BMC Psychology

SYSTEMATIC REVIEW

Open Access

Exploring emotional intelligence in children using the trait emotional intelligence questionnaire: a systematic review

Zeynep Özal[1*], Federica Ambrosini[1], Roberta Biolcati[1], Elena Trombini[2], Stella Mavroveli[3] and Giacomo Mancini[1]

Abstract

Background Measuring psychological constructs in children presents unique challenges, as careful consideration of children's cognitive and socioemotional development is needed. The Trait Emotional Intelligence Questionnaire-Child Form (TEIQue-CF) was developed within the theoretical underpinnings of trait Emotional Intelligence theory and is predicated on primary aged children. This review aims to systematize the scientific literature on the TEIQue-CF, its corresponding short form, the TEIQue-CSF and the translated versions of these tools to identify the key outcomes predicted by these forms in children aged 8–13 years.

Method A search was conducted in Google Scholar, PubMed, Scopus, Web of Science and APA PsycArticles in June 2024. This review was guided by the latest version of the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines.

Results Conducted search identified 40 studies that investigated child emotional intelligence measured via TEIQue child forms. The key findings cover several topics related to the emotional aspects of children's personalities, such as their intra- and interpersonal relationships, school life, cognition, and creativity.

Conclusions This systematic review revealed that trait Emotional Intelligence measured via the TEIQue child forms provide reliable results and is valid, as it has been linked to key childhood variables. This review also provides guidance for future research on the topic of trait Emotional Intelligence in children by highlighting current research limitations to avoid the likelihood of misleading research findings.

Keywords Trait emotional intelligence questionnaire child form, Trait emotional intelligence, Children, Socioemotional development, Self-efficacy

Over the past three decades, various emotional intelligence (EI) theories and several instruments to test EI have been proposed. At the core, there are two main models of EI: a*bility EI* and *trait EI* [1, 2]. It has also been suggested that the EI framework provides a basis for describing and assessing *emotional competence*, which is known to lack a comprehensive theory [3]. In general, EI has been found to predict social-relational [4, 5], educational [6, 7], vocational [8, 9], organizational [10, 11], health [12–14], and clinical [15, 16] outcomes. However,

*Correspondence:
Zeynep Özal
zeynep.ozal2@unibo.it
[1] Department of Education Studies "G.M. Bertin", Alma Mater Studiorum University of Bologna, Bologna, Italy
[2] Department of Psychology "R. Canestrari", Alma Mater Studiorum University of Bologna, Bologna, Italy
[3] Department of Surgery and Cancer, Imperial College London, London, UK

although EI remains an important construct to investigate, especially among understudied populations (e.g., children and adolescents), the popular and scientific literature on EI often falls short of scientific rigor due to the lack of consideration of the discrepancy between theory and measurement methods (i.e., aiming to measure ability EI with a trait EI measure or vice versa), which can produce misleading or difficult-to-interpret research results [17]. Furthermore, despite the proliferation of scientific work on trait EI, several questions remain unanswered and merit future investigation, such as identifying ways to link the existence of many conflicting models and related measures of EI, further studying the relationships between EI and other partially overlapping constructs, and identifying the most useful training to optimize EI, especially in children, adolescents and their parents [18].

The present review focuses solely on a single theory—trait EI—and its corresponding instrument—the TEIQue child forms. The classification of developmental stages can be ambiguous and may vary according to individual differences. The current study refers to Blos' taxonomy; it emphasizes the developmental phases identified as *latency* and *preadolescence* [19], which are also acknowledged as *middle childhood* and *early adolescence* [20] and encompass the age group between 8 and 13 years.

Trait EI

Trait EI encompasses the affective aspects of personality and is related to individuals' behavioral dispositions and self-perceived abilities regarding their emotions and emotional experiences [21]. It correlates with several personality traits, such as extraversion, conscientiousness, and neuroticism; however, it also remains distinct from them, as evidence for the discriminant, incremental, convergent, and criterion validity of trait EI has been provided in the literature [21, 22]. The sampling domain of trait EI for adults and adolescents comprises four main factors (Well-being, Self-control, Emotionality, Sociability) and fifteen different facets [23].

Trait EI in children

During latency and preadolescence [19], children start to experience changes in their self-esteem (e.g., low self-esteem stability) [24], become aware of self-conscious emotions (e.g., guilt, pride) [25], develop emotional understanding [26] and emotional self-regulation, which leads to emotional self-efficacy [20].

Given the differences in the emotional worlds of individuals at various stages of development, the construct of trait EI in children should be addressed in a different way in children than it is in adolescents and adults. Pioneering studies conducted by Mavroveli and colleagues [27, 28] provided the foundation of trait EI theory for children. Unlike the sample domain of trait EI for adolescents and adults, trait EI in children is composed of nine facets [27]: *Adaptability*, *Affective Disposition*, *Emotion Expression*, *Emotion Perception*, *Emotion Regulation*, *Low Impulsivity*, *Peer Relations*, *Self-esteem*, *and Self-motivation* (see Table 1).

Research involving children suggests that trait EI appears to be an important predictor of health-related outcomes and scholastic achievement throughout development [29]. For instance, children with higher levels of trait EI are less likely to experience somatic complaints [30] and show higher levels of socioemotional competence and prosocial behavior [31]. Bullying and

Table 1 The sampling domain of trait emotional intelligence in children

Facets	Brief description	Example item
Adaptability	Concerns children's self-perceptions of how well they adapt to new situations and people	"I find it hard to get used to a new school year"
Affective disposition	Concerns children's self-perceptions of the frequency and intensity with which they experience emotions	"I am a very happy kid'
Emotion expression	Concerns children's self-perceptions of how effectively they can express their emotions	"I always find the words to show how I feel"
Emotion perception	Concerns children's self-perceptions of how accurately they identify their own and others' emotions	"It is easy for me to understand how I feel"
Emotion regulation	Concerns children's self-perceptions of how well they can control their emotions	"I can control my anger"
Low impulsivity	Concerns children's self-perceptions of how effectively they can control themselves	"I do not like waiting to get what I want'
Peer relations	Concerns children's self-perceptions of the quality of their relationships with their classmates	"I listen to other children's problems"
Self-esteem	Concerns children's self-perceptions of their self-worth	"I feel great about myself"
Self-motivation	Concerns children's self-perceptions of their drive and motivation	"I always try to become better at school'

Table above is taken from "Investigation of the construct of trait emotional intelligence in children" by Stella Mavroveli, K.V. Petrides, Chloe Shove, Amanda Whitehead, 2008, *European Child & Adolescent Psychiatry*, *17(8)*, pp. 516–526 (https://doi.org/10.1007/s00787-008-0696-6)

victimization were also found to be negatively correlated with trait EI in children [32]. Alas, research on trait EI in child samples remains scarce and, therefore, less well understood compared to adult samples.

Measuring trait EI in children: TEIQue-CF and TEIQue-CSF

In line with the principles of psychometrics, the key difference between the distinct models of emotional intelligence is the method of measurement [23]. Although several instruments are available to assess trait EI, the TEIQue and its various versions remain the most scientifically robust tools, as they provide comprehensive coverage of trait EI theory and the trait EI sampling domain [23]. Additional information on TEIQue forms can be found at www.psychometriclab.com.

In the present review, we focus on the TEIQue child forms (i.e., the TEIQue-CF and TEIQue-CSF), which were developed by Mavroveli et al. [27] for school-aged children between the ages of 8 and 12. The full form (TEIQue-CF) consists of 75 short statements covering the 9 facets of the child trait EI sampling domain (Table 1) on a Likert-type scale from one (completely disagree) to five (completely agree). The questionnaire has been translated into more than ten languages; it shows adequate levels of internal consistency, temporal stability, and construct validity and remains as the only trait EI measurement specifically designed to assess the emotional aspects of children's personalities [27]. The short form (TEIQue-CSF), as a simplified version of the TEIQue-CF, comprises 36 items and, unlike the long form, provides only the global score of child trait EI.

