 1979
	Relation between (dis) engagement motivation and behavior	Inferred	14–25 months	*Recall/Real-time (EMA)* – When parent felt negative emotions related to parenting right before the EMA prompt or within the past hour	M	–	–	Hajal et al., 2019
Informant-report	STAXI – Anger-Control subscale (child recall of parent behaviors, adapted from Spielberger, 1996)	Inferred	Not specified	*Recall* – Adult child recall of when parent experienced and expressed anger toward child growing up (no restriction on child age stage for the recalled experiences)	M	*Internal consistency*: Cronbach's αs = 0.81 - 0.82 across 8 items	- Associations with theoretically relevant variables	Kocur, 2008
	Parent Anger Management – Youth report (single-item)	Inferred	10–14 years	*Recall* – When child behavior was anger-provoking	H	–	–	Coatsworth et al., 2010
	Child and Adolescent Needs and Strengths - Parent Stress Regulation (single-item, consensus rating by professionals working with the family)	Partially inferred	0–12 years	*Recall* – Family intervention sessions and other occasions where professionals had contact with families	H	–	–	Oppenheim-Weller et al., 2021
Observational coding	Minnesota Longitudinal Study of Parents and Children Coding System – Parent Emotion Regulation	Inferred	7–12 years	*Real-time* – Laboratory task: 4- to 5-min parent–child discussion of a topic of conflict	H	*Inter-rater consistency*: ICCs = 0.79	- Associations with theoretically relevant variables	Ahemaitijiang et al., 2021; McCullough et al., 2014; Morelen et al., 2016
	Observed composure and control	Inferred	0–18 years	*Hypothetical* – Roleplay of disciplinary situations (an adult research assistant played a non-compliant and hostile child)	M	*Inter-rater consistency*: Correlation between two coders' scores was not specified, but was between 0.68 and 0.86 *Internal consistency*: Spearman's correlation ρ = 0.86 across two roleplay	–	Barth et al., 1983

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Table 1 (*continued*)

Operationalization *Method*	Assessment	Inferred[a]	Child Age Range in Included Studies	Context		Evidence on Reliability in the Included Studies	Source of Information on Validity Discussed	Included Studies
				Setup	Rating[b]			
						scenes		
	Observed emotion self-regulation in parenting	Inferred	6–12 years	*Real-time* – Laboratory task: 4-min parent–child joint puzzle-solving (pieces missing to induce frustration)	H	*Inter-rater consistency*: α = 0.75	–	Melnick, 1997
	Observed emotion-conflict behavior sequences	Inferred	9–13 years	*Real-time* – Laboratory task: 6-min parent–child discussion of a topic of conflict	H	*Inter-rater consistency*: Kappa coefficients = 0.68 - 0.88 across observed parental emotions and conflict-related behaviors	- Content (Conflict-related behavior coding was adapted from well-validated systems including the Verbal Tactics Coding Scheme and the Couples Interaction Scoring System, and emotion coding was adapted from the Emotion Behavior Coding System; Enns & Stack 2007; Gottman 1979; Sillars 1986)	Ferrar et al., 2020
Multi-method	Association of subjective emotion with observed supportive parenting behavior	Inferred	14–27 months	*Real-time* – Laboratory tasks: 5-min divided attention (child waited while mother completed questionnaire), 10-min mother–child play with restriction to attractive toys, 5-min cleanup	H	*Evidence of reliability not reported in this sample* for mothers' self-report of emotions (based on video-reviewing) *Inter-rater consistency*: Kappa coefficients = 0.71 for observed supportive parenting behavior	For the video-reviewing procedure of self-reporting emotions: - Associations with criterion variables (physiological measures of arousal, observers' rating of emotions) and theoretically relevant variables	Dix et al., 2004
	Association of subjective emotion with observed responsiveness to child	Inferred	2.5–5 years	*Real-time* – Laboratory task: 9-min divided attention (child waited for an attractive gift while mother completed questionnaire)	H	*Internal consistency*: Cronbach's α = 0.71 across 12 items measuring negative emotions *Inter-rater consistency*: ICC = 0.82 for observed responsiveness to child	–	Zhang et al., 2023
	Association of catastrophizing feelings with observed distress-promoting and coping-promoting parenting behavior	Inferred	7–12 years	*Real-time* – Laboratory task: up to 4-min viewing child enduring pain	H	*Internal consistency*: Cronbach's α = 0.60 across 3 items measuring catastrophizing feelings *Inter-rater consistency*: Kappa = 0.83 for observed parenting behaviors overall; percentage of agreement = 87% for distress-promoting	For the Pain Catastrophizing Scale for Parents (Durand et al., 2016): - Internal structure (factor analysis) - Associations with theoretically relevant variables	Constantin et al., 2021

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Table 1 (*continued*)

Operationalization *Method*	Assessment	Inferred[a]	Child Age Range in Included Studies	Context		Evidence on Reliability in the Included Studies	Source of Information on Validity Discussed	Included Studies
				Setup	Rating[b]			
						behaviors, and 94% for coping-promoting behaviors		
	Association of subjective emotion with observed disciplinary behavior	Inferred	2–3 years	*Real-time* – Laboratory task: 10-min divided attention (child waited while mother engaged in a phone call)	H	*Evidence of reliability not reported in this sample* for mothers' self-report of emotions (based on video-reviewing) *Inter-rater consistency*: Finn's $r = 0.91$ for over-reactive discipline, and 0.78 for lax discipline	For the video-reviewing procedure of self-reporting emotions: - Associations with criterion variables (e.g., appraisal, physiological responses) and theoretically relevant variables (e.g., child misbehavior)	Lorber et al., 2016
Use of specific strategies								
Parent self-report	Parent Emotion Regulation Inventory (PERI; PERI-2)	/	1–12 years	*Recall* - When child misbehaved (discipline encounters)	M (PERI)/ H (PERI-2)	*Internal consistency*: Cronbach's αs = 0.90 - 0.95 across 6 or 8 items measuring reappraisal, 0.66 - 0.79 across 5 item measuring suppression, 0.83 - 0.89 across 6 items measuring escape, and 0.88 - 0.92 across 4 items measuring capitulation/giving-in (escape and capitulation were only included in PERI-2)	- Internal structure (factor analysis) - Associations with theoretically relevant variables	Dahl, 2021; Kelly, 2017; Lorber, 2012; Lorber et al., 2017; Shenaar-Golan et al., 2017
	Cognitive Emotion Regulation Questionnaire (CERQ; adapted from Garnefski et al. 2001)	/	4–18 years	*Recall* - When child showed behavior problems	L	*Internal consistency*: Cronbach's α was between 0.74 and 0.78 across 4 items for each of the four subscales (respectively measuring positive reappraisal, refocus on planning, self-blame, and rumination)	The validity of the original CERQ, but not the adapted parental version, was discussed.	Mark-Ribiczey et al., 2016
	Parent ER Strategies	/	Not specified	*Recall* - When parent experienced intensive negative emotions toward child	L	– (One item was used to measure each of the 3 strategies: reappraisal, distraction, rumination.)	–	Vertsberger et al., 2022
	Parent Skills Questionnaire & Skills Diary Card	/	3–7 years	*Recall* – During Parent-Child Interaction Therapy sessions (Skills Questionnaire) and in daily interaction with	M	– (One item was used to measure each of the 3 strategies: emotion	–	Rohrig, 2019

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Table 1 (*continued*)

Operationalization *Method*	Assessment	Inferred[a]	Child Age Range in Included Studies	Context		Evidence on Reliability in the Included Studies	Source of Information on Validity Discussed	Included Studies
				Setup	Rating[b]			
				child (Diary Card)		identification, self-validation, distraction)		
	Self-Statement Inventory	/	0–18 years	*Hypothetical* – Parent reading a vignette and participating in roleplays of stressful parent–child interaction	M	– (Measured strategies included positive self-talk, making calming statements, and self-praise for managing the situation, but the number of items was not specified)	–	Barth et al., 1983
	Emotion Regulation Strategy Switching	/	3–8 years	*Hypothetical* – Parent listening to standardized audio of child distress and pleading for 3- to 7-min	M	– (One item was used to measure each of the 6 strategies: reappraisal, distraction, relaxation, acceptance, avoidance, suppression. Although items were summed to represent strategy-switching, the authors suggested that the items were not theorized to measure a common underlying construct, thus internal consistency was not assessed.)	–	Kerns et al., 2017
	Parental Strategy-Use	/	2.5–5 years	*Real-time* – Laboratory task: 9-min divided attention (child waited for an attractive gift while mother completed questionnaire)	M	– (Two items were used to measure each of the 4 strategies: reappraisal, distraction, suppression, rumination)	–	Zhang et al., 2023
	Ways of Coping Questionnaire (Folkman & Lazarus, 1988)	/	Across all age groups	*Recall* – During a recent stressful incident/ encounter with child, or when child was non-compliant	L	– (Evidence of internal consistency was discussed regarding the original Ways of Coping Questionnaire, but no such indicator was reported for the parental samples among included studies)	Evidence of validity for the original Ways of Coping Questionnaire was discussed (based on factor analyses that supported the theorized internal structure and associations with theoretically relevant variables)	Begum et al. 2020; Bornstein, 2004; Houser & Seligman, 1991; LaRose, 1988; Levenbach, 1997; Sivberg, 2002
	Daily Coping Inventory (adapted from Stone & Neale, 1984)	/	4–12 years	*Recall* – During the most demanding parenting situation of the past day	M	– (One item was used to measure each of the 11 strategies: seeking social support, avoidance, problem solving, distraction, blaming	–	Pottie & Ingram, 2008

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Table 1 (*continued*)

Operationalization *Method*	Assessment	Inferred[a]	Child Age Range in Included Studies	Context		Evidence on Reliability in the Included Studies	Source of Information on Validity Discussed	Included Studies
				Setup	Rating[b]			
						others, positive reappraisal, worrying, expressing/ controlling emotions, withdrawal, compromising, helplessness)		
	Parental Coping Methods	/	Not specified	*Recall* – When parent felt angry with child	NA	– (One item was used to measure each of the 8 strategies: avoidance, aggression, distraction, suppression, substance use, tolerating, seeking social support, being disruptive)	–	Kukulu & Buldukoglu, 2006
	Coping with Infant Crying	/	0–6 months	*Hypothetical* – Parent listening to 10-min standardized audio of infant cries	M	– (Nine items were used to measure five types of strategies, but no subscales were formed: seeking social support, avoidance, distraction, and attempting to soothe the baby in appropriate or inappropriate ways)	–	Barr et al., 2014
	UBV Mothers and Toddlers Questionnaire – Coping Behaviors subscale	/	14–30 months	*Hypothetical* – Parent reading vignettes of challenging behaviors typical for young children	M	*Internal consistency*: Correlation between 2 items measuring active coping – attempting to influence the child or situation, $r = 0.81$ (Only 1 item was used to measure avoidance)	–	Favez & Reicherts, 2008
	Regulating Emotions in Parenting Scale (REPS) – Suppression and Rumination subscales	/	1–18 years	*Recall* – When parent felt upset with child and parenting in general	H	*Internal consistency*: Cronbach's $\alpha = 0.81$ across 4 items in the Suppression subscale, and 0.76 across 4 items in the Rumination subscale	- Content (inputs from experts and parents) - Internal structure (factor analysis) - Associations with theoretically relevant variables	Rodriguez & Shaffer, 2021
	Negative Emotion Suppression (adapted from Gross & John, 2003) & Positive Emotion Amplification	/	3–12 years	*Recall* – When parents used specific strategies to manage emotions in past parenting situations (Study 1) & daily parenting situations	M	– (One item was used to measure each of the 2 strategies: negative emotion suppression, positive emotion amplification)	–	Le & Impett, 2016

