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Perceived Parental Emotional Availability, Emotion Regulation, and Health-Related Quality of Life in Adolescents

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Abstract

This study examines differences in perceived parental emotional availability, emotion regulation (ER), and health-related quality of life (HRQoL) among adolescents, considering gender, age, and family structure. It also assesses contextual differences in ER (at home vs. at school) and investigates the mediating role of ER in the relationship between perceived parental emotional availability and HRQoL. The sample consisted of 202 Portuguese adolescents (M age = 13.44 years, SD = 1.01; 52.5% girls) who participated in this cross-sectional study. Self-report scales were used to assess perceived emotional availability, ER, and HRQoL, with data collected during classes using a paper-and-pencil procedure. The results showed that girls' perceptions of mother and father emotional availability were smaller than perceptions reported by boys; girls reported lower HRQoL. Also, adolescents from divorced/separated families reported higher levels of expressive suppression at home and lower HRQoL. Both maternal and paternal perceived emotional availability were positively associated with better HRQoL in adolescents. Furthermore, expressive suppression (within the home context) and cognitive reappraisal (within the school context) partially explained these associations. These findings have important implications for both practice and research, highlighting the significance of perceived parental emotional availability and the role of ER in enhancing adolescents' HRQoL.

Keywords: parental emotional ability; emotion regulation; quality of life; adolescence

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1. Introduction

The adolescent stage of life is characterized by biological growth, psychological changes, and major social role transitions, a multitude of changes that contribute to the shaping of an individual's overall health and well-being (Patton et al. 2016; Sawyer et al. 2012). However, because adolescence is a period of significant change and growth, young individuals may face various challenges to their personal development. Health-related quality of life (HRQoL) holds particular importance since this developmental stage is accompanied by the emergence of various risk factors that can potentially exert enduring effects on long-term well-being and health (Patton et al. 2016; Sawyer et al. 2012). It can be defined as a "multidimensional construct covering physical, emotional, mental, social, and behavioral components of well-being and functioning" (Ravens-Sieberer et al. 2014, p. 792) and is considered by some authors to be an important health indicator (Ravens-Sieberer et al. 2006).

Adolescents' HRQoL can be influenced by various factors, which can be categorized into two overarching groups: (1) personal characteristics and (2) social characteristics (Gaspar et al. 2012). In terms of personal characteristics, age has been identified as a significant factor influencing adolescents' HRQoL, with studies consistently indicating a decline in HRQoL as individuals progress through adolescence (e.g., Meade and Dowswell 2016). Furthermore, gender differences have been observed, with girls tending to report lower HRQoL compared to boys (e.g., Langeland et al. 2019; Otto et al. 2017). The existing body of research also underscores the significant influence of family structure on HRQoL outcomes. Specifically, studies have shown that adolescents living in households with both parents (nuclear families) exhibit higher HRQoL compared to their counterparts in single-parent families or stepfamilies (e.g., Houben-van Herten et al. 2015; Rattay et al. 2018). Alongside age, gender, and family structure, personal factors such as self-esteem, personality traits, resilience, optimism, and perceived stress have also been found to impact adolescents' HRQoL (e.g., Freire and Ferreira 2018; Gaspar et al. 2012).

In addition to personal characteristics, social factors—including the parent–child relationship—play a significant role in shaping adolescents' HRQoL (e.g., Buehler 2020; Gaspar et al. 2012; Gomes et al. 2020; Jiménez-Iglesias et al. 2015; Otto et al. 2017). According to the Tripartite Model of Emotion Regulation, proposed by Morris et al. (2017), the development of emotion regulation (ER) in adolescence results from dynamic interactions among individual, familial, and contextual factors. The model highlights the continued influence of parents through emotional modeling, emotion-related parenting practices, and the quality of the parent–adolescent relationship. Adolescents' ER is conceptualized as a key mechanism linking these influences to adolescent adjustment, with both intrapersonal and interpersonal regulation processes considered.

Perceived parental emotional availability, defined as the level of parental responsiveness, sensitivity, and emotional involvement, has emerged as a key factor in promoting healthy adolescent development (Lum and Phares 2005). For example, perceived parental emotional availability has been linked to better psychological health (Gökçe and Yılmaz 2018), fewer aggressive behaviors, fewer depressive symptoms in adolescents (Babore et al. 2016, 2017), and fewer internalizing and externalizing problems (Lum and Phares 2005). There is some evidence for age and gender differences, with boys and younger adolescents reporting higher perceived parental emotional availability than girls and older adolescents, especially regarding fathers (e.g., Babore et al. 2014). However, other studies have found no gender or age differences (e.g., Gökçe and Yılmaz 2018).