Aims and relevance of the present review

Early positive social and emotional experiences and related self-perceptions are key contributors to adaptive life outcomes and both physical and psychological well-being [20]. Trait EI has been repeatedly found to be positively linked to adaptive behaviors and psychosocial adjustment, and it comprises the focus of this scientific enquiry. This systematic review aims to systematize the scientific literature that studies trait EI via TEIQue-Child Forms and to identify the key outcomes predicted by these tools in children aged 8–13 years.

Methods

The latest version of the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) statement [33] was followed in the reporting of this systematic review. Searches were performed in Google Scholar, PubMed, Scopus, Web of Science and APA PsycArticles in June 2024 via the following keywords: *emotional intelligence*, *trait emotional intelligence*, *child**, *teique*, *teique-cf*, and *teique-csf*. Details on the search strategy are presented in Supplementary Table 1.

The inclusion criteria for the search strategy were as follows: articles published in (a) English, (b) as journal articles, and (c) between 2008 and 2024; the reason for this choice of date range was to cover all the studies that specifically used TEIQue Child forms, as these forms have been available since 2008 [27]. The inclusion criteria for the study selection were (a) children's age range (i.e., 8–13 years) and (b) implementation of the TEIQue-CF or TEIQue-CSF to measure trait EI in children. Search results that were not published in English and were nonjournal documents (e.g., book chapters, dissertations, and posters) were excluded. Other systematic literature reviews, meta-analyses, studies that used a different measure of trait EI, and studies with a sample outside of our predetermined age range criterion were also excluded.

Search strategy and data extraction

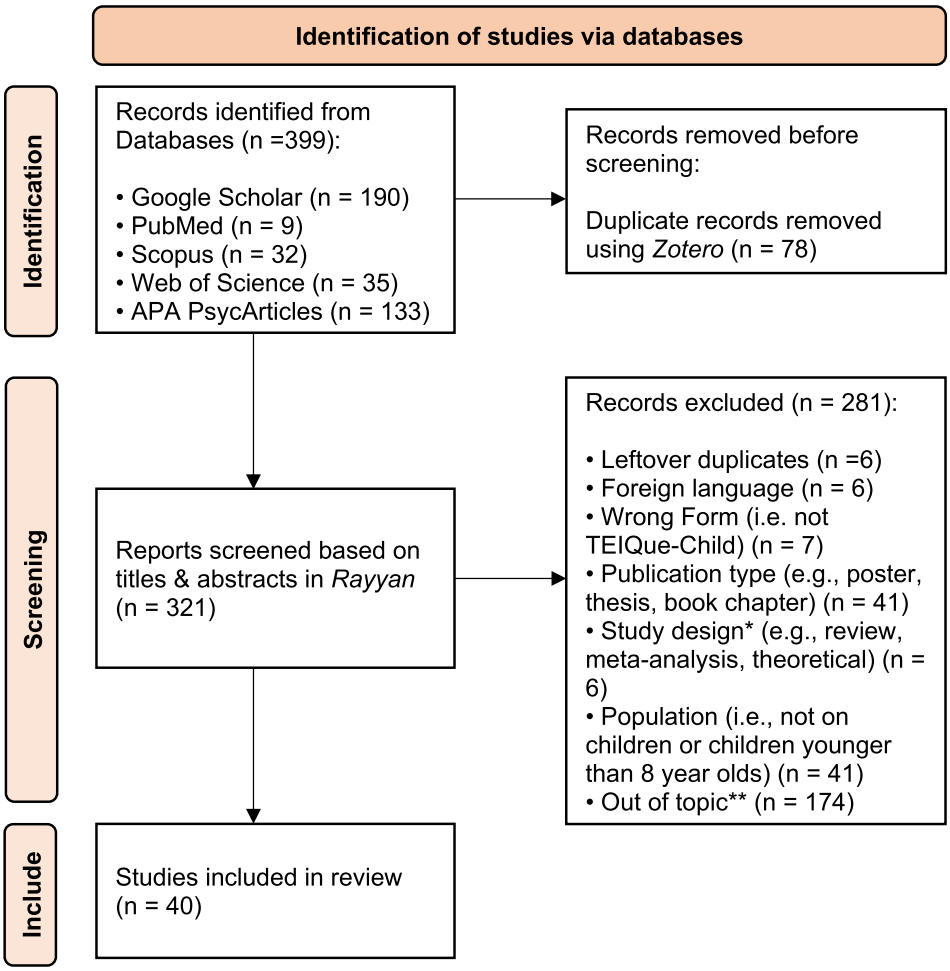
The search identified 403 studies. Figure 1 shows a flow diagram of the data extraction process. First, duplicate records (79) were removed via Zotero 6.0.27 [34]. Second, the remaining reports (324) were screened based on their titles and abstracts in Rayyan [35]. As a result of this identification and screening process, which was conducted jointly by the first and last authors, 40 studies were included in this systematic literature review, meeting all the search and inclusion criteria that we established.

Quality assessment

In this systematic review, sources of biases are assessed via an adapted Effective Public Health Practice Project (EPHPP) tool [36]. While the final decision regarding this assessment for each individual study can be seen in the Supplementary Table 4, Table 2 briefly describes the components of the assessment.

Results

Forty studies are reviewed to identify the relationships between trait EI and variables related to different domains of child development, such as personality, cognition, and socioemotional and behavioral experiences; to evaluate programs and interventions designed to enhance emotional competence in children; and to summarize the psychometric properties of the available translated versions—French, Italian, Serbian, Turkish and Urdu—of the TEIQue-Child Forms. The results of the literature review are summarized in Supplementary Table 2; an overview of the study and sample characteristics of the studies examined in this systematic review can be found in Supplementary Table 3.



* In addition to the incompatibility of the study design, most of them did not involve children.

** This category includes multiple non-compliance with selection criteria (e.g. adults as subjects; age range 10-17; different method of measurement; EI not considered as TEI; psychometric studies of different measures).

Fig. 1 PRISMA 2020 flow diagram

Table 2 Adapted EPHPP tool content (Effective Public Health Practice Project, 1998)

Component	Description
Selection Bias	The extent to which participants are representative of the target population.
Study Design	Type of study and randomization process.
Confounders	Control of confounding variables.
Blinding	Awareness of the outcome assessor and study participants.
Data Collection Methods	Validity and reliability of data collection tools.
Analyses	Appropriateness of the statistical methods chosen for analysis.

The results are summarized below and organized across key outcomes and constructs under several subtitles: (1) *Trait EI and School-Related Outcomes,* (2) *Trait EI, Cognition and Fluid Intelligence,* (3) *Trait EI and Creativity,* (4) *Trait EI and Peer Relations,* (5) *Trait EI and Theory of Mind in Children,* (6) *Interventions to optimize*

trait EI in Children, (7) *Psychometric studies of TEIQue Child Forms*, and (8) *Miscellaneous findings on child trait EI*.

Trait EI School-related outcomes

Several studies have focused on the relationships between trait EI in children and school-related subjects, such as scholastic achievement, classroom factors that contribute to trait EI, and school behavior. Mavroveli et al. [27] investigated the role of trait EI in school maladjustment. The results from the teacher ratings and TEIQue child forms revealed that trait EI was negatively correlated with emotional and behavioral problems, such as conduct problems and hyperactivity, and was positively related to prosocial behavior at school. Furthermore, children with unauthorized absences or exclusions from school (due to reasons such as physical aggression and disruptiveness) had lower TEIQue-CF scores than their peers in the control groups did [27].

In studies that have examined the relationship between academic achievement and trait EI, scores related mainly to the literature and mathematics were obtained. These studies provide mixed evidence on the relationship between trait EI and academic achievement. Mavroveli and Sánchez-Ruiz [37] reported that only math grades of Year 3 pupils were related to trait EI, but grades on reading and writing as well as school achievement of older children were not found to be related to trait EI. However, Agnoli et al. [38] reported that both math and literature classes were predicted by trait EI in children. Conversely, two studies have shown that trait EI is not related to the academic performance of children [15, 39].