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Operationalization *Method*	Assessment	Inferred[a]	Child Age Range in Included Studies	Context		Evidence on Reliability in the Included Studies	Source of Information on Validity Discussed	Included Studies
				Setup	Rating[b]			
	(adapted from Côté & Morgan, 2002)			(Study 2)				
	Emotion Regulation Inventory – Suppression subscale (Roth et al., 2009)	/	16–27 months	*Recall* – When parent felt negative emotions about parenting	L	*Internal consistency*: Cronbach's α = 0.76 across 4 items	–	Brenning et al., 2020
	Emotion Expression Style Questionnaire (adapted from Izard et al., 1991)	/	11–25 months	*Recall* – When parent felt negative emotions in front of child	M	*Internal consistency*: Cronbach's α = 0.58 across 2 items measuring maternal hiding of positive emotions, and 0.88 across 5 items measuring the hiding of negative emotions	- Internal structure (factor analysis) - Associations with theoretically relevant variables	Lojkasek, 1995
	Maternal Masking of Negative Emotions	/	11–25 months	*Recall* – When parent felt negative emotions in front of child	M	*Internal consistency*: Cronbach's α = 0.89 across 3 items measuring maternal masking of negative emotions	–	Lojkasek, 1995
	Emotional Labor Scale (adapted from Brotheridge & Lee, 2003)	/	0–18 years	*Recall* – Parenting in general	H	*Internal consistency*: Cronbach's α = 0.73 across 3 items measuring surface acting, and 0.93 across 3 items measuring deep acting	–	Lin et al., 2021
	Likelihood to Suppress Emotions	/	3–6 years	*Hypothetical* – Parent reading vignettes of when parent experiences child-/non-child-related negative emotions, while child also displays negative emotions	M	*Internal consistency*: Cronbach's α = 0.84 across all 15 items (across 5 vignettes, each followed by 3 items related to child displaying anger, sadness, and fear), αs = 0.67 – 0.74 across the 5 vignettes for each child emotion, and αs = 0.69 – 0.84 across the 3 child emotions for vignettes involving hostile or non-hostile parent emotions	- Associations with theoretically relevant variables	Martini et al., 2004; Root, 2003
	Rumination Reflection Questionnaire (adapted from Trapnell & Campbell, 1999)	/	2–5 years	*Recall* – When child misbehaved and when parent felt distressed with child	L	*Internal consistency*: Cronbach's α = 0.90 across all 12 items measuring rumination	–	Kelly, 2017

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Table 1 (*continued*)

Operationalization *Method*	Assessment	Inferred[a]	Child Age Range in Included Studies	Context		Evidence on Reliability in the Included Studies	Source of Information on Validity Discussed	Included Studies
				Setup	Rating[b]			
Informant-report	Parent Aide Rating Scale – Self-Control Skills subscale	/	Not specified	*Recall* – Parenting in general during the past month in the presence of a parenting aide	H	– (One item was used to measure how often the parent demonstrated behaviors consistent the target four-step self-control skills, e.g., noticing body signals, thinking about the cause of arousal, coming up with potential ways to respond, and choosing effective responses)	–	Fischman, 1986
Coding of narratives	Direct, Minimal Generalization, and Extended Generalization Tests	/	Not specified	*Hypothetical* – Parent watching videotaped vignettes (direct & minimal generalization) and participating in roleplays (extended generalization) of emotionally charged parenting situations	M	*Inter-rater consistency*: Inter-rater reliability coefficient (index not specified) = 0.86 across the ratings (4 items were rated in each test, corresponding to the four-step self-control skills, but their internal consistency was not reported.)	–	Fischman, 1986
	Strategy-Use in Maternal Coping	/	1–11 months	*Recall* – When parent felt negative emotions related to caring for the infant	H	*Inter-rater consistency*: Inter-rater reliability coefficient (index not specified) = 0.91 (One item was used to measure each of the 4 strategies: avoidance, seeking social support, distraction, re-directing feelings to others)	–	Glachan & Ney, 1995
	Coping Strategies (coded based on the Responses to Stress Framework; Connor-Smith et al., 2000)	/	14–25 months	*Recall/Real-time (EMA)* – When parent felt negative emotions related to parenting right before the EMA prompt or within the past hour	M	*Inter-rater consistency*: Kappa = 0.65-0.93, ICC = 0.71 - 0.82 across 5 categories of strategies: primary control engagement, secondary control engagement, voluntary disengagement, involuntary engagement, and involuntary disengagement	–	Hajal, 2018

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Table 1 (*continued*)

Operationalization *Method*	Assessment	Inferred[a]	Child Age Range in Included Studies	Context		Evidence on Reliability in the Included Studies	Source of Information on Validity Discussed	Included Studies
				Setup	Rating[b]			
Effects of specific strategies								
Parent self-report	Reappraisal → Subjective emotion (Parent ER Ability Task)	Inferred	6–12 years	*Hypothetical* – Parent watching standardized videos of child obesity-related parenting situations	L	–	–	Sagui-Henson et al., 2020
Observational coding	Suppression → Emotion expressions and parenting behaviors	Inferred	7–11 years	*Real-time* – Laboratory task: 6-min parent–child joint Lego-building (parent following child's verbal instruction)	H	*Inter-rater consistency*: ICCs = 0.99 for parent negative and positive emotions, 0.79 - 0.99 for parenting behaviors (responsiveness, warmth, and a composite score of guidance frequency and quality – Cronbach's α = 0.74 across frequency and quality scores).	–	Karnilowicz et al., 2019
Multi-method	Attention deployment → Subjective distress and pain control behavior	Inferred	10–16 years	*Real-time* – Laboratory task: up to 4-min viewing child enduring pain	M	*Internal consistency*: Cronbach's αs = 0.88 – 0.89 for anticipatory and experienced distress *Evidence of reliability not reported in this sample* for parent pain control behavior (measured as recorded time before parent ordered the pain procedure to stop)	For the measure of parental distress: - Associations with theoretically relevant variables	Vervoort et al., 2014
	Distraction → Subjective emotion and neural responses (amygdala activation)	Inferred	5–8 months	*Hypothetical* – Parent listening to standardized audio of infant cries and audio of their own infant's cries (26 min in total)	M	–	–	Firk et al., 2018
	Reappraisal, suppression → Appraisal of and subjective, physiological (SCL), facial, and behavioral responses to stimuli	Inferred	0–3 years	*Hypothetical* – Parent listening to standardized audio of infant cries (6 min in total)	M	*Internal consistency*: Cronbach's αs = 0.66 across 3 items measuring parental cry appraisal, 0.99 across 10 items measuring subjective negative emotions, and 0.80 across 5 items measuring sensitive caregiving response.	- Previous evidence was cited on the accuracy of the software used for automated facial emotion coding in reference to standardized datasets of basic human emotions	Riem & Karreman, 2019

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Operationalization *Method*	Assessment	Inferred[a]	Child Age Range in Included Studies	Context		Evidence on Reliability in the Included Studies	Source of Information on Validity Discussed	Included Studies
				Setup	Rating[b]			
						Evidence of reliability not reported in this sample for harsh caregiving response (single-item), observed facial emotional expression, or physiological measures.		
	Enhancement, suppression → Appraisal of and subjective, physiological (SCL), facial, and behavioral responses to stimuli	Inferred	0–3 years	*Hypothetical* – Parent listening to standardized audio of infant laughs (6 min in total)	M	*Internal consistency*: Cronbach's αs = 0.90 – 0.91 across 10 items measuring subjective positive emotions; PCAs confirmed one latent factor for positive appraisal of infant laughs (3 items; factor loadings = 0.42 - 0.90), and two factors respectively for sensitive (3 items; factor loadings = 0.62 - 0.90) and insensitive (3 items; factor loadings = 0.47 - 0.83) caregiving responses. *Evidence of reliability not reported in this sample* for observed facial emotional expression or physiological measures.	- Previous evidence was cited on the accuracy of the software used for automated facial emotion coding in reference to standardized datasets of basic human emotions For caregiving responses: - Internal structure (factor analysis)	Karreman & Riem, 2020
	Suppression → Dynamic physiology (PEP) and parenting behaviors	Inferred	7–11 years	*Real-time* – Laboratory task: 6-min parent–child discussion of a topic of conflict	H	*Inter-rater consistency*: For parenting behaviors, ICC = 0.84 and 0.76 for warmth and engagement, and 0.54 for criticalness *Evidence of reliability not reported in this sample* for physiological measures.	–	Waters et al., 2020
Goals and beliefs directing ER								
Parent self-report	Perceived Emotional Display Rules in Parenting Scale	/	0–18 years	*Recall* – Parenting in general	H	*Internal consistency*: Cronbach's α = 0.90 across 19 items regarding various emotions	- Content (inputs from parents)	Lin et al., 2021
	Parental Emotions Questionnaire – ER Goals subscale	/	0–18 years	*Recall* – During a stressful incident with child in the past 2 weeks	M	– (One item was used to measure whether parents thought they should have controlled their negative	–	Levenbach, 1997

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Table 1 (*continued*)

Operationalization *Method*	Assessment	Inferred[a]	Child Age Range in Included Studies	Context		Evidence on Reliability in the Included Studies	Source of Information on Validity Discussed	Included Studies
				Setup	Rating[b]			
						emotions)		
	Maternal Anger Survey – Anger Management Goals subsection	/	2–6 years	*Recall* – During a recent anger-provoking incident with child	H	– (Anger Management Goal subsection included 13 items related to different goals, which were not theorized to measure a common underlying construct, thus internal consistency was not assessed.)	- Content (inputs from parents)	Krueger, 1996
	UBV Mothers and Toddlers Questionnaire – Coping Intentions subscale	/	14–30 months	*Hypothetical* – Parent reading vignettes of challenging behaviors typical for young children	M	*Internal consistency*: Correlation between 2 items measuring maternal self-oriented coping intention, $r = 0.60$	–	Favez & Reicherts, 2008
Others								
Parent self-report	Berkeley Parenting Self-Efficacy Scale (BETA version) - Anger Management subscale	/	4–7 years	*Recall* – When parent felt angry with child	M	*Internal consistency*: Cronbach's $\alpha = 0.77$ across 4 items	- Internal structure (factor analysis)	Kim, 2015
	Perceived Emotional Display Rules in Parenting Scale – Regulatory Effort version	/	0–18 years	*Recall* – Parenting in general	H	*Internal consistency*: Cronbach's $\alpha = 0.92$ across 19 items regarding various emotions	- Content (inputs from parents)	Lin et al., 2021
	Feeling prepared to handle emotions	/	7–14 years	*Recall* – When parent visited child at foster placement	NA	– (One item was used to measure the extent to which parents felt prepared to handle their emotions during the visit)	–	Nesmith, 2013

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Table 1 (*continued*)

Operationalization *Method*	Assessment	Inferred[a]	Child Age Range in Included Studies	Context		Evidence on Reliability in the Included Studies	Source of Information on Validity Discussed	Included Studies
				Setup	Rating[b]			
Coding of narratives	Shaken Baby Syndrome Awareness Assessment – Coding of parental knowledge of ER strategies	/	Not specified	*Hypothetical* – When parent feels negative emotions while caring for an infant	M	*Inter-rater consistency*: Kappa = 0.93 for categories of strategies parents mentioned in response to an open-ended question ("What steps can caregivers take to make sure their emotions are appropriate when caring for an infant? What would you suggest they do?")	–	Russell et al., 2009

Note. Within each category, the assessments were organized based on how commonly they were used among the included studies as well as the specific constructs involved (e.g., coping, anger management). Different versions of one assessment (i.e., adapted and/or translated for use in different cultural contexts, such as the IM-P) were marked out unless it was translated without any adaptation. ACT Program = ACT Raising Safe Kids Program. EMA = Ecological momentary assessment. ICC = Intra-class correlation coefficient. HR = Heart rate; RSA = Respiratory sinus arrhythmia; PEP = Pre-ejection period; SCL = Skin conductance level. PCA = Principal component analysis.