However, gaps in knowledge remain regarding the specific mechanisms through which parent–child relationships, particularly perceptions of parental emotional availability, influence adolescents' HRQoL. Therefore, this investigation is particularly significant as it seeks to unravel the underlying mechanisms that shed light on the complexities of this connection, specifically by examining the potential mediating role of ER, defined as "the processes by which individuals influence which emotions they have, when they have them, and how they experience and express these emotions" (Gross 1998, p. 275). As proposed by the model of Morris et al. (2017), adolescents' ER plays a central mediating role in the relationship between parental and family variables and adolescents' psychological adjustment. Indeed, ER is highly influenced by parenting and parent-related factors, through children's observation of parental emotion regulation (e.g., emotion contagion), emotion-related parenting practices (e.g., reactions to emotions), and the emotional climate prevailing within the family (Morris et al. 2017; Silvers 2022). Furthermore, ER is likely to influence adolescents' outcomes (e.g., Martín-Albo et al. 2020; Teixeira et al. 2015; Verzeletti et al. 2016). Thus, understanding its role is crucial for elucidating the mechanisms through which parental involvement may affect adolescents' HRQoL.

ER plays a vital role in the socioemotional adjustment of adolescents (Lennarz et al. 2019; Riediger and Klipker 2014; Silvers 2022). The multitude of challenges experienced during adolescence, including changes in relationships (e.g., conflicts with parents) and the onset of psychopathological symptoms (e.g., anxiety and depression), is intricately linked to emotions (e.g., Branje 2018). Consequently, there is a heightened need for adolescents to effectively regulate their affect and behavior to navigate these challenges successfully (Silvers 2022).

Two common strategies that are used to regulate emotions and that have been investigated to examine patterns of ER use are cognitive reappraisal and expressive suppression (Gross 2015; McRae and Gross 2020). Cognitive reappraisal aims to modify an emotional response before it is generated by reappraising the meaning of the situation, while expressive suppression aims to modulate an emotional response that has already been generated by inhibiting emotion-expressive behaviors (Gross 2015). For this reason, they have been linked to different outcomes. In the context of adolescence, cognitive reappraisal has been consistently associated with lower levels of depressive symptoms (Martín-Albo et al. 2020), as well as higher levels of psychological well-being, self-esteem, and life satisfaction (Teixeira et al. 2015; Verzeletti et al. 2016).

In contrast, expressive suppression has been consistently linked to unfavorable outcomes, including the development of internalizing and externalizing symptoms, eating disorders, peer victimization, relational aggression, feelings of loneliness, and reduced self-perceived social competence (see Compas et al. 2017; Gross and Cassidy 2019, for a review). However, it is important to note that the potential positive or negative effects of expressive suppression are contingent upon contextual factors (e.g., time and location, the individual from whom the child conceals emotions, and the adolescent's goals) (Gross and Cassidy 2019). The same applies to cognitive reappraisal. Thus, in this study, we examined differences in the use of these ER strategies according to context (at home vs. at school). While there is a dearth of prior research investigating the influence of context on ER among adolescents, existing studies involving adults have offered insights into the pivotal role of context in the selection of diverse ER strategies. For instance, suppression has been specifically linked to social features, being employed more frequently in the presence of others, particularly in situations involving non-close individuals (English et al. 2017).

In terms of gender differences, one study found that girls used cognitive reappraisal and expressive suppression more often than boys (Lennarz et al. 2019). However, other studies have suggested that boys tend to report more expressive suppression than girls, with no gender differences for cognitive reappraisal (Gullone et al. 2010; Martín-Albo et al. 2020; Teixeira et al. 2015; Verzeletti et al. 2016). Regarding age, findings on the use of cognitive reappraisal in adolescents are inconsistent. Some studies suggest that older adolescents employ more cognitive reappraisal strategies due to advancements in cognitive functioning. However, other studies have found no significant age-related differences in the use of cognitive reappraisal (Verzeletti et al. 2016) or suppression (Verzeletti et al. 2016). Conversely, one study found that younger adolescents tend to use more cognitive reappraisal and more expressive suppression than older adolescents (Gullone et al. 2010).

The Present Study

This study aims to (1) examine differences in perceived parental emotional availability, ER, and HRQoL based on gender, age, and family structure; (2) assess contextual differences in ER (at home vs. at school); and (3) investigate the mediating role of ER in the relationship between perceived parental emotional availability and HRQoL. We aim to answer three research questions (RQs):

RQ1: Are there differences in the study variables (i.e., perceived parental emotional availability, ER, and HRQoL) based on gender, age, and family structure? Based on previous studies, we hypothesized that girls, older adolescents, and adolescents from single-parent families or stepfamilies would report lower HRQoL (e.g., Houben-van Herten et al. 2015; Langeland et al. 2019; Meade and Dowswell 2016; Otto et al. 2017; Rattay et al. 2018); that boys and younger adolescents would report higher perceived parental emotional availability (Babore et al. 2014); and that girls and younger adolescents would report greater use of cognitive reappraisal and expressive suppression (Gullone et al. 2010; Lennarz et al. 2019).