One factor that can have an effect on academic achievement is the classroom environment, as it is related to the emotional and learning experiences of children. One study investigated the impact of the classroom climate, as measured by the My Class Inventory Short Form (MCI-SF) [40], on children's EI. The MCI-SF has five scales that measure cohesiveness (of peers), friction (disagreement among students), difficulty (challenge of classroom work), satisfaction (from classes), and competition (among peers in a classroom). The results revealed that trait EI is positively correlated with satisfaction and cohesiveness and negatively correlated with friction, competitiveness and difficulty [41]. Another study examined the effect of trait EI on children's learning performance, not in a physical classroom setting, as most research has done, but on digital game-based learning. Yang et al. [42] developed a game for Taiwanese children to learn English. The assessment of trait EI was a modified version of the TEIQue-CF; the results showed that trait EI was significantly correlated with both gaming and learning experiences. Additionally, high-trait-EI children outperformed their low-trait-EI counterparts both in gaming (d = .99) and learning (d = 1.48) performance. However, the sample size was small, and it is unclear why only data from 30 children were selected for the analyses, even though there were 51 participants.

Trait EI, cognition and fluid intelligence

The relationship between emotional intelligence and other cognitive abilities has emerged as a subject of interest in many studies. It has been concluded that trait EI in children is independent of their cognitive ability [27–29, 43–45]. Most of these studies assessed the nonverbal reasoning abilities of children via Raven's Coloured Progressive Matrices [46].

Three studies [47–49] examined the relationship between trait EI and fluid intelligence, which is defined as the ability to reason abstractly in novel environments and situations [50]. While Li and colleagues [47, 48] used Cattell's Culture Fair Test [51], Li and Shi [49] used Raven's Standard Progressive Matrices [52] to assess fluid intelligence. Similar to those of cognition-focused studies, the results did not reveal a strong link between trait EI and fluid intelligence. Studies comparing gifted and intellectually average children [47, 49] support the hypothesis that trait EI could be more adaptive for children with intellectually average or low intelligence quotient (IQ) [53]. Considering the cognitive changes that occur during the transition from childhood to adolescence, Li et al. [48] investigated the roles of fluid intelligence and trait EI in affective decision-making, which is measured by the Iowa Gambling Task (IGT) [54]. The findings revealed different roles of fluid intelligence and trait EI, while both variables predict affective decision-making in young children aged 8 to 10, only trait EI contributed to this process in early adolescents aged 11 and 12 years [48].

Trait EI and creativity

Creativity is considered to be one of the most essential skills for the times that we live in [55]. Notably, emotional states are essential for the occurrence of creative processes [56]. Two studies in the reviewed literature focused on trait EI and creative potential in children [57, 58]. One may have a potential but be unaware of it; hence, potential needs an opportunity to develop [59]. An intervention could be one instance of such an opportunity. Agnoli et al. [57] investigated the efficiency of Creative Thinking Training for Children (CTT-C), which is based on the creation of fairy tales, with the aim of increasing creative potential in children and exploring the possible moderating role of trait EI as an emotional resource contributing to creativity. The Evaluation of Creative Potential instrument [60], which assesses creative potential as divergent

(i.e., exploratory process of idea generation) and integrative (i.e., synthetic integration of numerous pieces of information to generate original ideas) processes, was used in an experimentally controlled setting. The results revealed that the CTT-C is an effective intervention for increasing the creative potential of children; it can be particularly useful for low scorers of the TEIQue-CSF.

Trait EI and peer relations

Friends or not, peers are crucial during childhood, especially because of their potential to leave a trace in children's well-being. Andrei et al. [29] reported that experiences with peers also have a substantial influence on their scholastic adjustment. In the reviewed literature, some studies also investigated the connection between trait EI and peer relations and covered subjects such as peer-rated prosocial behavior, peer competence, peer acceptance–rejection, and peer bullying–victimization. The results revealed a small but significant negative correlation between trait EI and peer problems [27]. TEIQue-CF scores were related to fewer nominations for being a bully and were positively associated with peer-rated prosocial behavior (i.e., being kind, co-operating, and having leadership qualities as observed by peers) and overall peer competence [28, 37, 61]. There were also significant negative correlations between trait EI and self-rated bullying and victimization [37]. Peachey et al. [62] reported similar findings: trait EI was negatively associated with bullying in general and negatively associated with victimization. However, the latter finding was observed only for boys, not for girls. According to Kouvava et al. [63], children with attention deficit hyperactivity disorder (ADHD) and specific learning disorders have lower scores on friendship variables such as positive (e.g., validation and caring, conflict resolution, intimate exchange) and negative friendship qualities (i.e., conflict and betrayal) and thus have fewer friends than do children in the normal course of development.

Trait EI and theory of mind in children

The theory of mind (ToM) is the ability to understand that one's mental activities, such as knowledge, feelings, and beliefs, may differ from those of others [64]. ToM starts to develop before school age and is nurtured by language, executive functions, make-believe play, and social experiences; it is an evidence of children's capacity for metacognition [20]. Austin [65] stated that ToM and EI are related constructs. The interaction of ToM and EI was investigated by a team, with two studies [66, 67] included in this review. While in their first study [66], Machiavellianism (Mach), models of both EI (i.e., ability and trait) and ToM were explored, the second study [67] aimed to provide the first empirical examination of the relationship between EI and ToM. The TEIQue-CF, as a measure of trait EI, and the false belief and faux pas (advanced ToM) tasks, as measures of ToM, were used in both studies. In brief, false belief tasks aim to test one's ability to acknowledge others' differing knowledge and mental representations, which could be either true or not, compared with one's own knowledge and/or reality itself; the faux pas task has the same objective, yet tests it through a story with two protagonists.

Although there has been little speculation that higher EI, due to a greater ability to perceive emotions in oneself and others, might be associated with high levels of Mach, Barlow et al. [66] reported that girls who scored high on the TEIQue-CF were not manipulative of others in social contexts, which is considered Machiavellian behavior. The results showed that trait EI was negatively associated with Mach, and there was a more robust effect for girls than for boys [66]. The second study [67] included two groups of children (i.e., 5–7-year-olds and 8–10-year-olds). Owing to the age criterion of the sample we sought to focus on, we only report results from the older group of children, who are 8–10 years old. The results revealed that while the TEIQue-CF scores were not associated with the false-belief task, there was a significant small interaction effect between the TEIQue-CF scores and the faux pas task. That is, older children showed higher-level emotional knowledge, and trait EI influences their social behavior.

Interventions to optimize trait EI in children

Seven reviewed studies focused on several interventions designed for children and used TEIQue Child forms to assess trait EI.

Social and Emotional Learning (SEL) programs in Greek primary schools were not only part of the study design but also a nationwide plan as part of the Greek education system. The results of Babalis et al. [68] revealed that children who attended the SEL program scored higher on the TEIQue-CSF. Although EI was associated with high academic achievement, especially in subjects such as math, the students' grades were not significantly different between those who participated in the program and those who did not. However, this study was an outdated pilot training, whose efficiency was checked only with t test analysis.

Knowler and Frederickson [69] evaluated the effectiveness of a 12-week, emotional literacy (EL) group intervention that was designed to reduce bullying behavior and increase trait EI and behavioral adjustment in school-aged children by teaching self-awareness, self-regulation, empathy and social skills. The results revealed that the EL intervention did not have an effect on children's trait EI; children who were already high in EL (both in the

intervention and comparison groups) scored higher on trait EI. In addition, a significant increase between victimization and trait EI was reported for the comparison group, which did not receive the intervention [69]. However, it should be noted that a very small stratified sample with minority ethnic and mixed heritage groups was recruited, and important sociocultural variables were not considered.

The Pyramid intervention is a group-based intervention that was designed to improve socioemotional health in children who present as withdrawn, socially isolated, and emotionally vulnerable [70]. The pyramid intervention model consists of several activities, such as an art activity for creativity and emotion expression, cooperative games on problem-solving skills, role playing in different emotion-related situations, and yoga. Cassidy et al. [70] reported that The Pyramid intervention had a small but significant effect, which was maintained through 12 weeks of follow-up, on internalizing problems and improving children's trait EI scores.