[a] Whether the ER construct was inferred from variations in or associations among measures of emotional components that were attributed to parents' regulation of emotions.

[b] Ratings on the degree of specificity of the assessment context in relevance to parenting situations or demands. High (H) = The assessment, including how measurement context was established, was fully mapped onto parenting-specific demands and/or captured actual parent–child interaction. Medium (M) = The context incorporated parenting-related situations and demands, but in a way that was somewhat general or did not fully resemble actual parent–child interaction (e.g., parents were presented with parenting-related vignettes or stimuli but could not engage as they normally would). Low (L) = The assessment was designed to measure adult ER in general, with minimal adaptation to establish parenting contexts (e.g., only changing a sentence in the instruction directing parents to respond regarding their experience in parenting). NA = Not enough information was available for a rating.

[c] These assessments were mapped onto parents' ability to reduce negative feelings and/or prevent negative emotions from interfering with parenting, but also included items on the use of specific strategies presumed to be adaptive (e.g., pausing before reacting, verbalizing feelings, reappraisal).

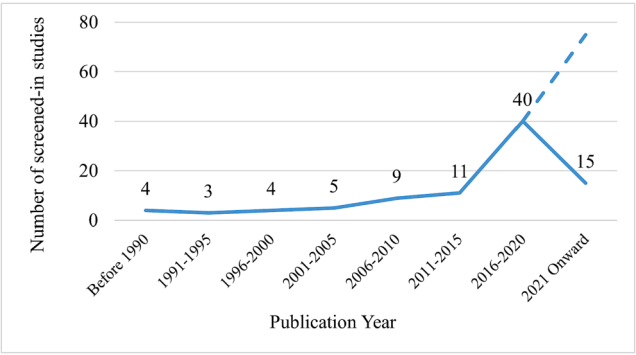

Fig. 2. The chronological trend in the number of studies examining parental ER in the context of parenting. *Note*. The literature search for this review was conducted at the end of 2021. The dashed line represents a projection of the total number by the end of a complete 5-year period (≈ 75 studies during 2021–2025).

Study aims involving parental ER

Based on a preliminary review of the studies and the broader literature, six categories of study aim related to parental ER were defined before data extraction (see Fig. 3; a study may involve multiple aims). Most commonly, 35 studies (38%) sought to examine the associations of parental ER with parents' psychosocial well-being (e.g., mental health symptoms, parenting self-efficacy) and/or parenting (e.g., parenting styles, parenting practices such as disciplinary behaviors). Studies examining parental psychosocial well-being and/or parenting were categorized together due to their conceptual and empirical overlaps (around half of those studies investigated both types of constructs in association with ER). The next group of aims involved the associations between parental ER and child characteristics (23 studies, 25%), some conceptualizing child characteristics as predictors of parental ER, while others theorizing how parental ER shapes children's adjustment (although few studies examined the association longitudinally or transactionally). A total of 21 studies (23%) aimed to examine the effects of interventions on parental ER, such as programs focusing on child management skills (e.g., the ACT Raising Safe Kids Program; Altafim, de Oliveira, & Linhares, 2021) or mindful parenting (e.g., Parenting Mindfully; Chaplin et al., 2021). Different designs were used, including randomized controlled trials (n = 10), non-randomized controlled trials (n = 2), single-group pre-post comparisons (n = 7), and process evaluations (n = 2; e.g., tracking changes in parental use of ER skills across treatment sessions). Other aims included developing and/or evaluating measures of parental ER (n = 13, 14%; all focused on self-report questionnaires), describing the processes and strategies of parental ER in specific populations and/or contexts (n = 10, 11%), and examining the effects of specific strategies on parental emotions and behaviors (n = 6, 7%).

Sixteen studies (18%) involved aims that did not fit into the categories above. These studies sought to understand how parental ER differs by demographic characteristics (e.g., parent gender, age, socioeconomic status; Altafim, McCoy, & Linhares, 2018; Kukulu & Buldukoglu, 2006; Moreira & Canavarro, 2017), how parental ER is related to parents' cognitive appraisal (e.g., parent- or child-oriented concerns; Dix, Gershoff, Meunier, & Miller, 2004) or physiological functioning (e.g., autonomic nervous system activity; Lorber, Mitnick, & Slep, 2016; Zhang et al., 2023) in the measurement context, how parental ER is associated with broader family functioning (e.g., work-family balance, strain in the family; Moreira, Fonseca, Caiado, & Canavarro, 2019; Sivberg, 2002), or how childhood or prenatal experiences are associated with parents' current ER in parenting (e.g., childhood history of maltreatment, prenatal trauma-related distress; Laifer, DiLillo, & Brock, 2021; McCullough et al., 2014).

Sample characteristics

To understand the state of research on parental ER in the context of parenting, it is important to consider the participants in these studies. The majority of included studies collected data from North American (44% from the US and 10% from Canada) or European (25%) countries, with the rest examining samples from Asia (11%), South America (5%), or multiple countries across continents (4%). Over half of the studies (57%) focused solely or primarily (over 90% of the sample) on mothers, whereas 36% included both mothers and fathers (the percentage of fathers ranged from 11% to 50%, M = 34%) and the remaining included fathers only (1%) or foster parents and unspecified parental figures (7%). The sample size ranged widely from under 20 (4 studies, all examining effects of intervention programs in clinical samples) to more than 500 caregivers (11 studies, all using self-report surveys).

Among the included studies, 85 (93%) reported information on child age. Parents of children at different developmental stages were examined (see Fig. 4). Ten (11%) studies focused on parents of infants (<2 years), 26 (29%) focused on parents of toddlers or preschool-age children (2–5 years, although the age range in two studies extended into infancy), 15 (16%) focused on parents of school-age children (6–12 years), and 6 (7%) examined parents of adolescents (greater than 12 years). The rest of the studies included samples across developmental stages, some examining parents of younger children (<12 years) whereas others focusing on middle-childhood and adolescence or including parents of children across all ages. Notably, studies examining parents of infants all included mothers only.

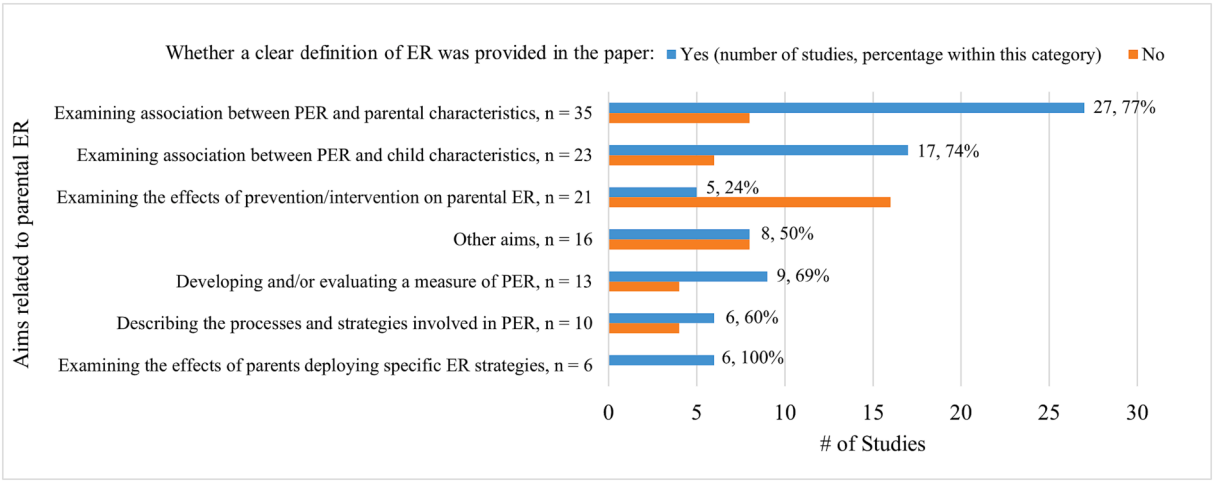

Fig. 3. Number of studies including specific aims related to parental ER and whether a clear definition was provided for the ER construct. *Note*. No = The study either did not provide a definition of ER or provided a definition that was rated as lacking specificity or clarity (i.e., did not specify the scope, components, or processes of the phenomenon; see "Definition of ER" in the Results section).

Community samples with no inclusion criteria related to specific risk factors were more commonly used (65% of studies) while the rest included selected samples based on children's physical or mental health symptoms (e.g., chronic illness, autism spectrum disorder, obesity), parents' mental health symptoms (e.g., dissociative disorders), parenting difficulties (e.g., anger control problems), child welfare involvement, and other risk factors (e.g., socioeconomic disadvantage, inter-parental aggression; see Table S1). Overall, study samples varied in parental education, although samples with relatively high education levels were more common. Among the 46 studies that reported the percentage of parents with higher education, 63% indicated that over half of their samples completed a college degree or higher vocational training. Sixteen studies reported sample-average years of education, among which 81% of the samples had more than 12 years of education on average (i.e., usually extending beyond secondary education).

Definition of ER

Overall, 61 studies (67%) presented a definition of the ER-related construct, whereas the rest did not (see Table S1). Quality assessment ratings suggested that the definitions in eight studies (out of the 61) lacked specificity or clarity (i.e., the definition did not specify the scope, components, or processes of the phenomenon). Thus, only 53 studies were rated as having provided a clear definition of ER, and this proportion differed by study aims. As shown in Fig. 3, only a small portion of studies (24%) examining the effects of intervention programs provided a clear definition of ER. In comparison, all six studies examining the effects of parental strategies to manage emotions provided clear definitions of ER and the strategies of interest. For studies with other aims, a clear definition was present in 50% to 77% of the articles.