RQ2: Do differences exist in ER between home and school contexts? Based on the literature emphasizing the role of contextual factors in shaping the use of ER strategies (Gross and Cassidy 2019), we expect that adolescents will use different strategies in different contexts. Specifically, we hypothesize that adolescents will use more cognitive reappraisal at home and more expressive suppression at school, since suppression is employed more frequently in the presence of others, particularly in situations involving non-close individuals (English et al. 2017).

RQ3: Does ER mediate the relationship between perceived parental emotional availability and adolescents' HRQoL? Given the significant influence attributed to perceived parental emotional availability in shaping various outcomes for adolescents, we hypothesized that adolescents' perceptions of their parents' emotional availability would influence the adoption and use of more adaptive ER strategies (Morris et al. 2017; Silvers 2022), which, in turn, would contribute to enhanced psychological well-being and adaptive functioning across various domains of life (e.g., Hu et al. 2014).

2. Materials and Methods

2.1. Participants

The sample for this study consisted of 202 adolescents (M age = 13.44 years, SD = 1.01; 52.5% female; age range: 12–17 years). In terms of education, 31.5% were in 7th grade, 33.5% in 8th grade, and 35% in 9th grade. Only 12.7% were retained students (i.e., students who did not advance to the next grade level and were required to repeat the same grade for another academic year), and 12.1% reported having a chronic disease, primarily asthma.

Regarding the family context, 57.4% had parents who were married or living together, with an average relationship duration of 17 years (SD = 4.66), while 41.6% had divorced or separated parents, with an average duration of 8.91 years (SD = 4.54). On average, participants had 1.4 siblings (Mdn = 1). The mean age of mothers was 44.30 years (SD = 5.44), and the mean age of fathers was 47.18 years (SD = 6.17) (see Table 1 for details).

Table 1. Sociodemographic characteristics by adolescents' gender (N = 202).

Variables	Girls		Boys	
	M	**SD**	**M**	**SD**
Participants' age	13.33	0.97	13.56	1.05
Mothers' age	44.41	5.53	44.19	5.38
Fathers' age	47.58	6.63	46.79	5.68
	n	**%**	**n**	**%**
Education				
7th grade	36	34.3	27	28.4
8th grade	33	31.4	34	35.8
9th grade	36	34.3	34	35.4
Retained students	10	9.7	15	16.0

Table 1. *Cont.*

Variables	Girls		Boys	
	n	%	n	%
Chronic disease	15	14.4	9	9.5
Parents' marital status				
Married	55	51.9	61	63.5
Divorced	50	47.2	34	35.4

Note. M = mean; SD = standard deviation.

2.2. Measures

2.2.1. Emotional Availability of Parents

Perceived parental emotional availability was measured using the Lum Emotional Availability of Parenting (LEAP) scale (Lum and Phares 2005; Portuguese version: Brandão and Simão 2024). The LEAP consists of 15 items for mothers and 15 items for fathers, each rated on a 6-point Likert scale ranging from 1 (never) to 6 (always), with higher scores indicating greater perceived parental emotional availability. The scale assesses perceptions of both mothers and fathers and demonstrates a single-factor structure (Brandão and Simão 2024). In this study, Cronbach's alpha was 0.95 for both the mother and father subscales.

2.2.2. Emotion Regulation

ER was measured using the Emotion Regulation Questionnaire for Children and Adolescents (ERQ–CA) (Gullone and Taffe 2012; Portuguese version: Teixeira et al. 2015). The ERQ–CA is based on the original ERQ developed by Gross and John (2003), which contains 10 items that assess two types of emotion regulation strategies: cognitive reappraisal (6 items; e.g., "When I want to feel less negative emotion (such as sadness or anger), I change what I'm thinking about") and expressive suppression (4 items; e.g., "I keep my emotions to myself"). Participants rate each item on a 7-point Likert-type scale ranging from 1 (strongly disagree) to 7 (strongly agree), with higher scores indicating greater use of the corresponding ER strategy. To enhance completion by children and adolescents, Gullone and Taffe (2012) revised the wording of the items (e.g., changing "I control my emotions by not expressing them" to "I control my feelings by not showing them") and reduced the response scale to five points, ranging from 1 (strongly disagree) to 5 (strongly agree).