Another intervention, a customized Spiritual Education Program (SEP), was designed to improve the EI of gifted children. The SEP is composed of several themes, such as self-awareness, relational consciousness, unconditional love, and forgiveness; it was developed in English and translated to French, Mandarin and Spanish [71]. Data were collected from 15 different cities around the world by delivering the SEP with spiritual trainers. The TEIQue-CF was administered both before and after the intervention. The results demonstrated that the average post-test TEIQue-CF scores of the gifted children were higher than the pre-test scores (d = .48). In addition to the intervention, self-practice was the most important predictor of the increase in the post-test TEIQue-CF results. However, it was noted that the training program was developed in English, French, Mandarin, and Spanish; this raises the question of the validity of the program and the assessment tools used in other languages, such as Arabic, German, and Japanese, since data were also collected from Cairo, Berlin, and Tokyo. Second, the number of girls was almost half that of boys. Third, there was no control group in the study. Although cross-cultural studies are quite valuable, given the miscellaneous shortcomings mentioned above, it may be better to start with small but more robust design steps and further investigate the effect of such an intervention.

One study [72] examined the effectiveness of another SEL support program for 11- and 12-year-olds who are transitioning to secondary school and may experience challenging experiences due to changes in physiology, cognition, and social functioning. The SEL program developed by Mahmud [73] focuses on developing the self-awareness and empathy skills of pupils. The results revealed that children in the intervention group scored significantly higher on the TEIQue-CF after the intervention.

Pauletto et al. [74] also focused on preadolescents by fostering their (both ability and trait) EI and examined the efficacy of pilot training on emotions, coping and psychological well-being. Both the assessment (e.g., measures of verbal and nonverbal abilities, ability and trait EI measures, and affect-related questionnaires) and content of the thoroughly developed training included many informative and practical sessions (e.g., activities comprising reading, writing, listening, watching and storytelling about emotional awareness, emotional states, ambivalent emotions and emotion regulation skills). However, the results showed that trait EI was not enhanced by the EI intervention program. This was an expected outcome because the intervention program was designed based on the ability model.

Finally, Tiabashvili et al. [75] reported that Mythodrama group work, which was designed to resolve conflict and bullying behavior in schools, is an effective intervention for improving children's trait EI. The children were not randomly assigned to the intervention and control groups; interestingly, the intervention group scored higher than the control group did in terms of the Adaptability and Emotion Expression aspects both before and after the intervention. However, the scores on the Emotion Regulation facet did not improve after the intervention.

Psychometric studies of TEIQue child forms

Psychometric studies of TEIQue forms are highly important for the validity of studies conducted in different cultures and languages. Six studies included in this review conducted validation studies for TEIQue Child forms in English [27], French [76], Italian [44], Serbian [61], Turkish [77], and Urdu [78].

The pioneering work in the area of child trait EI, performed by Mavroveli et al. [27], is composed of two studies and provides satisfactory evidence for internal consistency (a = .76, a = .73), temporal stability ($r = .79$, $r_{(corrected)} = 1$) and construct validity of the original (English) version of the TEIQue-CF. Stassart et al. [76] provided satisfactory evidence for internal consistency (a = .81), temporal stability ($r = .79$), and concurrent and congruent validity of the French TEIQue-CSF. The Italian version of the TEIQue-CF also has a high level of internal consistency (a = .89), although the facets of Adaptability, Emotion Perception, and Emotion Regulation have slightly low Cronbach's alpha values, a = .58, a = .58, and a = .59, respectively. For this reason, although the Italian TEIQue-CF is a highly reliable

assessment of global trait EI, facet scores are advised to be used with caution [44]. According to Banjac et al. [61], the Serbian TEIQue-CF also has a satisfactory level of internal consistency (a = .87), criterion, construct validity and incremental validity. Beyazıt et al. [77] reported that the Turkish adaptation of the TEIQue-CF has a satisfactory level of internal consistency (a = .90), construct validity, and criterion validity. Finally, according to Siddiqui and Ali [78], the TEIQue-CSF Urdu version provides evidence for item-by-item and overall cross-language validation ($r = .95$, $p \leq .01$), internal validity (a = .82), and split-half ($r = .88$) and test-retest ($r = .84$, $p \leq .01$) reliability.

Miscellaneous findings on child trait EI

In the reviewed literature with child samples, there are number of studies employing TEIQue Child Forms for heterogeneous topics diverging from those emphasized and grouped under the aforementioned titles. These are child trait EI and the Big 5, emotion perception, emotion awareness, emotional self-efficacy, loneliness, depression, anxiety, happiness, ADHD, perfectionism, and parents on drug addiction.

Few studies [29, 44, 79] have investigated trait EI and the Big 5 (B5) relationship in Italian children using the TEIQue-CF and the Big Five Questionnaire-Children (BFQ-C) [80]. Studies have reported that the TEIQue-CF global score is moderately related to all B5 dimensions. Only negative correlations were observed between neuroticism (termed emotional instability in the context of children) and child trait EI. Russo et al. [44] also performed a facet-based analysis, and the largest correlations were observed between Affective Disposition and neuroticism ($r = -.51$) and between Self-Motivation and conscientiousness ($r = .54$). The results from regression analyses in these studies showed that the predictive contribution of trait EI in explaining self-reported depression and anxiety remained significant even after controlling for B5 [44] but not in explaining social status indicators and academic performance [29].

Emotion perception, which is a key trait EI facet, is consistently related to affective social competence, prosocial behavior and improved peer relations. According to Mavroveli et al. [28], children who scored higher on the TEIQue-CF performed better on emotion perception measured by the facial expression section of the assessment of children's emotion skills (ACES) [81], as the results revealed significant correlations between trait EI and emotion perception as well as between trait EI and ACES scores. However, perception and awareness are distinct states. Similarly, in the case of emotions, this may not mean that one who perceives emotions is also aware of them. Agnoli et al. [43] aimed to test emotion awareness in children via the Levels of Emotional Awareness Scale for Children (LEAS-C) [82] and the TEIQue-CF. The results revealed that trait EI was positively correlated with emotional awareness in the self and in others. As a result, trait EI was found to be a significant predictor of emotional awareness in children.

Emotion expression is another facet of the trait EI sampling domain. For children in latency and preadolescence, whose emotional knowledge and understanding continue to develop in a more sophisticated way, emotional expression also changes and can become challenging. One way to observe emotional expression in children could be through their drawings. Mancini [79] used emotional indicators (e.g., size of figures, omission of body parts, placement of the arms, inclusion of shading, asymmetry, transparency) listed by Koppitz [83] in the Draw-a-Person (DAP) test [84] to investigate the effect of trait EI on children's drawings as representative of their emotion expression. In brief, the DAP test is a projective drawing task that is often used in psychological assessments of children's emotional dimensions and personality traits. The results of hierarchical regression analysis revealed that trait EI has a significant predictive effect on emotional indicators in children's drawings. In addition, the DAP task and trait EI were positively correlated in children [85].

Loneliness, depression and anxiety are experienced not only by adults and adolescents but also by children. Russo et al. [44] provided evidence for the predictive role of trait EI on depression and anxiety in children. Their results also revealed that trait EI remained a significant negative predictor of both anxiety and depression even after age, gender and the B5 dimensions were added to the two-step hierarchical regression. Additionally, trait EI was found to be negatively correlated with prolonged depressive symptoms, prolonged loneliness [86], and anxiety sensitivity ($r = -.23$, $p < .001$), which is the belief that anxiety-related sensations can lead to harmful consequences [87]. Piqueras et al. [88] also reported a negative correlation between trait EI and emotional problems, such as anxiety and depression.

One of the basic emotions, happiness, was the main focus of research in a study comparing children with and without visual impairment. Raimule and Bhawalkar [89] investigated these relationships via the TEIQue-CSF and the Oxford Happiness Questionnaire (OHQ) [90]. Trait EI and happiness were found to be positively correlated, and OHQ was scored higher by children without visual impairment.