The most cited definitions were those from Gross (1998), Thompson (1994), and the integration of both (Gross & Thompson, 2007). Gross (1998) defined ER as "the processes by which individuals influence which emotions they have, when they have them, and how they experience and express these emotions" (p. 275), and further proposed the multiple phases in the generation of emotional responses during which ER can take effect (e.g., selecting or modifying the provoking situation, altering attention or appraisal, or modulating responses). Extending from this work, some studies defined specific ER strategies, that is, the cognitive or behavioral actions deployed to influence components of emotions (e.g., distraction, reappraisal, avoidance, suppression, and enhancement). The definition by Thompson (1994) also considered extrinsic forces of ER and processes that may proceed and set the stage for the actual modulation of emotions (e.g., monitoring and evaluation).

Gross (1998) and Thompson (1994) both highlighted the goal-directed nature of ER. The integration of their models (Gross & Thompson, 2007) further emphasized that ER can influence the dynamic properties (e.g., latency, magnitude, duration) of emotional components and the coherence among components. Some defined parental ER as preventing negative feelings, arousal, and behavioral impulses driven by negative emotions from translating into at-risk parenting (e.g., Duncan, 2007; Ravindran, Engle, McElwain, & Kramer, 2015) or compromising appropriate parenting behaviors (Zhang, Gatzke-Kopp, Cole, & Ram, 2023). These definitions reflect the role of ER in serving the parental role, focusing on the association between parents' internal emotional states and their ability to align parenting behaviors with parenting goals. Another approach emphasized parents' well-being, that is, defining ER as the process of influencing parents' own experiences and reducing distress (e.g., Kocur, 2008).

Additionally, several studies were based on the coping framework (Folkman & Lazarus, 1988), conceptualizing the target construct as the process of engaging in cognitive and/or behavioral actions to resolve a stressful situation and reduce associated negative emotions. This definition was often accompanied by descriptions of specific coping strategies, such as problem-focused (resolving the emotionally provoking problem) and emotion-focused strategies (focusing on altering internal feelings). It should be noted that studies

of parental coping identified in the research were only included when their assessment of coping fit the inclusion criteria, that is when the assessment was explicitly directed to coping with emotions or a situation that has evoked emotions. A similar approach was taken with other constructs that overlap with ER conceptually, such as experiential avoidance (unwillingness to remain in contact with distressing experiences, including a lack of ability to regulate emotions in such contexts; Cheron, Ehrenreich, & Pincus, 2009) and mindful parenting (engaging in parenting with non-judgmental, in-the-present attention to the child and parent's own states, including noticing and pausing impulsive reactivity when feeling upset with child and choosing behaviors that align with parenting goals; Duncan et al., 2009).

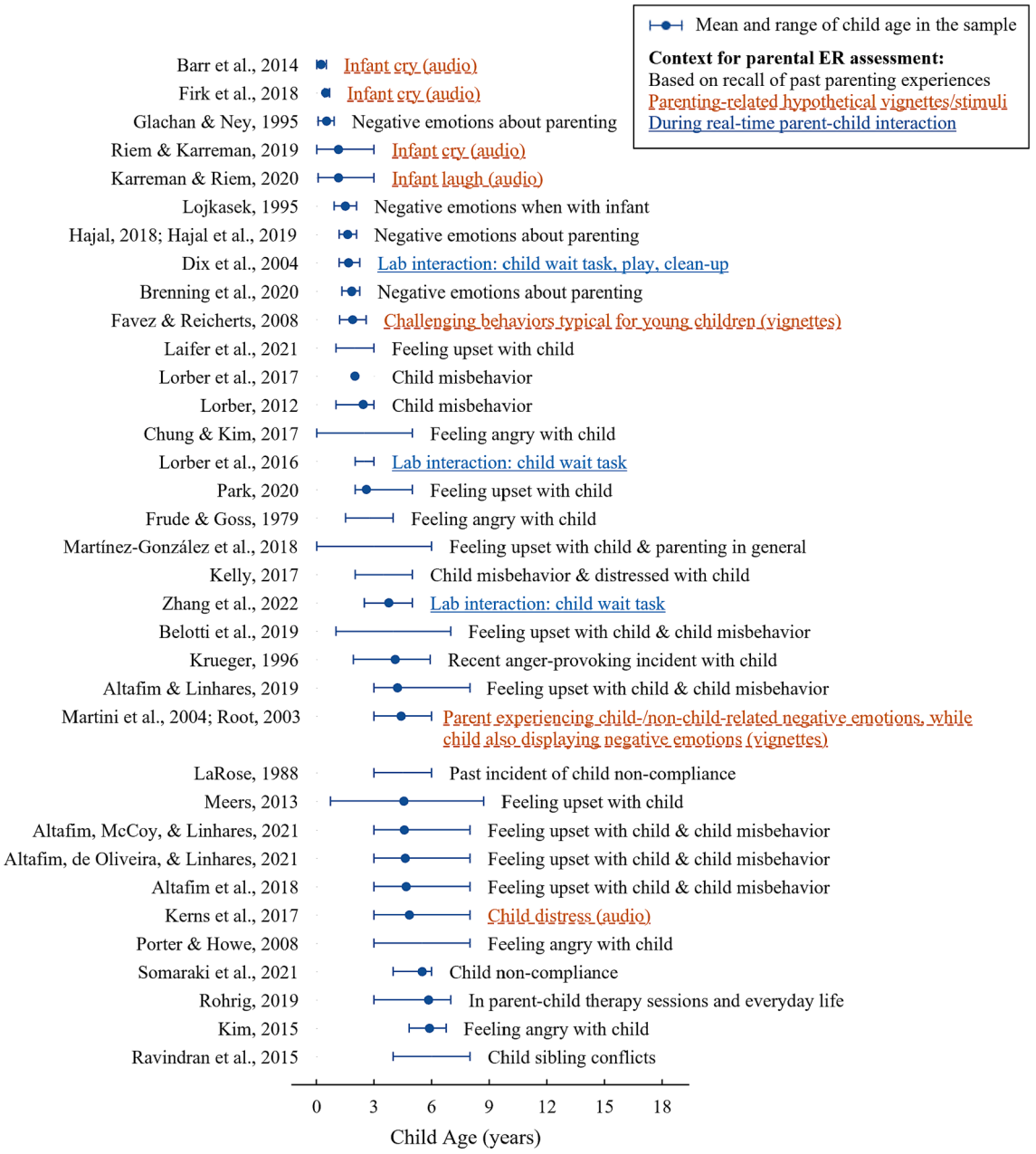

Fig. 4. Child age in the sample and the setup of parenting context for parental ER assessment. *Note*. Among the 91 studies, 85 provided information on child age (mean, range, or both) and were included in this figure. A few studies reported the age stage of the sample but not the specific age range, for which 0–5 was plotted for early childhood, 1–3 years for toddlerhood, and 6–12 for school age. Child age in the sample and the setup of parenting context for parental ER assessment.

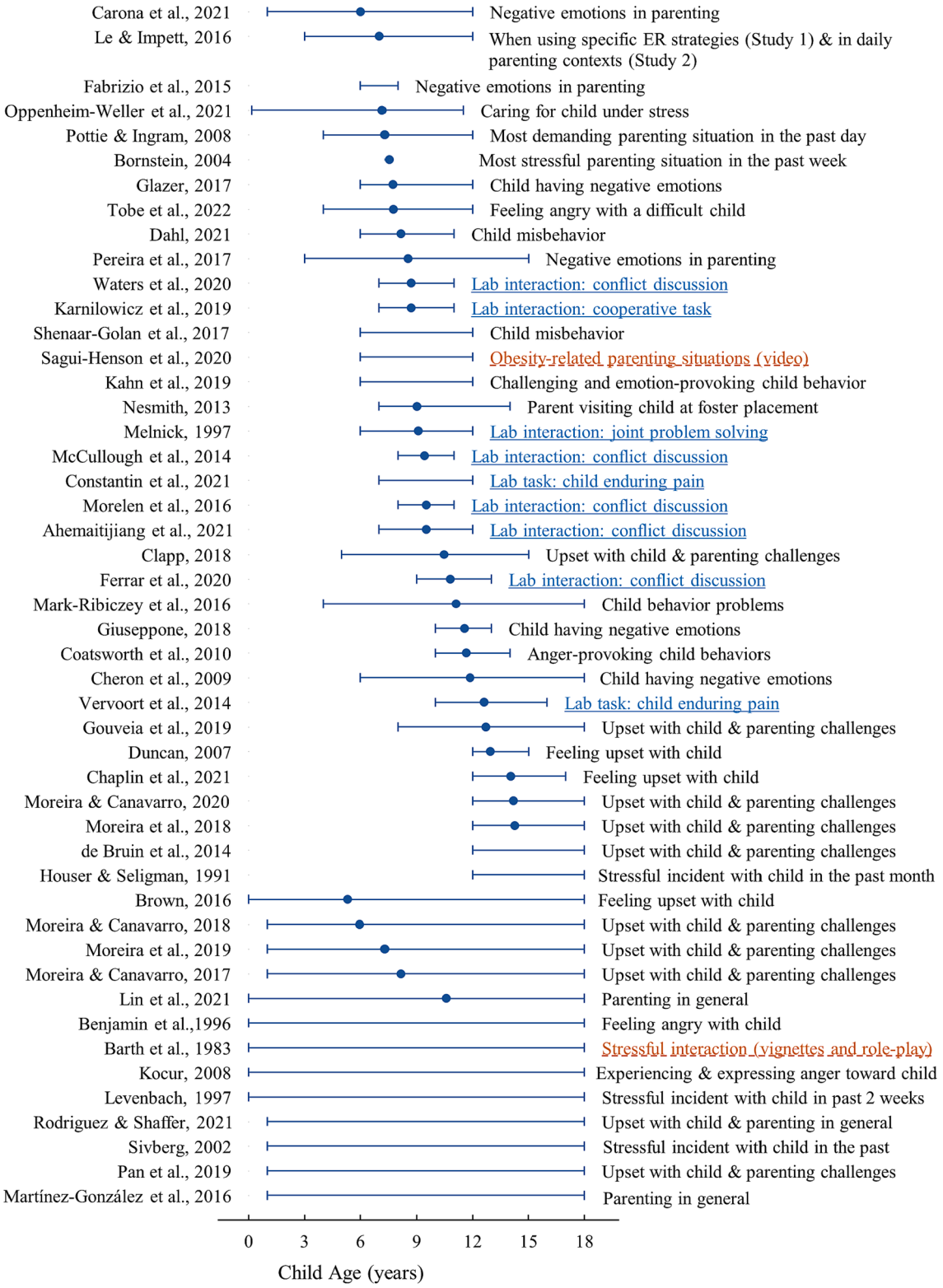

Fig. 4. (*continued*).

Operationalization of ER in the assessment

The operationalizations of ER reflected in the 107 assessments were coded into four categories, including ability or difficulty in managing emotions, use of specific strategies, effects of specific strategies, and goals or beliefs directing ER (see Table 1). Most assessments (79%) fit into one of those categories, whereas the rest fit across two categories (17%, all capturing both the ability or difficulty in managing emotions and the use of certain strategies presumed to be adaptive or maladaptive) or captured an unclassified type of ER construct (4%).