For this study, the protocol included the ERQ–CA questionnaire twice, with adolescents being asked to report on their use of emotion regulation strategies at home and at school. In this study, Cronbach's alpha for expressive suppression was 0.79 at home and 0.66 at school (with one item—item 2—removed for the school context); for cognitive reappraisal, Cronbach's alpha was 0.78 at home and 0.76 at school. The relatively low value for expressive suppression at school was also observed in Teixeira et al. (2015) (Cronbach's alpha = 0.65).

2.2.3. Health-Related Quality of Life

HRQoL was assessed using the KIDSCREEN-10 Index (Ravens-Sieberer et al. 2014; Portuguese version: Gaspar and Matos 2008), a short version of the KIDSCREEN instrument developed to provide a global measure of well-being in children and adolescents. The index includes 10 items selected from the KIDSCREEN-27 through Rasch analysis, covering key aspects of physical, psychological, and social functioning. Respondents rated each item on a 5-point Likert scale reflecting frequency or intensity over the past week. Scores were summed and transformed according to the scoring guidelines, with higher scores indicating better perceived health-related quality of life (HRQoL).

For the purposes of this study, the KIDSCREEN-10 was calculated using the corresponding 10 items from the fully administered KIDSCREEN-27. Internal consistency was good (Cronbach's $\alpha = 0.81$). This approach allowed for the analysis of a single outcome variable, rather than conducting ten separate models for each of the five KIDSCREEN-27 domains by two independent variables (mother's and father's perceived emotional availability), which would have substantially increased the number of statistical tests and the risk of Type I error associated with multiple testing.

2.3. Procedure

This cross-sectional study was conducted in one urban public school after obtaining approval from the School Executive Staff and the Ethics Committee of || removed for blind review ||. Prior to data collection, this study's purpose and details were communicated to parents through information sent home with the children. Only students who returned a signed parental consent form were allowed to participate. Before participation, the adolescents themselves also provided informed assent, ensuring their voluntary involvement in this study. No incentives were provided for participation. Data were collected using a paper-and-pencil format during classroom sessions, with each participant completing the measures individually. The data collection period spanned from January to March 2023, and the average time required for each participant to complete the process was approximately 30 min. The researcher was present to provide clarification and address any questions or concerns raised by participants during data collection.

During the preparation of this work, the authors used ChatGPT (version o4-mini) to support the writing process in the following ways: to clarify text for improved readability; to suggest alternative formulations of sentences, particularly when aiming to simplify language or ensure consistency in tone; and to help identify grammatical or stylistic issues in early versions of the manuscript. After using this tool, the authors reviewed and edited the content as needed, and they take full responsibility for the content of the publication.

2.4. Data Analysis

The data collected for this study were analyzed using the statistical software package SPSS (v.28). Descriptive statistics, including means and standard deviations, were calculated to summarize the data. Pearson correlations were conducted to explore relationships among the study variables. To assess differences between groups based on gender, age, and family structure (married parents, n = 116, vs. divorced/separated parents, n = 84), independent *t*-tests were used. For this purpose, the sample was divided into two age groups according to developmental theories (e.g., Collins and Steinberg 2008): group 1 corresponded to early adolescence (12–13 years; n = 106), and group 2 corresponded to middle adolescence (14–17 years; n = 93). To examine differences in cognitive reappraisal and expressive suppression between home and school contexts, paired-sample t-tests were used.

To test the mediational models, the PROCESS macro (model 4) for SPSS (Hayes 2017) was used. Two models were tested: the independent variable was perceived parental emotional availability (separately for mothers and fathers, as reported by the adolescents); the mediators were expressive suppression and cognitive reappraisal (both at home and at school); and the dependent variable was HRQoL (as measured by the KIDSCREEN-10 Index). Direct, indirect, and total effects were examined. Indirect effects were evaluated using bootstrap resampling, with significance determined by whether the 95% confidence intervals (CIs) excluded zero. Unstandardized coefficients were reported. In all analyses, statistical significance was set at $p < 0.05$.

3. Results

3.1. Descriptive Statistics and Correlations

Descriptive statistics for all study variables and Pearson correlations are presented in Table 2. Mothers' perceived emotional availability was positively correlated with fathers' perceived emotional availability, cognitive reappraisal (both at home and at school), and HRQoL and negatively correlated with expressive suppression (only at home). Fathers' perceived emotional availability was positively correlated with cognitive reappraisal (only at school) and HRQoL and negatively correlated with expressive suppression (both at home and at school).

Table 2. Descriptive statistics and correlations among study variables (N = 202).