Trait EI is also called trait emotional self-efficacy [2]. Pauletto et al. [45] considered different conceptualizations for trait EI and emotional self-efficacy. While trait EI is about self-perceptions and dispositions, emotional

self-efficacy, as suggested by Caprara et al. [91], is regulatory, which refers to the belief of one in one's own emotion regulation skills. That is, while emotion regulation is one of the main domains of trait emotional self-efficacy, emotional self-efficacy, as suggested by Caprara et al. [91], focuses on emotion regulation only. The results revealed significant positive correlations between trait EI and regulatory self-efficacy, psychological well-being, and adaptive coping strategies [45]. The results revealed that higher scores on the TEIQue-CF predict higher scores for psychological well-being in children [45].

Trait EI was also investigated in children with ADHD. Abo Elella et al. [92] reported that TEIQue-CF global scores and ADHD symptom categories (i.e., impulsivity, cognition, social problems, and emotional liability) were negatively correlated. Kouvava et al. [63], who used only the Low Impulsivity subscale of the TEIQue-CF, reported that children with ADHD scored lower on Low Impulsivity compared to children with specific learning disorders and typical development. Additionally, children who have cognition and learning difficulties and children with behavioral, emotional, and social difficulties score significantly lower than their peers without special educational needs do [37].

In the literature, perfectionism is evaluated both from a positive (e.g., desire for excellence at school) and a negative (e.g., hamper of school and learning process) perspective [93]. However, trait EI was not significantly related to perfectionism, as measured by the Frost Multidimensional Perfectionism Scale (F-MPS) [94], in children [93]. Furthermore, F-MPS is suggested to be administered to children aged 15 and above; in the study of Doktorová and Varečková [93], the mean age of the children was 9. Moreover, considering that F-MPS has many items on parental criticism and parental expectations, which may lead to the development of perfectionism in children, it would be useful to gather data from parents as well. In this study, the sample size is also perplexing. Although Doktorová and Varečková [93] stated that there are 120 children (80 girls and 40 boys) in their abstract, in the latter pages, this number is reported as 240 children (160 girls and 80 boys), which could be a simple typo, yet we could not reach the authors in this regard.

Although parents/guardians play an essential role in child development, only one study in the reviewed literature focused on parents. Aslanidou et al. [95] investigated the trait EI of parents with and without drug addiction and compared the trait EI of offspring in both groups. While parents without addiction scored higher on the TEIQue short form, there were no significant differences between the global trait EI scores of the children. A number of claims have been made about this finding: (1) other caregivers (e.g., grandparents, other family members) may have played a supportive role in the child's development, (2) families with severe problems may have already chosen not to participate, or (3) there may be reporting bias because research results may put their child at risk of being removed from the parents' care [94].

Discussion

Research on emotional intelligence, involving the TEIQue-CF (and the TEIQue-CSF), which was developed with a robust theoretical framework and psychometric principles, is limited or encompasses various small sample sizes. Within the scope of this systematic review, we identified 40 studies that aimed to examine trait EI in children across key constructs and outcomes, such as school behavior, academic success, cognition and creativity. These papers also include studies investigating the efficacy of interventions to increase trait EI in children and studies conducted across different cultural backgrounds, providing a statistical exploration of TEIQue child forms in different languages.

Two studies [41, 88] were conducted under the generic label of EI; that is, they did not clearly specify the EI model they focus on but used a trait EI measure. Four studies explored both ability and trait EI [66, 67, 74, 86], and one study [92] was conducted on emotional competence. Our main goal was to systematically synthesize the studies that specifically used TEIQue Child forms to assess trait EI. For this reason, the results reported in this synthesis and in Supplementary Table 2 are based only on the results obtained via TEIQue Child forms.

Strengths and limitations

As mentioned earlier, one issue that continues to plague EI research is the mismatch of theory and measurement in the studies designed. Forty studies reviewed in this literature, to a very large degree (36/40), explored and investigated trait EI in children with consistency of theory and measurement match. Many studies have explored important themes (e.g., emotion perception, expression and awareness, loneliness, depression, anxiety, school achievement and behavior, creativity, cognition and peer relations) that play crucial roles in children's development. The efficiency of many socioemotional learning intervention programs has also been examined in several countries. Research on intervention efficacy and TEIQue child form validations indicates that research on the construct of trait EI and child well-being is moving in the direction of seeking substantial and practical change, in addition to extending research findings from exploratory studies. The cited studies also contribute to the literature cross-culturally (Supplementary Table 3).

The current systematic review of the literature is the first to address the existing, limited, yet broad in topic, international evidence on trait EI in children. The focus was particularly on the use of TEIQue child forms as valid tools for measuring trait EI in children aged 8–13 years, which highlights the great importance of the differentiation that should be made by EI researchers. A thorough search and selection process (see Fig.1, Supplementary Tables 1 and 2) was conducted for this review following the PRISMA 2020 statements, which allowed a transparent synthesis of the literature.

The most common limitations of the reviewed studies were as follows: (a) pervasiveness of cross-sectional designs; (b) lack of subfacet analysis on trait EI sampling domains; (c) usage of nonvalidated self-report forms; (d) absence of effect size reports from the conducted statistical analyses; and (e) lack of follow-up. Despite their valuable contributions to the literature, several studies require replication and further investigation with varying study designs (e.g., longitudinal and randomized controlled trials) beyond cross-sectional designs to draw more concrete conclusions on the basis of their results, which would also be useful for intervention development.

By including only English-language journal articles and not reporting on grey literature, language bias has certainly been introduced into this work, and some information may have been lost. Additionally, one item of the PRISMA 2020 guidelines was unmet because a preregistered protocol was not available for this review.

Conclusions and future lines of research

A growing body of literature demonstrates that the construct of trait EI has considerable potential for several positive implications in everyday life, not only for adults but also for adolescents and children. The present systematic review presents the literature on child trait EI, which is specifically measured via TEIQue Child forms. Findings from forty systematically synthesized studies show that the TEIQue Child Forms, as well as the validated versions in different languages, can successfully predict a wide variety of outcomes contributing to children's socioemotional and educational experiences both in school and in daily life.

Despite the beneficial contributions of the reviewed literature in exploring and investigating trait EI in children, research constraints are highlighted in this review to inform future work. First, it is imperative to prioritize conducting EI research that aligns theory with measurement methods, avoiding mismatches to prevent misleading results. Second, given the prevalence of cross-sectional studies in the findings of this review, research on trait EI in children would benefit from diversifying research methodologies, such as experimental designs with follow-up procedures. Third, validation studies for the translated versions of the TEIQue forms as well as facet-based analysis are encouraged for future research endeavors. Ultimately, it is important to bear in mind that more robust designs yield more reliable results, which can inform various areas, including school counselling services, educational programs, curriculum design, and policymaking regarding children's well-being.

Abbreviations

ACES	Assessment of Children's Emotion Skills
ADHD	Attention Deficit Hyperactivity Disorder
B5	Big Five
BFQ-C	Big Five Questionnaire-Children
CTT-C	Creative Thinking Training for Children
DAP	Draw-a-Person task
EI	Emotional Intelligence
EL	Emotional Literacy
EPHPP	Effective Public Health Practice Project
F-MPS	Frost Multidimensional Perfectionism Scale
IGT	Iowa Gambling Task
IQ	Intelligence Quotient
LEAS-C	Levels of Emotional Awareness Scale for Children
MARC	Machiavellianism
MCI-SF	My Class Inventory Short Form
OHQ	Oxford Happiness Questionnaire
PRISMA	Preferred Reporting Items for Systematic reviews and Meta-Analyses
SEL	Social and Emotional Learning
SEP	Spiritual Education Program
TEIQue-CF	The Trait Emotional Intelligence Questionnaire-Child Form
TEIQue-CSF	The Trait Emotional Intelligence Questionnaire-Child Short Form
TOM	Theory of Mind

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s40359-024-02094-w.

Supplementary Material 1.

Supplementary Material 2.

Supplementary Material 3.

Supplementary Material 4.

Authors' contributions

Conceptualization: F.A., G.M.; Methodology: G.M.; Investigation: F.A., Z.Ö.; Writing - Original Draft: Z.Ö.; Writing - Review & Editing: E.T., F.A., G.M., R.B., S.M., Z.Ö.; Visualization: Z.Ö.; Supervision: E.T., G.M.; Project Administration: G.M.