The most common type of operationalization captured parents' ability or difficulty in managing emotions, applied in 57 assessments (53%). That is, parental ER was assessed as the extent to which parents were *able to* manage their emotions to parent appropriately and/or maintain their own well-being, or the extent to which they had difficulty doing so. In other words, *how* parents managed their emotions (e.g., specific strategies) was not captured; instead, *whether* parents successfully managed emotions to meet context-specific demands was measured. Some assessments (or items) were directed toward internal states (i.e., ability to reduce negative appraisals and feelings), while others were directed toward external, parenting-related demands (e.g., not acting on impulses of negative parenting behaviors, staying engaged with the child despite having negative feelings). Several assessments focused on managing anger – a common factor in at-risk parenting, whereas the others referred broadly to negative emotions during parenting. Parents' awareness of their negative emotions and behavioral impulses was also mentioned in some assessments as a part of ER (e.g., the Non-Reactivity subscale of the Interpersonal Mindfulness in Parenting Scale, IM-P; Duncan, 2007).

Another common type of operationalization was parents' use of specific strategies (50%), that is, the engagement of mental and/or behavioral actions (including enlisting external forces, such as social support) with the intention to modulate the activation, experience, and/or expression of emotions. In contrast to assessments of ER ability or difficulty, the assessments of strategy-use captured whether or how frequently parents attempted specific strategies, but not the actual effects of these strategies such as whether they helped parents modulate emotions or meet contextual demands. A wide range of strategies was measured across different assessments, including those based on Gross's (1998, 2015) model (e.g., reappraisal, suppression), mindfulness techniques (e.g., noticing and labeling one's feelings, pausing before reacting), coping models (e.g., making problem-solving plans, blaming, escaping), as well as others that are more specific to parenting contexts (e.g., temporarily disengaging from the child, seeking support from alternative caregivers).

In addition to those two common types, a few assessments captured the effects of deploying specific strategies (7%), that is, the direction and magnitude of changes in parents' emotional indicators (e.g., cognitive appraisal, subjective experiences, psychophysiological responses, facial expressions, behaviors/behavioral tendencies) when they used specific strategies. The strategies examined include reappraisal, suppression, amplification, and distraction. These studies adopted experimental designs, instructing parents to use specific strategies and then comparing their emotional indicators between groups or across within-person trials. Additionally, 4% of the assessments captured the goals or beliefs directing parents' ER, that is, the goals or beliefs parents held about how emotions should be expressed or regulated in specific contexts. The goals and beliefs were theorized to influence whether, when, and how parents modulate their emotions, but these assessments were not set to measure the actual acts of ER or specific strategies.

Four remaining studies (4%) reflected operationalizations not characterized by the categories described above. Two measured parents' self-efficacy of ER, that is, the feeling of being "prepared" to manage emotions appropriately in challenging parenting situations. Another assessment focused on parents' knowledge of strategies that can be used to manage emotions (but not their actual strategy-use), that is, how many potential strategies parents could come up with when presented with a hypothetical parenting challenge. Finally, an assessment captured the subjectively perceived amount of effort required to manage emotions in a way that aligns with parents' beliefs about emotional expressions.

Among the assessments ($n = 64$) used in studies that provided a clear definition of ER, 83% demonstrated a match between the operationalization with the conceptual definition. Based on a qualitative synthesis, the two main reasons for a lack of clear match include (1) the definition focused on the ability to achieve certain goals in parenting contexts but does not specify the role of emotions or the modulation of emotions in such processes (we screened in articles based on how ER was operationalized in the assessments, so the conceptual definitions provided in the paper did not necessarily fit with our criteria), and (2) the definition focused on the modulation of subjective feelings, whereas the operationalization focused on the modulation of outward expressions and behaviors when experiencing negative emotions, or vice versa.

Types of methods involved in the assessment of parental ER

We coded whether each assessment involved self-report, informant-report, observational coding, interview- or narrative-based coding, psychophysiological measures, or other types of methods. The majority (87%) of the 91 studies involved only one type of method in their assessment(s) and others took a multi-method approach (13%). Among the 107 assessments, the measures in 87 (81%) were directly mapped onto the operationalized ER construct, whereas the remaining 20 inferred parental ER from variations or associations of emotional and/or behavioral indicators that were attributed to parents' self-regulation of emotions (see Table 1).

The assessments of ER that did not involve inferences based on emotional and/or behavioral indicators predominantly adopted parental self-report ($n = 80$; that is, 92% of these assessments were based on self-report only). The self-report questionnaires commonly capture parents' ability or difficulty in managing emotions (e.g., the Non-Reactivity or Self-Regulation in Parenting subscale in the IM-P, the Emotional and Behavioral Regulation subscale in the ACT Evaluation and Instrument Guide, both used in multiple studies) and/or parental use of specific strategies (e.g., Parent Emotion Regulation Inventory and Ways of Coping Questionnaire were most frequently used; see Table 1). Self-report was also used to measure the goals and beliefs directing parental ER, parents' self-efficacy in

managing emotions, and the amount of effort parents perceived they devoted to ER. Among the other assessments that did not involve inferences, five coded parental use of strategies from interviews about past parent–child interaction or parental knowledge of strategies in response to hypothetical parenting situations. Another assessment measured parental use of strategies based on reports of parenting aides delivering intervention programs. Finally, one assessment integrated multiple sources of information, including transcripts of treatment sessions and reports of professionals working with the families, to generate a rating of parental difficulty in ER (i.e., the Child and Adolescent Needs and Strengths rating system).

In comparison to the assessments above, among the 20 assessments that inferred parental ER from variations or associations of emotional indicators, the majority did not rely on self-report, and around half ($n = 9$) involved multiple types of methods. These assessments can be summarized into three approaches. The first approach inferred parents' underlying ability to manage emotions based on informants' or researchers' observations of whether parents' emotional dynamics seem flexible and appropriate to the context. For example, the Minnesota Longitudinal Study of Parents and Children Coding System includes an observational rating scheme of parental ER (Ahemaitijiang, Ren, Wang, & Han, 2021; McCullough et al., 2014), which captures indicators of regulation (e.g., perseverance through and quick recovery from challenging moments, emotion flows are flexible and match with the context) and a lack of indicator of dysregulation (e.g., mood swings; appearing to get stuck in one emotional state; emotion seems to interfere with parenting) during parent–child interaction. The second approach involved inferring the ability or process of ER based on the coherence or relations among measures of emotional components. For example, instead of directly asking parents whether they can prevent negative emotions from translating into inappropriate parenting behaviors, some studies examined how parents' subjective emotions or impulses when experiencing emotions were related to real-time parenting (e.g., Hajal, Teti, Cole, & Ram, 2019; Lorber et al., 2016; Zhang et al., 2023). The underlying assumption was that, if parents could maintain positive parenting despite having negative feelings or related impulses, there is evidence for effective ER. While these studies mostly examined associations among the average level or reactivity in emotional indicators over several minutes of interaction, one study examined temporal sequences (Ferrar, Stack, Dickson, & Serbin, 2020). The third approach inferred the effects of ER strategies based on variations in self-reported appraisal or feelings, physiological responses, and observed facial expressions or behaviors when parents were instructed to use specific strategies (e.g., Karreman & Riem, 2020; Waters et al., 2020). Note that these emotional indicators per se are not measures of ER, but with careful experimental manipulations of strategy-use, comparing the indicators across strategies or with control conditions would reflect how a strategy influences multiple systems of functioning.

Evidence of reliability and validity

Regardless of measurement approaches, all studies should consider whether the measures involved capture the target construct with precision, warranting an examination of the evidence on reliability and validity. Among the 107 assessments, the corresponding articles provided information on the reliability of involved measures for 73 (68%). Specifically, information on reliability in the current sample was reported for 66 assessments (62%), whereas evidence of reliability was only cited from previous work using the same measures for 7 assessments (7%). The indicators of reliability for each assessment (for the current samples in the included studies) are presented in Table 1. For self-report assessments, internal consistency was typically reported as evidence of reliability for multi-item scales (e.g., Cronbach's α or inter-item correlation). Test-retest reliability was also reported in a few studies that viewed parental ER in parenting contexts as a relatively stable characteristic across weeks or months. For observational or interview-/narrative-based coding, inter-rater consistency was commonly evaluated, examined by indicators such as intra-class correlation (ICC) and kappa. No indicator of reliability was reported for any of the physiological measures.

The included articles provided information on the validity of involved measures for 46 (43%) of the assessments, among which 19 (18%) reported information on validity in the current sample and 27 (25%) cited evidence from previous work that developed or used the measure. Compared to common indicators of reliability, there are rarely standardized or well-recognized quantitative criteria to determine whether certain indicators reflect "satisfactory" validity. Therefore, instead of overwhelming the readers with detailed validity-related analyses provided for each assessment, we report the sources of information on validity discussed in the studies based on the categories proposed by the American Educational Research Association (AERA), American Psychological Association (APA), and the National Council on Measurement in Education (NCME, 2014; see Table 1). To summarize, some studies described obtaining evidence on validity based on test contents (e.g., collecting inputs from experts and parents on the relevance and clarity of scale items, matching the assessment contents with contents of the intervention programs being evaluated). Information on the internal structure of the measures was also provided for several assessments (e.g., based on factor analyses that reveal latent structures consistent with the conceptual model). Another frequently discussed source of validity-related information was the association between the target measure and established measures of overlapping constructs (e.g., trait-like ER) or variables expected to be associated with parental ER (e.g., parenting behaviors).

Assessment context and developmental considerations

Given the interest in parental ER specifically in the context of parenting, a core aim of this review was to examine how studies establish their contexts of measurement, and whether and how these contexts reflect developmental characteristics in parent–child relationships. As detailed in Table 1 and Fig. 4, among the 107 assessments, 79 (74%) asked respondents to recall past parenting experiences. Notably, some studies prompted respondents to complete the assessment about parenting in general or a type of parenting situation (e.g., when a child misbehaved), whereas the others asked respondents to first recall and describe a specific parenting-related incident in recent weeks or months (typically those that presented emotional challenges) and then complete the assessment in

reference to the incident.

Additionally, 13 assessments (12%) examined parental ER based on data collected during real-time parent–child interaction or parenting tasks in the laboratory. The specific contexts ranged from free play to tasks that present challenges to the dyad, such as child waiting tasks (e.g., the child has to wait while the parent completed work – also a divided attention situation for the parent), joint problem-solving tasks (e.g., puzzles beyond the child's ability or made impossible to solve, some only allowing the parent to assist verbally to increase difficulty), or conflict discussions. Task lengths ranged from 4 to 10 min, with tasks that pull for more intensive and structured interactions (e.g., joint puzzles) being typically shorter than tasks that may require more time to observe an adequate amount of interaction (e.g., waiting tasks). During the tasks, various measures were collected, such as self-reports of emotions and strategies, observations of behaviors and emotional expressions, and physiological measures.

Lastly, 15 assessments (14%) examined parental ER in the context of hypothetical parenting situations (e.g., parents were presented with vignettes or participated in role plays of emotionally challenging parenting situations) or exposure to child-related stimuli (e.g., listening to infant cries or laughter). Parents were often asked to imagine themselves being in the situation while having their responses measured. However, compared to actual parent–child interaction, parents were typically not able to engage as they normally would (e.g., parents could not soothe a hypothetical crying infant, or interact with their children in a vignette).