Variables	M (SD)	1	2	3	4	5	6
1. LEAP mother	4.97 (1.01)	-					
2. LEAP father	4.78 (1.04)	0.547 **	-				
3. Cognitive reappraisal at home	3.38 (0.73)	0.235 **	0.100	-			
4. Cognitive reappraisal at school	3.37 (0.70)	0.267 **	0.276 **	0.680 **	-		
5. Expressive suppression at home	2.84 (0.99)	−0.375 **	−0.289 **	−0.023	−0.054	-	
6. Expressive suppression at school	2.86 (0.90)	−0.138	−0.153 *	0.063	0.054	0.546 **	-
7. HRQoL (KIDSCREEN-10 index)	3.66 (0.66)	0.550 **	0.531 **	0.269 **	0.421 **	−0.481 **	−0.304 **

Note. * $p < 0.05$; ** $p < 0.001$.

Cognitive reappraisal (at home and at school) was positively correlated with HRQoL, while expressive suppression (at home and at school) was negatively correlated with HRQoL. Cognitive reappraisal and expressive suppression (at home and at school) were not significantly correlated.

3.2. Differential Analyses

3.2.1. Gender Differences

In terms of gender differences, we found significant differences in perceptions of mothers' emotional availability ($t(199) = -3.65$, $p < 0.001$), perceptions of fathers' emotional availability ($t(193) = -2.66$, $p < 0.01$), HRQoL ($t(200) = -5.28$, $p < 0.001$), and expressive suppression at home ($t(200) = 2.18$, $p < 0.05$). Specifically, boys (M = 5.22, SD = 0.75) perceived greater mothers' emotional availability than girls (M = 4.71, SD = 1.15); boys (M = 4.98, SD = 1.00) also perceived greater fathers' emotional availability than girls (M = 4.59, SD = 1.05); and boys (M = 3.44, SD = 0.57) reported better HRQoL than girls (M = 3.14, SD = 0.66). Girls (M = 2.99, SD = 0.99) reported more expressive suppression at home than boys (M = 2.68, SD = 0.96).

There were no significant gender differences in expressive suppression at school ($t(200) = 1.14$, $p = 0.255$), cognitive reappraisal at home ($t(200) = 0.28$, $p = 0.565$), or cognitive reappraisal at school ($t(200) = -1.39$, $p = 0.166$).

3.2.2. Age Differences

There were no significant age differences in any study variable: perceptions of mothers' emotional availability ($t(196) = 1.72$, $p = 0.088$), perceptions of fathers' emotional availability ($t(190) = 1.07$, $p = 0.287$), HRQoL ($t(197) = 1.58$, $p = 0.115$), expressive suppression at home ($t(197) = -1.14$, $p = 0.257$), expressive suppression at school ($t(200) = -0.56$, $p = 0.576$), cognitive reappraisal at home ($t(197) = -0.24$, $p = 0.811$), and cognitive reappraisal at school ($t(197) = -0.47$, $p = 0.641$).

3.2.3. Family Structure Differences

In terms of family structure, we found significant differences in HRQoL (t(198) = 2.18, $p < 0.05$) and in expressive suppression at home (t(193) = −2.69, $p < 0.01$). Specifically, adolescents with married parents reported better HRQoL (M = 3.75, SD = 0.63) than those with separated or divorced parents (M = 3.55, SD = 0.70). Additionally, adolescents with married parents reported less expressive suppression at home (M = 2.70, SD = 0.97) than those with separated or divorced parents (M = 3.07, SD = 0.97).

No significant differences were found in the remaining variables: perceptions of mothers' emotional availability (t(197) = 1.61, $p = 0.111$), perceptions of fathers' emotional availability (t(198) = 1.16, $p = 0.247$), expressive suppression at school (t(198) = −1.28, $p = 0.202$), cognitive reappraisal at home (t(198) = 0.67, $p = 0.503$), and cognitive reappraisal at school (t(198) = 1.66, $p = 0.099$).

3.2.4. Context Differences in ER

There were no significant differences between expressive suppression at home and at school (t(201) = −0.22, $p = 0.828$) or between cognitive reappraisal at home and at school (t(201) = −0.27, $p = 0.785$).

3.3. Mediation Analyses

Two models were examined: Model 1 included perceived emotional availability for mothers, and Model 2 included perceived emotional availability for fathers. In both models, gender and family structure were included as covariates.

Model 1 explained 53% of the variance in adolescents' HRQoL (F(7, 193) = 30.88, $p < 0.001$). Perceptions of mothers' emotional availability were positively and significantly associated with HRQoL. They were also positively and significantly associated with cognitive reappraisal (at home and at school) but negatively associated with expressive suppression (at home only). Indirect effects were significant for cognitive reappraisal at school (effect = 0.05, SE = 0.02, 95% CI [0.018, 0.094]) and cognitive reappraisal at home (effect = 0.06, SE = 0.02, 95% CI [0.022, 0.094]). When the mediators were included, the association between perceptions of mothers' emotional availability and HRQoL remained significant (total effect = 0.32, $p < 0.001$), suggesting partial mediation. The results are presented in Table 3.