Funding

No funding was received to assist with the preparation of this manuscript.

Data availability

The author confirms that all data (i.e., search details, critical details on the reviewed literature, quality analysis, sample and study characteristics) analysed during this study are included as Supplementary Table (4). The full list of articles prior to data extraction (i.e. records identified from databases, $n = 399$) is on request from the corresponding author.

Declarations

Ethics approval and consent to participate

Not applicable.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

Received: 19 July 2024 Accepted: 17 October 2024
Published online: 30 October 2024

References

1. Mayer JD, Caruso DR, Salovey P. The ability model of emotional intelligence: principles and updates. Emot Rev. 2016;8(4):290–300. https://doi.org/10.1177/1754073916639667.
2. Petrides KV, Sanchez-Ruiz MJ, Siegling AB, Saklofske DH, Mavroveli S. Emotional Intelligence as Personality: Measurement and Role of Trait Emotional Intelligence in Educational Contexts. In: Keefer KV, Parker JDA, Saklofske DH, editors. Emotional Intelligence in Education. Cham: Springer International Publishing; 2018. p. 49–81. (The Springer Series on Human Exceptionality); http://link.springer.com/10.1007/978-3-319-90633-1_3. Cited 2024 Jul 17.
3. Pérez-González JC, Saklofske DH, Mavroveli S. Editorial: trait emotional intelligence: foundations, assessment, and education. Front Psychol. 2020;11:608. https://doi.org/10.3389/fpsyg.2020.00608.
4. Erus SM, Deniz ME. The mediating role of emotional intelligence and marital adjustment in the relationship between mindfulness in marriage and subjective well-being. Pegegog. 2020;10(2):317–54. https://doi.org/10.14527/pegegog.2020.011.
5. Szcześniak M, Tułecka M. Family functioning and life satisfaction: the mediatory role of emotional intelligence. PRBM. 2020;13:223–32. https://doi.org/10.2147/PRBM.S240898.
6. Dave HP, Keefer KV, Snetsinger SW, Holden RR, Parker JDA. Predicting the pursuit of post-secondary education: role of trait emotional intelligence in a longitudinal study. Front Psychol. 2019;10:1182. https://doi.org/10.3389/fpsyg.2019.01182.
7. Romano L, Tang X, Hietajärvi L, Salmela-Aro K, Fiorilli C. Students' trait emotional intelligence and perceived teacher emotional support in preventing burnout: the moderating role of academic anxiety. IJERPH. 2020;17(13): 4771. https://doi.org/10.3390/ijerph17134771.
8. Celik P, Storme M. Trait Emotional Intelligence predicts academic satisfaction through career adaptability. J Career Assess. 2018;26(4):666–77. https://doi.org/10.1177/1069072717723290.
9. Farnia F, Nafukho FM, Petrides KV. Predicting career decision-making difficulties: the role of trait emotional intelligence, positive and negative emotions. Front Psychol. 2018;9: 1107. https://doi.org/10.3389/fpsyg.2018.01107.
10. Li M, Pérez-Díaz PA, Mao Y, Petrides KV. A multilevel model of teachers' job performance: understanding the effects of trait emotional intelligence, job satisfaction, and organizational trust. Front Psychol. 2018;9:2420. https://doi.org/10.3389/fpsyg.2018.02420.
11. Mancini G, Mameli C, Biolcati R. Burnout in Italian primary teachers: the predictive effects of trait emotional intelligence, trait anxiety, and job instability. Eur J Psychol. 2022;18(2):168–80. https://doi.org/10.5964/ejop.2685.
12. Baudry A, Grynberg D, Dassonneville C, Lelorain S, Christophe V. Sub-dimensions of trait emotional intelligence and health: a critical and systematic review of the literature. Scandinavian J Psychol. 2018;59(2):206–22. https://doi.org/10.1111/sjop.12424.
13. Kircaburun K, Demetrovics Z, Griffiths MD, Király O, Kun B, Tosuntaş ŞB. Trait emotional intelligence and internet gaming disorder among gamers: the mediating role of online gaming motives and moderating role of age groups. Int J Ment Health Addict. 2020;18(5):1446–57. https://doi.org/10.1007/s11469-019-00179-x.
14. Süral I, Griffiths MD, Kircaburun K, Emirtekin E. Trait Emotional Intelligence and problematic social media use among adults: the Mediating Role of Social Media Use motives. Int J Ment Health Addict. 2019;17(2):336–45. https://doi.org/10.1007/s11469-018-0022-6.
15. Andrei F, Nuccitelli C, Mancini G, Reggiani GM, Trombini E. Emotional intelligence, emotion regulation and affectivity in adults seeking treatment for obesity. Psychiatry Res. 2018;269:191–8. https://doi.org/10.1016/j.psychres.2018.08.015.
16. Oussi A, Bouvet C. Trait emotional intelligence, perceived control, coping styles, and clinical symptoms in panic disorder. Curr Psychol. 2023;42(32):28638–49. https://doi.org/10.1007/s12144-022-03842-0.
17. Pérez JC, Furnham A. Measuring trait emotional intelligence. Emotion Intell. 2005;181:201.
18. Mancini G, Biolcati R, Joseph D, Trombini E, Andrei F, Editorial. Emotional intelligence: current research and future perspectives on mental health and individual differences. Front Psychol. 2022;13: 1049431. https://doi.org/10.3389/fpsyg.2022.1049431.
19. Blos P. On adolescence: a psychoanalytic interpretation. Volume 90433. Simon and Schuster; 1962. ISBN 0029043301, 9780029043301.
20. Berk LE. Development through the lifespan. Sage; 2022. ISBN 9781071895191, 1071895192.
21. Petrides KV, Mikolajczak M, Mavroveli S, Sanchez-Ruiz MJ, Furnham A, Pérez-González JC. Developments in Trait Emotional Intelligence Research. Emot Rev. 2016;8(4):335–41. https://doi.org/10.1177/1754073916650493.
22. Alegre A, Pérez-Escoda N, López-Cassá E. The relationship between trait Emotional Intelligence and Personality. Is trait EI really anchored within the big five, big two and big one frameworks? Front Psychol. 2019;10:866. https://doi.org/10.3389/fpsyg.2019.00866.
23. Petrides KV, Mavroveli S. Theory and applications of trait emotional intelligence. Psychol J Hellenic Psychol Soc. 2018;23(1):24–36. https://doi.org/10.1007/978-3-319-90633-1_3.
24. Bos AER, Muris P, Mulkens S, Schaalma HP. Changing self-esteem in children and adolescents: a roadmap for future interventions. NEJP. 2006;62(1):26–33. https://doi.org/10.1007/BF03061048.
25. Muris P, Meesters C. Small or big in the eyes of the other: on the Developmental psychopathology of self-conscious emotions as shame, guilt, and pride. Clin Child Fam Psychol Rev. 2014;17(1):19–40. https://doi.org/10.1007/s10567-013-0137-z.
26. Castro VL, Halberstadt AG, Garrett-Peters P. A three-factor structure of emotion understanding in third-grade children. Soc Dev. 2016;25(3):602–22. https://doi.org/10.1111/sode.12162.
27. Mavroveli S, Petrides KV, Shove C, Whitehead A. Investigation of the construct of trait emotional intelligence in children. Eur Child Adolesc Psychiatry. 2008;17(8):516–26. https://doi.org/10.1007/s00787-008-0696-6.
28. Mavroveli S, Petrides KV, Sangareau Y, Furnham A. Exploring the relationships between trait emotional intelligence and objective socio-emotional outcomes in childhood. Brit J Edu Psychol. 2009;79(2):259–72. https://doi.org/10.1348/000709908X368848.
29. Andrei F, Mancini G, Mazzoni E, Russo PM, Baldaro B. Social status and its link with personality dimensions, trait emotional intelligence, and scholastic achievement in children and early adolescents. Learn Individ Differ. 2015;42:97–105. https://doi.org/10.1016/j.lindif.2015.07.014.
30. Jellesma FC, Rieffe C, Meerum Terwogt M, Westenberg PM. Children's sense of coherence and trait emotional intelligence: a longitudinal study exploring the development of somatic complaints. Psychol Health. 2011;26(3):307–20. https://doi.org/10.1080/08870440903411021.
31. Frederickson N, Petrides KV, Simmonds E. Trait emotional intelligence as a predictor of socioemotional outcomes in early adolescence. Pers Indiv Differ. 2012;52(3):323–8. https://doi.org/10.1016/j.paid.2011.10.034.
32. Kokkinos CM, Kipritsi E. The relationship between bullying, victimization, trait emotional intelligence, self-efficacy and empathy among preadolescents. Soc Psychol Educ. 2012;15(1):41–58. https://doi.org/10.1007/s11218-011-9168-9.
33. Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ. 2021. https://doi.org/10.1136/bmj.n71.
34. Zotero. Corporation for Digital Scholarship. 2006. https://www.zotero.org/
35. Ouzzani M, Hammady H, Fedorowicz Z, Elmagarmid A. Rayyan—a web and mobile app for systematic reviews. Syst Rev. 2016;5(1):210. https://doi.org/10.1186/s13643-016-0384-4.
36. Quality Assessment Tool for Quantitative Studies. Effective Public Healthcare Panacea Project. 1998. Available from: https://www.ephpp.ca/quality-assessment-tool-for-quantitative-studies/.
37. Mavroveli S, Sánchez-Ruiz MJ. Trait emotional intelligence influences on academic achievement and school behaviour: trait emotional