To understand whether and how the operationalization of parenting contexts reflected considerations of developmental characteristics in parent–child relationships, we organized the contexts adopted in each study by the age of children in the sample (see Fig. 4). A qualitative synthesis suggested that developmental considerations were evident in the contexts of some but not all assessments. That is, the parenting contexts established in some assessments reflected the unique parenting demands central to specific developmental stages. For example, several studies focusing on parents of infants examined parental ER when exposed to standardized audios of infant crying. This conforms with developmental research indicating that prolonged and inconsolable crying in the first year of life is a significant source of distress for parents and a potential trigger of abusive behaviors (e.g., shaking the baby; Barr, Trent, & Cross, 2006). Intense parental negative emotions in response to infant crying have been associated with at-risk parenting and the development of problematic attachment relationships (Joosen et al., 2013; Leerkes, Parade, & Gudmundson, 2011), making such contexts especially relevant for the study of parental ER during infancy. Notably, the choice of standardized stimuli instead of pre-recorded audio or video of parents' own infants may reflect a tradeoff between the consistency of exposure across participants and ecological validity. Developmental considerations were also reflected in studies using laboratory parent–child interaction tasks. As shown in Fig. 4, studies of parental ER in early childhood used child waiting tasks, joint play, and age-appropriate disciplinary tasks (e.g., parent asking the child to clean up toys). These contexts can challenge children's emerging self-regulation and also present their parents with a common situation that comes with emotional demands (i.e., attending to a young child who may be bored or frustrated, sometimes while completing parents' own tasks; Cole et al., 2011; Lunkenheimer et al., 2017). Another cluster of laboratory tasks was used in studies focusing on parenting in early adolescence. Although a few studies also used age-appropriate cooperative or joint problem-solving tasks in this age range, conflict discussion became a more common context for assessing parental ER. This is consistent with the typical increases in parent–child conflicts during the transition to adolescence, with the psychobiological changes in children and the negotiation of autonomy and power balance bringing emotional challenges for many parents.

In other assessments of parental ER, especially for measures based on recall of past experiences, the operationalization of context was often more general, asking respondents to think about times characterized by the nature of child behavior (e.g., when the child misbehaved) or parents' subjective experiences (many focused on when parents were upset about the child). In these contexts, respondents may focus on experiences that are typical for everyday interaction with their children, which can also capture developmentally unique parenting demands. Thus, this less structured way of establishing the measurement context may be especially suitable, and common, among studies with a wider range of child ages in their samples. Depending on the research questions, some studies sought to understand parental ER in very specific parenting contexts, such as in food-related situations when examining parental factors in child diet (Sagui-Henson et al., 2020), or in sibling conflict situations when evaluating a sibling relationship intervention (Ravindran et al., 2015). Based on ratings in the quality assessment form, 51%, 31%, and 13% of the assessments, respectively, received a rating of high, medium, and low on the specificity of the contexts established to capture parenting demands (see Table 1).

Key aspects of findings

Although this review focused on the methodological approaches to assessing parental ER, the findings from each study were also extracted and reviewed. Below, we highlighted some aspects of findings that may have unique implications for understanding parental ER in developmental and clinical research. Note that this review included studies with a wide range of aims and the risk-of-bias evaluation focused on the assessment of ER without covering other aspects of the studies that may influence the rigorousness and generalizability of their findings (e.g., the assessments of other constructs, whether confounding variables were accounted for). Therefore, this section was not intended to provide an exhaustive summary of all findings or to draw conclusions, but rather to review what unique perspectives this literature has offered.

First, through examining parental ER as context-specific processes, studies illustrated that parenting responsibilities, ideologies, and related resources may drive parental ER efforts and strategies. Hajal and colleagues (2019) identified a regulatory pattern in a U.S. community sample of mothers, such that they managed to stay engaged with caregiving despite experiencing negative emotions and associated motivation to disengage. In another sample, predominantly mothers from European countries, considerations around whether it was appropriate to display certain emotions in front of their child were related to corresponding strategies and efforts to regulate emotions (Lin et al., 2021). Several studies that examined a wide range of strategies showed that more practical approaches (e.

g., problem-solving) and seeking social support were among the most commonly used to manage parenting-related negative emotions, although parents also engaged in cognitive strategies focused on their emotional experiences (e.g., Barr et al., 2014; Begum et al., 2020; Bornstein, 2004; Houser & Seligman, 1991; Pottie & Ingram, 2008), especially when presented with a hypothetical parenting challenge that did not allow actual engagement (e.g., Russell et al., 2009).

Second, the parenting-specific measures of ER ability or difficulty showed statistically significant, but magnitude-wise only weak to moderate, correlations with global, non-parenting-specific measures of the same construct (e.g., Brenning et al., 2020; Cheron et al., 2009; Chung & Kim, 2017; Duncan, 2007; Glazer, 2017; Pan et al., 2019). Overall, better ability or less difficulty in regulating emotions during parenting (not accounting for specific strategies) has been associated with lower levels of stress and mental health symptoms among parents (Cheron et al., 2009; Clapp, 2018; Krueger, 1996; Moreira & Canavarro, 2017; Pan et al., 2019) as well as more positive and/or less negative parenting behaviors (Brenning et al., 2020; de Bruin et al., 2014; Duncan, 2007; Morelen et al., 2016; Pereira et al., 2017). This is consistent with the broader literature on the association between ER and mental health symptoms (Berking & Wupperman, 2012; Compas et al., 2017), as well as a recent meta-analysis on the associations between parental ER (not specific to ER in parenting contexts) and parenting behaviors (Zimmer-Gembeck et al., 2022). However, no analysis to our knowledge has addressed whether and to what extent parenting-specific ER ability explains unique variances in parental well-being or parenting behaviors beyond global measures of adult ER ability.

Regarding strategy-use, the associations between parents' global and parenting-specific use of the same strategies ranged from non-significant to moderate, and there was not a consistent pattern of which strategies may have stronger associations between global and parenting-specific uses (Lorber, 2012; Lorber et al., 2017; Rodriguez & Shaffer, 2021). Most studies examining suppression of negative emotions during parenting found it to be associated with parental distress and maladaptive parenting outcomes (e.g., Giuseppone, 2018; Kelly, 2017; Le & Impett, 2016; Lorber et al., 2017; Rodriguez & Shaffer, 2021; Shenaar-Golan et al., 2017; Zhang et al., 2023). Studies adopting experimental designs also revealed negative impacts of suppression on parenting quality (Karnilowicz et al., 2019; Waters et al., 2020). There were two exceptions; one study suggested that parents who suppressed negative emotions during discipline encounters with toddlers reported less over-reactive discipline (Lorber, 2012), and another found that less authoritarian parents were more likely to suppress hostile emotions when transitioning from non-child-related stressors to coping with preschool-age children's fear or sadness (Martini et al., 2004). Overall, suppression may reflect parents' efforts to not let out negative emotions in front of their young children, but evidence has been accumulating on its maladaptive implications for parental well-being and the ability to engage in appropriate parenting. For reappraisal, although it is often recognized as an adaptive strategy in the literature of adult ER, evidence is mixed on its benefits during parenting. Some studies found that it buffered parental arousal and burnout (Riem & Karreman, 2019; Vertsberger et al., 2022) and was related to more ideal parenting (Rodriguez & Shaffer, 2021). Others found no associations with parenting and questioned the extent to which parents can engage in or accurately report elaborated cognitive processes amidst the chaos of parenting challenges (Lorber et al., 2017; Zhang et al., 2023). The implications of other strategies were investigated less frequently. However, the findings again illustrated the importance of considering specific parenting demands when examining parental ER. For example, rumination is typically viewed as a maladaptive strategy, but ruminating about negative parenting experiences may capture parents' guilt and reflection about parenting and was related to both positive and negative aspects of the parent–child relationship (Rodriguez & Shaffer, 2021). The implications of attention redirection may also be complicated by competing demands involving parenting responsibilities and parents' emotional needs. For example, self-distraction in stressful parenting situations may help parents reduce negative feelings and arousal in some cases (Firk et al., 2018), but may lead to more distress if it prevents parents from attending to a child-related situation that they are anxious about (Vervoort et al., 2014). Therefore, it may be misleading to label parental use of specific strategies in parenting contexts as "adaptive" or "maladaptive" based on the broader literature of adult ER.

Third, a range of child characteristics or psychosocial outcomes were examined in association with parental ER. Studies examining ER ability or difficulty mostly conceptualized it as a predictor of child outcomes, whereas studies focusing on strategy-use often viewed parents' choice of strategies as being influenced by child characteristics. However, few studies tested longitudinal or transactional associations. Better parental ER ability and lower levels of difficulty were more consistently associated with lower child externalizing symptoms across developmental stages (Altafim et al., 2018; Ahemaitijiang et al., 2021; Cheron et al., 2009; Clapp, 2018; Duncan, 2007), whereas associations with internalizing symptoms were often not evident and only emerged in two studies focusing on samples that may be at higher risk for emotional disturbance (i.e., children of mothers with childhood aggression and social withdrawal, and youths with overweight concerns; Ferrar et al., 2020; Gouveia et al., 2019). Regarding strategy-use, children with more emotional and behavioral difficulties may place greater demands on parents, who reported attempting a wider range of strategies and engaging strategies more frequently during parenting (Kerns et al., 2017; Shenaar-Golan et al., 2017; Zhang et al., 2023). Other studies examined whether and how child characteristics were related to parental choice of specific strategies to manage parenting-related negative emotions, although no clear pattern of findings emerged across the various strategies and child variables examined.

Finally, several studies examined the effects of intervention programs on parental ER, mainly focusing on parents' self-reported ability to manage emotions to support parenting goals. Some studies also assessed parents' use of presumably adaptive strategies, especially those taught in the intervention programs. However, because parental ER was often one of many outcomes or mediators examined in those studies, summarizing only the findings related to parental ER may result in an incomplete and potentially misleading picture of the intervention effects. Additionally, there were wide variations in the contents of the interventions and study designs, and no systematic risk-of-bias evaluation was conducted for the quality of the evaluation trials. Therefore, synthesizing the findings regarding the effects of intervention programs is beyond the scope of this review and thus not presented here.

Discussion

Increasing attention has been directed to parental ER in developmental and clinical research, with recent meta-analyses addressing its association with parenting competence and risks as well as children's ER and emotional problems (Lavi et al., 2021; Zimmer-Gembeck et al., 2022). This study aimed to address the gap between the need to understand how parents manage their emotions in response to parenting demands and a literature that has predominantly adopted general models and measures of adult ER. Through a rigorous review, this study provides a database of approaches to assessing underlying parental ER constructs in the context of parenting, along with information on evidence of reliability and validity. As illustrated by the findings, these assessments were adopted to support a range of study aims, many seeking to examine whether and how parental traits translate into emotional and behavioral states during parenting and the regulatory mechanisms underlying parenting difficulty. This body of research thus has important implications for the development, implementation, and evaluation (which was also the aim of some included studies) of parenting interventions.