Table 3. Direct and indirect effects of perceptions of mothers' emotional availability (LEAP) on HRQoL via ER, controlling for gender and family structure.

	Effect	SE	t	*p*
Direct effects				
LEAP Mother → CR School	0.18	0.05	3.59	<0.001
Gender → CR School	0.04	0.10	0.38	0.707
Family Structure → CR School	−0.15	0.09	−1.68	0.095
LEAP Mother → CR Home	0.19	0.05	3.62	<0.001
Gender → CR Home	−0.16	0.10	−1.51	0.134
Family Structure → CR Home	−0.08	0.09	−0.90	0.372
LEAP Mother → ES School	−0.11	0.06	−1.73	0.086
Gender → ES School	−0.07	0.13	−0.57	0.569
Family Structure → ES School	0.04	0.11	0.35	0.728
LEAP Mother → ES Home	−0.35	0.07	−5.25	<0.001
Gender → ES Home	−0.11	0.13	−0.79	0.430
Family Structure → ES Home	0.15	0.12	1.32	0.190

Table 3. *Cont.*

	Effect	SE	t	*p*
LEAP Mother → HRQoL	0.20	0.04	5.43	<0.001
CR School → HRQoL	0.30	0.07	4.57	<0.001
CR Home → HRQoL	0.01	0.06	−0.17	0.867
ES School → HRQoL	−0.09	0.04	−2.11	<0.05
ES Home → HRQoL	−0.157	0.04	−3.87	<0.001
Gender → HRQoL	0.25	0.07	3.66	<0.001
Family Structure → HRQoL	−0.04	0.06	−0.71	0.480
Indirect effects				
Via CR School	0.05	0.02	0.018	0.094
Via CR Home	0.00	0.01	−0.027	0.028
Via ES School	0.01	0.01	−0.003	0.031
Via ES Home	0.06	0.02	0.022	0.094

Note. LEAP = mother's emotional perceived availability; CR = cognitive reappraisal; ES = expressive suppression; HRQoL = health-related quality of life (KIDSCREEN-10 index).

Model 2 explained 53% of the variance in adolescents' HRQoL ($F(7, 187) = 31.05$, $p < 0.001$). Perceptions of fathers' emotional availability were positively and significantly associated with HRQoL and negatively and significantly associated with expressive suppression at home. No significant associations were found with expressive suppression at school or with cognitive reappraisal (either at home or at school). Indirect effects were significant only for cognitive reappraisal at school (effect = 0.04, SE = 0.02, 95% CI [0.012, 0.078]) and expressive suppression at home (effect = 0.04, SE = 0.02, 95% CI [0.017, 0.083]). When the mediators were included, the association between perceptions of fathers' emotional availability and HRQoL remained significant (total effect = 0.30, $p < 0.001$), suggesting partial mediation. The results are presented in Table 4.

Table 4. Direct and indirect effects of perceptions of fathers' emotional availability (LEAP) on HRQoL via ER, controlling for gender and family structure.

	Effect	SE	t	*p*
Direct effects				
LEAP Father → CR School	0.18	0.05	3.77	<0.001
Gender → CR School	−0.04	0.10	−0.46	0.301
Family Structure → CR School	−0.14	0.09	−1.56	0.421
LEAP Father → CR Home	0.08	0.05	1.54	0.126
Gender → CR Home	−0.11	−0.11	−1.04	0.301
Family Structure → CR Home	−0.08	−0.09	−0.81	0.421
LEAP Father → ES School	−0.12	−0.06	−1.91	0.058
Gender → ES School	−0.12	−0.13	−0.94	0.351
Family Structure → ES School	0.05	0.12	0.42	0.675
LEAP Father → ES Home	−0.25	0.07	−3.79	<0.001
Gender → ES Home	−0.22	0.14	−1.57	0.117
Family Structure → ES Home	0.17	0.12	1.38	0.169
LEAP Father → HRQoL	0.20	0.03	5.81	<0.001
CR School → HRQoL	0.23	0.07	3.46	<0.001
CR Home → HRQoL	0.06	0.06	1.01	0.313
ES School → HRQoL	−0.08	0.04	−1.76	<0.080
ES Home → HRQoL	−0.19	0.04	−4.47	<0.001
Gender → HRQoL	0.27	0.07	4.01	<0.001

Table 4. *Cont.*

	Effect	SE	t	*p*
Family Structure → HRQoL	−0.06	0.06	−1.06	0.289
Indirect effects	Effect	SE	LL CI	UL CI
Via CR School	0.04	0.02	0.012	0.078
Via CR Home	0.00	0.01	−0.008	0.025
Via ES School	0.01	0.01	−0.003	0.030
Via ES Home	0.05	0.02	0.017	0.083

Note. LEAP = father's perceived emotional availability; CR = cognitive reappraisal; ES = expressive suppression; HRQoL = health-related quality of life (KIDSCREEN-10 index).