intelligence. Br J Educ Psychol. 2011;81(1):112–34. https://doi.org/10.1348/2044-8279.002009.
38. Agnoli S, Mancini G, Pozzoli T, Baldaro B, Russo PM, Surcinelli P. The interaction between emotional intelligence and cognitive ability in predicting scholastic performance in school-aged children. Pers Indiv Differ. 2012;53(5):660–5. https://doi.org/10.1016/j.paid.2012.05.020.
39. Hansenne M, Legrand J. Creativity, emotional intelligence, and school performance in children. Int J Educ Res. 2012;53:264–8. https://doi.org/10.1016/j.ijer.2012.03.015.
40. Sink CA, Spencer LR. My class inventory-short form as an accountability Tool for Elementary School counselors to measure Classroom Climate. Prof School Couns. 2005;9(1):2156759X0500900. https://doi.org/10.1177/2156759X0500900112.
41. Erasmus S, Van Eeden R, Ferns I. Classroom factors that contribute to emotional intelligence in the case of primary school learners. SAJCE. 2022;12(1); https://sajce.co.za/index.php/sajce/article/view/1072. Cited 2024 Jul 17.
42. Yang JC, Quadir B, Chen NS. Effects of children's trait emotional intelligence on digital game-based learning. Int J Hum–Comput Interact. 2019;35(4–5):374–83. https://doi.org/10.1080/10447318.2018.1543088.
43. Agnoli S, Mancini G, Andrei F, Trombini E. The relationship between trait Emotional Intelligence, Cognition, and emotional awareness: an interpretative model. Front Psychol. 2019;10:1711. https://doi.org/10.3389/fpsyg.2019.01711.
44. Russo PM, Mancini G, Trombini E, Baldaro B, Mavroveli S, Petrides KV. Trait emotional intelligence and the big five: a study on Italian children and preadolescents. J Psychoeduc Assess. 2012;30(3):274–83. https://doi.org/10.1177/0734282911426412.
45. Pauletto M, Grassi M, Passolunghi MC, Penolazzi B. Psychological well-being in childhood: the role of trait emotional intelligence, regulatory emotional self-efficacy, coping and general intelligence. Clin Child Psychol Psychiatry. 2021;26(4):1284–97. https://doi.org/10.1177/13591045211040681.
46. Raven J. The raven's Progressive matrices: Change and Stability over Culture and Time. Cogn Psychol. 2000;41(1):1–48. https://doi.org/10.1006/cogp.1999.0735.
47. Li D, Liu T, Zhang X, Wang M, Wang D, Shi J. Fluid intelligence, emotional intelligence, and the Iowa gambling task in children. Intelligence. 2017;62:167–74. https://doi.org/10.1016/j.intell.2017.04.004.
48. Li D, Wu M, Zhang X, Wang M, Shi J. The roles of fluid intelligence and emotional intelligence in affective decision-making during the transition to early adolescence. Front Psychol. 2020;11:574903. https://doi.org/10.3389/fpsyg.2020.574903.
49. Li D, Shi J. Fluid intelligence, trait emotional intelligence and academic performance in children with different intellectual levels. High Ability Stud. 2021;32(1):51–69. https://doi.org/10.1080/13598139.2019.1694493.
50. Heitz RP, Unsworth N, Engle RW. Working Memory Capacity, Attention Control, and Fluid Intelligence. In: Handbook of Understanding and Measuring Intelligence. 2455 Teller Road, Thousand Oaks California 91320 United States: SAGE Publications, Inc.; 2005. p. 61–78. Available from: https://sk.sagepub.com/reference/handbook-of-understanding-and-measuring-intelligence/n5.xml. Cited 2024 Jul 17.
51. Cattell RB 1905–1998., Cattell AKS, Institute for personality and ability testing. Measuring intelligence with the culture fair tests. Champaign, Ill.: Institute for Personality and Ability Testing; 1960. OCLC 27022182.
52. Raven J. Raven Progressive Matrices. In: McCallum RS, editor. Handbook of Nonverbal Assessment. Boston: Springer US; 2003. p. 223–37. Available from: https://doi.org/10.1007/978-1-4615-0153-4_11.
53. Petrides KV, Frederickson N, Furnham A. The role of trait emotional intelligence in academic performance and deviant behavior at school. Pers Indiv Differ. 2004;36(2):277–93. https://doi.org/10.1016/S0191-8869(03)00084-9.
54. Bechara A, Damasio AR, Damasio H, Anderson SW. Insensitivity to future consequences following damage to human prefrontal cortex. Cognition. 1994;50(1–3):7–15. https://doi.org/10.1016/0010-0277(94)90018-3.
55. Barbot B, Besançon M, Lubart T. Creative potential in educational settings: its nature, measure, and nurture. Educ 3–13. 2015;43(4):371–81. https://doi.org/10.1080/03004279.2015.1020643.
56. Agnoli S, Corazza GE. Emotions: The Spinal Cord of the Creative Thinking Process. In: Beghetto RA, Corazza GE, editors. Dynamic Perspectives on Creativity. Cham: Springer International Publishing; 2019. p. 47–65. (Creativity Theory and Action in Education; vol. 4). Available from: https://link.springer.com/10.1007/978-3-319-99163-4_4. Cited 2024 Jul 17.
57. Agnoli S, Pozzoli T, Mancini G, Franchin L, Mastria S, Corazza GE. This is my fairy tale: how emotional intelligence interacts with a training intervention in enhancing children's creative potential. J Creative Behav. 2022;56(3):465–82. https://doi.org/10.1002/jocb.541.
58. Agnoli S, Mastria S, Mancini G, Corazza GE, Franchin L, Pozzoli T. The dynamic interplay of affective, cognitive and contextual resources on children's creative potential: the modulatory role of trait emotional intelligence. J Intell. 2023;11(1):11. https://doi.org/10.3390/jintelligence11010011.
59. Lubart T, Zenasni F, Barbot B. Creative potential and its measurement. Int J Talent Dev Creativity. 2013;1(2):41–51.
60. Lubart TI, Besançon M, Barbot B. Evaluation Du Potentiel Créatif (EPoC). Paris, France: Editions Hogrefe; 2011.
61. Banjac S, Hull L, Petrides KV, Mavroveli S. Validation of the Serbian adaptation of the trait Emotional Intelligence Questionnaire-Child form (TEIQue-CF). Psihologija. 2016;49(4):375–92. https://doi.org/10.2298/PSI1604375B.
62. Peachey AA, Wenos J, Baller S. Trait Emotional Intelligence related to bullying in Elementary School Children and to victimization in boys. Occup Particip Health. 2017;37(4):178–87. https://doi.org/10.1177/1539449217715859.
63. Kouvava S, Antonopoulou K, Kokkinos CM, Ralli AM, Maridaki-Kassotaki K. Friendship quality, emotion understanding, and emotion regulation of children with and without attention deficit/hyperactivity disorder or specific learning disorder. Emotion Behav Difficult. 2022;27(1):3–19. https://doi.org/10.1080/13632752.2021.2001923.
64. Bailey CS, Rivers SE. An overview of emotional intelligence in early childhood. In Dacre Pool L, Qualter P, editors. An introduction to emotional intelligence. 1st ed. Hoboken: Wiley; 2018. p. 64–80.
65. Austin EJ. Trait and ability conceptualizations of emotional intelligence. In Dacre Pool L, Qualter P, editors. An introduction to emotional intelligence. 1st ed. Hoboken: Wiley; 2018. p. 18-31.
66. Barlow A, Qualter P, Stylianou M. Relationships between Machiavellianism, emotional intelligence and theory of mind in children. Pers Indiv Differ. 2010;48(1):78–82. https://doi.org/10.1016/j.paid.2009.08.021.
67. Qualter P, Barlow A, Stylianou MS. Investigating the relationship between trait and ability emotional intelligence and theory of mind. Br J Dev Psycho. 2011;29(3):437–54. https://doi.org/10.1348/026151010X502999.
68. Babalis T, Tsoli K, Artikis CT, Mylonakou-Keke I, Xanthakou Y. The impact of social and emotional learning programs on the emotional competence and academic achievement of children in Greek Primary School. WJE. 2013;3(6):p54. https://doi.org/10.5430/wje.v3n6p54.
69. Knowler C, Frederickson N. Effects of an emotional literacy intervention for students identified with bullying behaviour. Educ Psychol. 2013;33(7):862–83. https://doi.org/10.1080/01443410.2013.785052.
70. Cassidy T. Group-Based Intervention to Improve Socio-Emotional Health in Vulnerable Children. JPCPY. 2014;1(7). https://doi.org/10.15406/jpcpy.2014.01.00045. Cited 2024 Jul 19.
71. Pandya SP. Spiritual education program for improving the emotional intelligence of gifted children: a multi-city single-group evaluation study. Gifted Talented Int. 2017;32(2):120–33. https://doi.org/10.1080/15332276.2018.1537138.
72. Mahmud A. A context-specific social and emotional learning programme to support adolescents following the transition to secondary school. Pastoral Care Educ. 2021;39(4):329–47. https://doi.org/10.1080/02643944.2020.1827285.
73. Mahmud A. The role of social and emotional learning during the transition to secondary school: an exploratory study. Pastoral Care Educ. 2020;38(1):23–41. https://doi.org/10.1080/02643944.2019.1700546.
74. Pauletto M, Grassi M, Pellizzoni S, Penolazzi B. Fostering emotional intelligence in preadolescence: effects of a pilot training on emotions, coping and psychological well-being. Clin Child Psychol Psychiatry. 2022;28(2):567–79. https://doi.org/10.1177/13591045221105189.
75. Tiabashvili T, Mirtskhulava R, Japaridze M. Increasing emotional intelligence among early adolescents: mythodrama group psychotherapy approach. Pec. 2015;66(1):67–74. https://doi.org/10.33225/pec/15.66.67.
76. Stassart C, Etienne AM, Luminet O, Kaïdi I, Lahaye M. The psychometric properties of the french version of the trait emotional intelligence questionnaire–child short form. J Psychoeduc Assess. 2017;37(3):293–306. https://doi.org/10.1177/0734282917740499.