The findings of this review demonstrate the various ways of conceptualizing and operationalizing parental ER as well as the wide range of methods and contexts involved in the assessments, reflecting the multi-faceted nature of this construct. Meanwhile, the results point to a lack of definitional clarity (especially in intervention studies) and a paucity of information on the reliability and validity of the involved measures (especially for psychophysiological measures) in some studies. Additionally, more attention is needed with respect to the context of parental ER assessments in developmental research, both in terms of the specific measurement contexts that capture parenting demands and regarding the broader sociocultural contexts of the family. Based on findings from this review, we aimed to make recommendations that move the field toward a more conceptually sound and methodological rigorous direction.

Toward conceptual clarity in the study of parental ER

The burgeoning research of ER since the 1990s has provided a rich collection of conceptual models featuring different breadths and focuses. As suggested in a review by Bloch and colleagues (2010), the definition provided by Gross and Thompson (2007), which is relatively broad and inclusive of various forms and processes of ER, can provide a unifying framework to help integrate empirical findings. Similarly, a recent article integrated conceptual work on self-regulation to extract the core process – engaging executive processes to modulate prepotent reactions, which may apply to various contexts (Cole, Ram, & English, 2019). Many studies included in the present review adopted these more general frameworks in defining parental ER, which can help connect the findings with the broader literature on adult ER. Meanwhile, some studies presented more context-specific models, including those accounting for how parents modulate emotion-related impulses to prevent them from compromising parenting (Duncan et al., 2009) and how parental ER involves balancing the conflicting internal and external demands in parenting (Dix et al., 2004; Zhang et al., 2023). These parenting-specific conceptual models can add clarity to operationalizations and assessments in this field, especially for determining when (in what contexts and at what timings) and how (measuring what specific variables) to capture parental ER to explain mechanisms underlying parenting behaviors and the socialization of emotional competence in the family. This also conforms with the notion that ER may not be stable across time and context, but rather varies by changing demands.

Our findings further suggest that, empirically, different assessments capture distinct facets or processes of parental ER, calling for caution in the comparison and integration of results. For example, parents' use of specific strategies does not represent the effects of those strategies in specific parenting contexts or whether parents can manage emotions to support parenting goals, yet they may all be labeled as "parental ER". Even within one type of operationalization as we summarized in the results section, there can be differences in the specific processes captured. For example, parents' ability to prevent negative feelings from translating into at-risk parenting may not overlap with their ability to recover from those negative feelings. In fact, parental efforts to not transmit their own negativity to their children may contribute to feelings of burnout (Lin et al., 2021). Furthermore, some facets of parental ER may be important for understanding parenting demands and parental well-being, yet they have only been examined in a small proportion of studies (e.g., the goals and beliefs directing ER processes). Together, these findings suggest that researchers should consider conceptualizations of parental ER based on study aims and select measures in which the operationalization corresponds to the specific facets or processes of ER in their conceptual model. Future studies should also examine the associations among different facets and processes to develop a more comprehensive understanding of parental ER, such as considering parental ER as a dynamic system where executive processes are involved to manage and balance various goals and demands in parenting contexts.

Finally, it is concerning that among studies examining intervention effects, only a quarter provided a clear definition of parental ER. This may be because parental ER was a secondary outcome or mediator in the theory-of-change model for some programs (most studies targeting parental ER as a primary outcome did provide clear definitions) and thus not the focus of the article. However, it is still worth noting that clear, operationalizable definitions of all constructs involved in the theory-of-change model are critical for developing, implementing, and evaluating relevant components. For example, a clear definition of ER can help practitioners identify and target parents' specific regulatory difficulties and help researchers determine what specific skills should be assessed to evaluate the efficacy and effectiveness of the intervention.

Methodological issues and establishing evidence of reliability and validity

The findings of this review suggest that most studies of parental ER in the context of parenting relied solely on self-report measures. Self-reports provide access to parents' cognitions and their recall of past experiences and can thus capture a variety of facets and processes of ER. However, they are also subject to biases due to conscious or unconscious selective reporting or misreporting. Social

desirability bias associated with self-reports can be especially problematic in the evaluation of intervention programs, given that the measures are often mapped onto the skills taught in the program, and parents may know what they *should* say in post-intervention assessments. Additionally, the ability to be aware of and describe one's cognitive processes and past experiences can vary widely across parents, which can be a source of confounding effects, especially for populations with reflective functioning difficulties. Furthermore, as other variables often examined in associations with parental ER (e.g., parental psychosocial well-being, child characteristics) are commonly measured through parents' self-report as well, common-method variance can also contribute to biased findings.

A small proportion of studies incorporated other methods including informant reports, observational and interview- or narrative-based coding, and psychophysiological measures. A multi-informant, multi-method approach to assessment can provide unique insights and a more comprehensive picture of parental ER. Interview-based coding, although still based on parental reports, allows researchers to help respondents recall specific parenting situations and obtain more nuanced information. Incorporating informant reports (e.g., from children or professionals working with the family) and observational coding can contribute to a more objective account of parental ER ability and thus reduce the risk of artificial findings. For example, one study obtained youths' perception of their parents' anger management following a family intervention, which suggested smaller intervention effects compared to parents' self-report (Coatsworth, Duncan, Greenberg, & Nix, 2010). Children's perspectives may also be unique in understanding the role of parental ER in socialization processes. Physiological measures capture how physiological systems are preparing to facilitate responses to emotionally provoking circumstances, and have often been used in inferring the effects of specific strategies. However, physiological measures also have limitations in that they are influenced by a wide range of psychological and physical activities, and the results can thus be difficult to interpret in some cases. Therefore, these measures may be most helpful when examined with careful consideration of contextual factors and co-occurring cognitive and behavioral processes, serving as a component of a multi-method approach.

The diverse methods involved in the assessment of parental ER have strengths and limitations in terms of what facets or processes of ER they can capture (e.g., some cognitive strategies may not be observable), what contexts they characterize (e.g., informant report may only capture parental ER in a limited range of settings), and feasibility in specific research settings (e.g., highly trained staff may be required to conduct interviews, specific in-person settings may be needed to collect physiological data during interaction). Researchers should consider these factors when choosing and designing assessments of parental ER and, to the extent possible, incorporate a multi-informant, multi-method approach and examine the associations and distinctions among measures collected from different sources.

Regardless of the types of measures involved, establishing reliability and validity is critical for producing robust research findings. For a third of the assessments included in this review, no information was provided in the corresponding articles on their reliability (or not provided for at least one of the measures involved). For self-report measures, internal consistency was typically reported for multi-item scales or subscales, and a few studies reported test–retest reliability. However, some self-report measures only included one generally-worded item to measure parental ER or analyzed each item separately when they were not theorized to measure a common construct, for which no information on their reliability was reported (see Table 1). This further brings their validity, and thus the accuracy of study findings, into question. Moreover, it is concerning that the reliability of physiological measures was rarely examined or discussed. The importance and approaches to evaluate the reliability of physiological measures have been discussed in previous research (e.g., Burt & Obradović, 2013; Kelsey, Ornduff, & Alpert, 2007). Such evaluation may seem trickier when the within-person or within-task variability in repeated measures of physiology is increasingly treated as meaningful variances rather than measurement errors. For example, researchers may be interested in the dynamic changes in cardiac activity as a function of deploying a cognitive strategy to regulate emotions. Therefore, examining reliability in such studies requires careful consideration of the specific research questions as well as what conclusions and generalizations are being drawn (e.g., whether a conclusion assumes stable individual differences across time or tasks), to identify what constitutes measurement error in reliability assessments.

Finally, for over half of the assessments included in this review, no information on the validity of the measure(s) was provided. The rest of the studies discussed evidence related to test contents, internal structures of the measures, and/or the associations of the scores with criterion variables or other theoretically relevant constructs (see Table 1). This should be noted for future studies, including considering the adaptation and validation of measures in specific populations and cultural contexts (e.g., de Bruin et al., 2014). Furthermore, with increasing diversity in study samples, researchers should consider issues with measurement invariance to clarify the generalizability of findings in the target population. Attention should also be directed to data collection and analysis procedures that may influence measurement reliability and validity. In this review, we noticed that some articles lacked key details in this regard, including how materials and protocols were translated and/or adapted when used in different cultures or settings (e.g., online versus in-person), what steps were in place to ensure the fidelity of data processing (e.g., observational coding, physiological signal inspection and cleaning), and whether and how researchers and participants were blinded to intervention or experimental conditions. Standardizing and clearly describing these procedures would provide additional information for the evaluation of reliability and validity and are important steps toward more transparent and replicable research.

Minding the context: Examining parental ER in developmental research

As reviewed in the introduction, parents face unique demands when their children are at each developmental stage. Studies may also aim to address different correlates of parental ER given the developmental characteristics of the parent–child relationship (e.g., parental sensitive responsiveness in infancy versus psychological control in middle childhood and adolescence). The assessments in several studies reflected such developmental considerations, aligning the measurement context with the most common or salient emotionally challenging parenting situations given child age, ranging from infant crying to conflicts with young adolescents. This is

particularly evident in studies examining parental ER during real-time parent–child interaction or hypothetical parenting situations (by presenting child-related stimuli or vignettes), which allow researchers to set up more structured contexts and prompt parents' responses to challenges.

In comparison, most studies asking about past experiences took a more general approach in defining what parenting-related contexts or incidents parents should refer to when completing the assessment. This approach may capture a more representative picture of how parents manage emotions in everyday life or in response to specific types of parenting challenges, which is a potential advantage compared to taking a "screenshot" in structured laboratory tasks. However, the recall approach is typically paired with self-reports that are subject to biases as discussed above. All in all, to what extent parental reports of parenting experiences in general and "screenshots" of specific parenting tasks capture shared or unique variances is up for empirical examination. Notably, ecological momentary assessment (EMA), which was used in two studies to capture parents' use of strategies or ER ability (Hajal et al., 2019; Le & Impett, 2016), has the potential to both be representative of everyday parenting challenges and reduce recalling biases, and should be considered in future research. With wearable devices that can record various data streams (e.g., physiological, audio) and technology-supported reporting protocols, a multi-method approach has become more feasible with EMA designs. Furthermore, most studies of parental ER in parenting contexts focused on negative emotions, especially anger. Although the regulation of anger may be the most relevant for preventing at-risk parenting, how parents regulate other emotions, including positive or complex emotions, may also play a role in parenting and parental well-being (Karreman & Riem, 2020; Lin et al., 2021). Future research should consider how a wider range of emotions could be represented in the examination of parental ER in parenting contexts.

Importantly, parental ER should also be understood within the socio-demographic context for the parent and the family, and research must consider the appropriateness and relevance of the assessment approaches for their sample. Most studies included in this review collected data from North America and European countries, and samples with relatively high education levels were more common. As shown in Table S1 in the Supplementary Materials, although several studies included relatively diverse samples in terms of race and ethnicity, many still focused on predominantly White samples. Additionally, over half of the studies focused only on mothers. With the growing awareness of diversity in psychological research and cautions around the generalization of study findings, the research of parental ER should also be increasingly representative of caregivers from various demographic and sociocultural backgrounds. In this process, the field needs to consider the sociocultural norms regarding the experience, expression, and regulation of emotions, as well as the typical parenting and co-parenting arrangements, demands, and goals in specific populations.