4. Discussion

The aims of this study were to (1) examine differences in perceived parental emotional availability, ER, and HRQoL based on gender, age, and family structure; (2) assess contextual differences in ER (at home vs. at school); and (3) investigate the mediating role of ER in the relationship between perceived parental emotional availability and HRQoL.

First, some differences were found according to gender and family structure but not according to age. In this study, boys reported higher HRQoL as well as higher perceptions of both mothers' and fathers' emotional availability compared to girls. These results are consistent with previous studies (Babore et al. 2014; Langeland et al. 2019; Otto et al. 2017). As expected, adolescents from divorced or separated families also reported lower HRQoL (e.g., Houben-van Herten et al. 2015; Rattay et al. 2018).

It is plausible to hypothesize that, during adolescence, girls may experience more pronounced physiological changes, including differences in hormonal functioning and physiological reactivity, which could potentially influence certain health conditions or risk factors. For example, adolescent girls typically exhibit a more pronounced negative emotional response when faced with stressors (Ordaz and Luna 2012). Additionally, girls tend to perceive higher academic demands and a greater sense of responsibility at school, as well as more concerns regarding body image and self-esteem, all of which can contribute to higher levels of stress and lower HRQoL (e.g., Wiklund et al. 2010). Thus, cultural norms and gender stereotypes may place different pressures and expectations on boys and girls, impacting their HRQoL.

The observed differences in HRQoL based on family structure are consistent with previous findings in the literature (Houben-van Herten et al. 2015; Rattay et al. 2018). It is important to note that adolescents from both types of family structure reported generally good HRQoL. However, it is possible that the HRQoL of adolescents from non-intact families may be influenced by factors such as family instability, challenges in co-parenting, or emotional adjustment difficulties, which could lead to lower levels of HRQoL compared to adolescents from intact families.

The findings regarding gender differences in perceptions of parental emotional availability are consistent with a previous study by Babore et al. (2014). It is plausible to hypothesize that girls experience a heightened perception of conflicts and difficulties in relationships compared to boys, as boys tend to demonstrate a greater capacity for navigating challenges within their parent–child relationships (e.g., Weymouth et al. 2016). Gender differences in the perception of parental availability may also reflect distinct parental beliefs and behaviors toward boys and girls (e.g., Bornstein and Putnick 2016). Typically, parents tend to scaffold girls and boys in different activities, with girls more involved in caregiving and instrumental activities than boys (Leaper 2000). This differential treatment may limit girls' perception of their parents' emotional availability, as they may see themselves more in the role of caregiver rather than as recipients of care. All of these factors can poten-

tially result in lower perceptions of parental emotional availability among girls, which, as discussed earlier, can have implications for lower HRQoL.

In terms of ER, our study revealed gender differences specifically in expressive suppression at home, with girls exhibiting higher levels than boys. This finding is consistent with a previous study by Lennarz et al. (2019) but contradicts other studies (Gullone et al. 2010; Martín-Albo et al. 2020), which reported different results. While societal expectations often dictate that males should exhibit less expressiveness than females (e.g., Chaplin 2015; Fischer and LaFrance 2015), this was not observed in our study. It is plausible that factors such as parent–child interactions or other unexplored variables may have a greater impact on patterns of ER in girls than gender norms or expectations alone. This is particularly noteworthy given that female participants in this study also reported lower levels of perceived parental emotional availability compared to male participants.

Regarding potential differences in the use of ER strategies according to context, our study did not find any significant differences. This suggests that adolescents regulate their emotions in a similar manner across different contexts. The absence of significant differences may indicate that adolescents employ consistent ER strategies regardless of the specific context in which they find themselves, implying that their emotion regulation strategies are relatively stable and applicable across various situations. It is also important to consider that both versions of the ERQ were completed at the same time, and adolescents may have remembered their responses from the previous questionnaire, potentially influencing their answers. Further research is needed to explore the nuances of context-specific ER strategies and to identify factors that may contribute to individual differences.