77. Beyazit U, Yurdakul Y, Ayhan AB. The psychometric properties of the Turkish version of the trait emotional intelligence questionnaire–child form. SAGE Open. 2020;10(2):215824402092290. https://doi.org/10.1177/2158244020922904.
78. Siddiqui M, Ali AZ. Translation And Adaptation Of Satisfaction With Life Scale-Children, Trait Emotional Intelligence Scale-Child Short Form And Brief Cope. Pakistan J Clin Psychol. 2018;17(2). https://pjcpku.com/index.php/pjcp/article/view/36.
79. Mancini G. Trait Emotional Intelligence and draw-A-Person emotional indicators: a first study on 8-Year-old Italian children. Child Ind Res. 2019;12(5):1629–41. https://doi.org/10.1007/s12187-018-9601-0.
80. Barbaranelli C, Caprara GV, Rabasca A, Pastorelli C. A questionnaire for measuring the big five in late childhood. Pers Indiv Differ. 2003;34(4):645–64. https://doi.org/10.1016/S0191-8869(02)00051-X.
81. Schultz D, Izard CE, Bear G. Children's emotion processing: relations to emotionality and aggression. Develop psychopathol. 2004;16(02). https://doi.org/10.1017/S0954579404044566. Cited 2024 Jul 19.
82. Lane RD, Quinlan DM, Schwartz GE, Walker PA, Zeitlin SB. The levels of emotional awareness scale: a cognitive-developmental measure of emotion. J Pers Assess. 1990;55(1–2):124–34. https://doi.org/10.1080/00223891.1990.9674052.
83. Koppitz EM. Psychological evaluation of children's human figure drawings. New York: Grune & Stratton; 1968.
84. Goodenough FL. Measurement of intelligence by drawings. Oxford: World Book Co.; 1926.
85. Mancini G, Passini S, Biolcati R. The influence of trait emotional intelligence and gender interaction on draw-a-person emotional indicators during childhood. Child Ind Res. 2020;13(4):1187–201. https://doi.org/10.1007/s12187-019-09690-y.
86. Davis SK, Nowland R, Qualter P. The role of Emotional Intelligence in the maintenance of depression symptoms and loneliness among children. Front Psychol. 2019;10:1672. https://doi.org/10.3389/fpsyg.2019.01672.
87. Stassart C, Dardenne B, Etienne AM. Specificity of gender role orientation, biological sex and trait emotional intelligence in child anxiety sensitivity. Pers Indiv Differ. 2014;71:165–70.
88. Piqueras JA, Mateu-Martínez O, Cejudo J, Pérez-González JC. Pathways into psychosocial adjustment in children: modeling the effects of trait emotional intelligence, social-emotional problems, and gender. Front Psychol. 2019;10:507. https://doi.org/10.3389/fpsyg.2019.00507.
89. Raimule M, Bhawalkar J. A comparative assessment of emotional intelligences and happiness index among normal sighted and visually impaired students. Int J Community Med Public Health. 2015;431–4. https://doi.org/10.18203/2394-6040.ijcmph20150921.
90. Hills P, Argyle M. The Oxford Happiness Questionnaire: a compact scale for the measurement of psychological well-being. Pers Indiv Differ. 2002;33(7):1073–82.
91. Caprara GV, Di Giunta L, Eisenberg N, Gerbino M, Pastorelli C, Tramontano C. Assessing regulatory emotional self-efficacy in three countries. Psychol Assess. 2008;20(3):227–37. https://doi.org/10.1037/1040-3590.20.3.227.
92. Abo Elella E, Hassan GAM, Sabry W, Hendawy H, Shorub E, Zyada F, et al. Trait emotional intelligence in a sample of Egyptian children with attention deficit hyperactivity disorder. Child Adoles Ment Health. 2017;22(4):216–23. https://doi.org/10.1111/camh.12236.
93. Doktorová D, Varečková Ľ. An investigation into Interrelations between Trait Emotional Intelligence and Perfectionism in Middle School aged children. PO. 2021;12(3):336–49. https://doi.org/10.18662/po/12.3/343.
94. Frost RO, Marten PA. Perfectionism and evaluative threat. Cogn Ther Res. 1990;14(6):559–72. https://doi.org/10.1007/BF01173364.
95. Aslanidou GS, Petrides KV, Stogiannidou A. Trait emotional intelligence profiles of parents with drug addiction and of their offspring. Front Psychol. 2018;9:1633. https://doi.org/10.3389/fpsyg.2018.01633.

Publisher's Note