Scope of the present review

This paper provides a systematic review of how parental ER has been assessed in parenting contexts. However, it should be noted that the research that provides important insights into parental ER as context-specific processes extends beyond the studies included here. Qualitative work has revealed nuanced findings, not only on the range of strategies parents may employ in managing emotions, but also on how they draw psychological resources from multiple aspects of their lives to construct a regulatory system in response to emotional challenges (Beighton & Willis, 2017), as well as the journey of attempting to improve ER through training (Mejia, Ulph, & Calam, 2015; Wolford, 2019). Additionally, some studies examined constructs that encompass or are implicated in parental ER processes (e.g., parental reflective functioning, emotional awareness and clarity; Sleed, Slade, & Fonagy, 2020) but did not assess ER specifically, or that they coded parental ER in broader contexts including but not limited to parenting (e.g., the Parental Meta-Emotion Interview; Hunter et al., 2011). These studies were not included here but have informed our understanding of parental ER. Also, as explained in the Literature Search section and the Supplementary Materials, several studies examining distress tolerance, despite the conceptual overlaps with ER, were not included because their assessment approaches did not fit our inclusion criteria. For example, distress tolerance has been defined as the ability or skills to withstand aversive experiences, conceptualized as a manifestation of underlying ER ability (Van Eck, Warren, & Flory, 2017) or a multidimensional construct that includes ER as a component (Simons & Gaher, 2005). When examined in the context of parenting, distress tolerance was often measured as how long parents can sustain caregiving behaviors when exposed to aversive child-related stimuli (e.g., infant crying; Rutherford et al., 2013) or their coping with children's negative emotions (Del Vecchio et al., 2020), but whether and how much parents experienced negative emotions or engaged in ER was not accounted for in these assessments. Although we did not include these studies, they did set up contexts where parental ER could be readily measured, which could inform the regulatory mechanisms underlying parents' ability to tolerate child-related stressors.

Furthermore, studies examining dynamic patterns in parents' emotional indicators but not the associations among different emotional components (e.g., Lougheed, Brinberg, Ram, & Hollenstein, 2020; Somers et al., 2020), or those inferring regulation processes based on physiology-behavior dynamic associations (e.g., Skowron et al., 2013; Zhang, Gatzke-Kopp, Cole, & Ram, 2022), although not fitting our definition and criteria of examining ER per se, may reveal relevant information and provide innovative tools that can be applied when assessing parental ER. Similarly, we did not include studies that examined neural or physiological reactivity that may be involved in ER but may also be involved in other psychological or physiological processes (e.g., studies examining prefrontal cortex activation or respiratory sinus arrhythmia but did not show that modulating attempts were involved or testing the associations with other components of emotion or parental behaviors).

Conclusions

This systematic review is the first effort to identify, summarize, and evaluate studies that assessed parental ER in the context of parenting. Findings suggest that a range of assessment approaches have been used to capture various facets and processes of parental

ER, including the ability, difficulty, perceived effort, and self-efficacy in managing emotions, the knowledge, use, or effect of specific strategies, and parents' goals and beliefs directing ER. These assessments were used to examine a range of aims relevant to developmental research, including addressing the mechanisms underlying parenting and parental well-being, understanding the role of parental ER in the intergenerational transmission of strengths or difficulties, and evaluating the effects of intervention programs. Methodologically, while most studies relied on self-report, some collected data from other sources or incorporated observational and interview-/narrative-based coding as well as physiological measures, speaking to the feasibility of a multi-informant, multi-method approach. Compared to the commonly used measures of adult ER, such as the Difficulties in Emotion Regulation Scale (Gratz & Roemer, 2004) and the Emotion Regulation Questionnaire (Gross & John, 2003), many assessments included in this review reflect parenting demands in the operationalization of ER and the measurement contexts. They may thus be more informative for researchers and practitioners who need to address parental ER as context-specific processes. However, the findings of this review also highlight the importance of conceptual clarity, including matches among study aims, definitions, and the operationalization of parental ER, as well as the need to provide evidence on reliability and validity.

This review establishes a database of how parental ER has been assessed in the context of parenting (see Table 1), which can serve as a toolbox for future research. Based on the findings revealing the diversity in research aims, specific facets or processes of ER, and parenting contexts that researchers may be interested in, it may be counterproductive to pursue convergence in assessment approaches. Instead, we propose a framework for selecting and refining assessments of parental ER as context-specific processes (see Fig. 5). First, it is important to adopt a clear conceptualization of ER and, considering the multi-faceted nature of the underlying construct, specify the components or processes of interest. The operationalization of ER, as outlined in Table 1, should then match the conceptual model and be informed by specific research aims. The next to determine are the types of measurement to adopt (e.g., self-report, observation, etc.) and the context within which ER is assessed. Researchers should consider what types of measurement could effectively capture the operationalized property or process of ER, with potential options listed in Table 1, and examine the evidence of reliability and validity of specific measures in the target population. When feasible, a multi-informant, multi-method approach can provide a more comprehensive picture of parental ER and reduce common-method biases, although more research is needed to understand the degree of convergence among different informants/methods (including whether and how they capture unique variances in ER). Meanwhile, the context within which parental ER is assessed should match the research aims (e.g., understanding parental ER in child obesity-related situations) and reflect parenting demands that are relevant given the characteristics of the sample. As summarized in Table 1 and Fig. 4, several established paradigms are available for examining parental ER in hypothetical parenting tasks or real-time parent–child interactions, many setting up emotionally challenging parenting situations that are representative of the

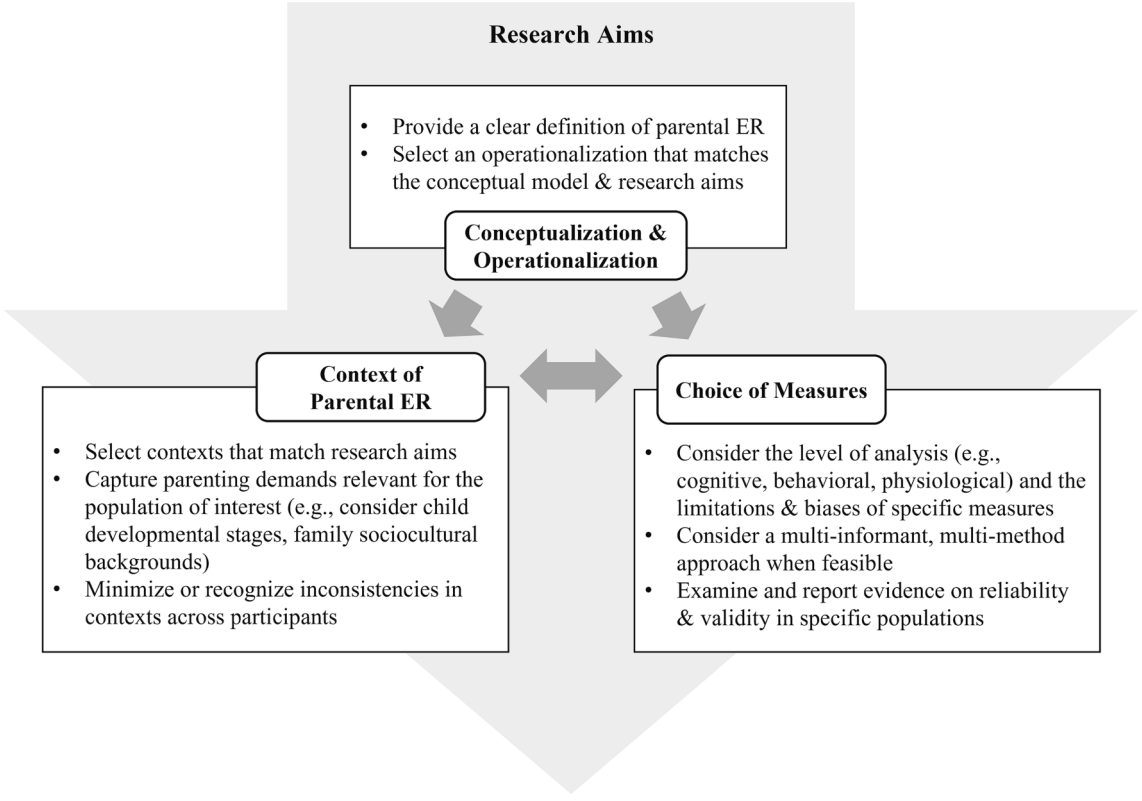

Fig. 5. Recommendations for selecting context-specific parental ER assessments.

corresponding child age range. When there is a wider range of child age or sample characteristics, or when researchers would like to capture parenting contexts more generally, it may be suitable to use broader language in operationalizing the context (e.g., when parent feels upset about the child), so that each participant can identify what is emotionally challenging for them in parenting. However, it is important to minimize, or to recognize and control for, the variations in the context captured by the assessment. When a study fails to do so, the variations in parental ER may be confounded by variations in assessment contexts (e.g., in a laboratory parent–child interaction task, some children may be more challenging than others).

This review can serve as a toolbox for future research, and the results provide a foundation for examining potential moderators of the psychometric properties of these assessments in future work, as well as how key research findings (e.g., the association between parental ER and parenting) may vary based on the operationalization of ER, methodological approaches, psychometric properties of the measures, and measurement contexts. This map of context-specific assessments also lays a foundation for examining the unique contributions of global versus context-specific parental ER. Although a few studies have examined global and parenting-specific measures of parental ER simultaneously and found somewhat different patterns of associations with parenting behaviors and experiences (e.g., Lorber, 2012), there are still questions that need to be further addressed. First, future studies should directly compare the unique variances explained by or the effect sizes involving global versus context-specific measures of parental ER. Meta-analyses have linked global ER difficulties among parents with less positive parenting behaviors, more negative parenting behaviors and greater risk for child maltreatment, as well as more psychopathological symptoms among their children, whereas global strategy-use in ER is less consistently associated with those variables, especially for child outcomes (Lavi et al., 2021; Zimmer-Gembeck et al., 2022). It is possible that while trait-like difficulties in ER manifest more reliably across contexts including parenting, the use of specific strategies and their effects are more context-dependent processes and should be measured as such. The unique value of global and context-specific approaches may also vary for different research questions. For example, global measures may be more helpful in capturing the overall emotional climate and styles of the family, whereas context-specific measures may be preferred when researchers are interested in how the specific processes of parental ER unfold. Second, in addition to calculating the correlations of global ER with ER measured in one specific parenting context, future work should consider a more intra-individual approach to examining their shared (and unshared) variances. For example, parents' ER in some parenting contexts may align more closely to their trait-like ability or habituated strategy-use, whereas other types of parenting contexts with unique demands may pull for deviations. This line of investigation is also relevant for intervention studies, where researchers may aim to identify situational factors during parent–child interaction that impact parents' regulatory capacity or to examine the transfer of skills following interventions (e.g., whether training targeting ER in parenting contexts results in broader improvements across various contexts, and whether skills gained in non-parenting-specific training are manifested in parenting). Together, these investigations can help integrate the global and context-specific approaches to parental ER.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data on the included papers can be found in Table 1 and Table S1 (Supplementary Materials). Other raw data (e.g., screening reports) will be made available on request.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.dr.2023.101092.

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Note. Studies analyzed in the systematic review are marked with asterisk (*).

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