Finally, regarding our main objective—to examine the mediating role of emotion regulation (ER) in the relationship between perceived parental emotional availability and adolescents' HRQoL—the associations among these variables were significant. Both mothers' and fathers' perceived emotional availability were directly associated with better HRQoL. This finding is consistent with prior research indicating that the quality of the parent–adolescent relationship plays a vital role in adolescents' HRQoL. Positive relationships and greater perceived social support from parents have been associated with higher HRQoL, as demonstrated in previous studies (Gaspar et al. 2012; Gomes et al. 2020; Jiménez-Iglesias et al. 2015).

Furthermore, the findings indicate that perceived parental emotional availability is linked to adolescents' HRQoL through ER. Specifically, greater perceived parental emotional availability is associated with the reduced use of expressive suppression at home and increased use of cognitive reappraisal at school, both of which are, in turn, associated with better HRQoL. This finding is consistent with the literature showing that parental factors play a crucial role in shaping adolescents' ER (Morris et al. 2017).

In terms of expressive suppression, these findings suggest that emotionally available parents contribute to an environment where adolescents feel secure and encouraged to express their emotions openly. Indeed, children's tendency to engage in expressive suppression has been found to relate to two factors: the level of support children anticipate and the level of support parents provide in response to children's emotional displays (Gross and Cassidy 2019). This indicates that emotionally available parents create an environment that allows adolescents to openly express and discuss their emotions by providing guidance, empathy, and validation, thereby facilitating a safe space for them to share their feelings. This is consistent with the literature on parenting styles, which shows that democratic parents—those who are open, available to listen, and respectful of their children's opinions—promote more positive outcomes in terms of academic, emotional, and social well-being (e.g., Mansoory 2023).

The absence of a link between perceived parental emotional availability and expressive suppression at school suggests that factors other than parental emotional availability may influence the expression of emotions in the school environment. It is possible that adolescents' experiences and interactions at school, such as peer relationships, play a more significant role in determining their use of expressive suppression in that context. Further research is needed to explore these factors and the reasons underlying the use of expressive suppression at school.

Finally, perceived parental emotional availability was associated with greater use of cognitive reappraisal at school, which, in turn, contributed to better HRQoL. One plausible hypothesis is that emotionally available parents create increased opportunities to model and effectively teach adolescents how to use cognitive reappraisal. By fostering perspective-taking skills, these parents may provide guidance and examples on how to reframe and reinterpret events in a more positive or balanced manner, which may be particularly applicable for adolescents in the school setting.

4.1. Limitations and Future Research

It is important to acknowledge the limitations of this study. First, the cross-sectional design prevents the establishment of causal relationships among the variables examined. To better understand the directionality among study variables, future longitudinal studies are warranted. Second, participants were recruited from only one public urban school, which limits the generalizability of the findings and may make them vulnerable to the influence of unmeasured extraneous variables, such as socioeconomic status.

Third, the reliance on self-report measures from adolescents introduces the possibility of biases such as social desirability or recall bias. To mitigate these limitations, future research could incorporate a multi-informant approach, gathering data from multiple sources such as parents, teachers, or peers, in addition to adolescents themselves. This would provide a more comprehensive and nuanced understanding of the associations among the variables of interest.

Moreover, it is noteworthy that this study used an adaptation of the ERQ to evaluate emotion regulation in two distinct contexts. Additionally, the observed low internal consistency of expressive suppression within the home context should be considered when interpreting the findings. Furthermore, supplementing quantitative research with qualitative studies could provide valuable insights into the underlying reasons and contextual factors influencing how adolescents regulate their emotions. By addressing these limitations and employing a more comprehensive research approach, future studies can yield a more robust understanding of the mechanisms underlying emotion regulation and its impact on adolescents' HRQoL.

4.2. Implications for Practice

This study has important clinical implications for promoting adolescents' HRQoL. The findings highlight the significance of perceived parental emotional availability in shaping adolescents' ER strategies and HRQoL. Clinicians should involve parents in the psychological support offered to adolescents and encourage them to foster open communication, active listening, and validation of their adolescents' emotions. Additionally, family-focused interventions can be valuable for addressing family dynamics, improving communication patterns, and enhancing emotional support within the family system—especially for adolescents living in divorced or separated families—to improve parent–child relationships and facilitate ER.

Interventions targeting ER can also be beneficial, particularly for girls. Clinicians can promote the use of cognitive reappraisal to help adolescents reframe challenging situations

and develop more positive interpretations while discouraging strategies that inhibit or suppress emotional expression.

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Abbreviations

The following abbreviations are used in this manuscript:

ER	Emotion Regulation
CR	Cognitive reappraisal
ES	Expressive suppression
LEAP	Lum Emotional Availability Parents
HRQoL	Health-related quality of life

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