

The Relationship Between Perceived Parenting Styles and Cognitive Emotional Regulation: The Mediating Role of Cognitive Flexibility

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ABSTRACT

Objective: This study aimed to investigate the relationship between adolescents' perceptions of parenting styles and cognitive emotion regulation, with cognitive flexibility serving as a mediating variable.

Methods: This basic, descriptive-correlational study employed structural equation modeling (SEM). The study population consisted of all adolescents aged 12–17 years in Qazvin, Iran, in 2025 (1404 SH). A total of 135 participants were selected through convenience sampling. Data were collected using the Cognitive Emotion Regulation Questionnaire (Garnefski et al., 2001), the Parenting Styles Questionnaire (Baumrind, 1991), and the Cognitive Flexibility Inventory (Dennis & Vander Wal, 2010). Data were analyzed using SPSS version 26 and SmartPLS version 3.

Results: The findings revealed significant relationships between perceived parenting styles and cognitive emotion regulation. The authoritative parenting style was positively associated with both cognitive emotion regulation and cognitive flexibility, whereas authoritarian and permissive parenting styles were negatively associated with cognitive emotion regulation. Positive cognitive emotion regulation showed a significant positive relationship with cognitive flexibility, while negative cognitive emotion regulation was negatively related to cognitive flexibility. Furthermore, mediation analysis demonstrated that cognitive flexibility significantly mediated the relationship between perceived parenting styles and cognitive emotion regulation.

Conclusions: The findings suggest that adolescents' perceptions of parenting styles influence cognitive emotion regulation indirectly by enhancing cognitive flexibility. The proposed structural model demonstrated satisfactory fit and strong explanatory power for the relationships among the study variables.

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Introduction

The family, as the first social and emotional system in which an individual develops, plays a fundamental role in shaping cognitive, emotional, and behavioral processes. In this regard, parents' parenting methods are among the most important environmental factors that directly and indirectly affect children's mental health and emotional adjustment (Zekaeifar & Mousazadeh, 2020). Contemporary research in developmental psychology shows that it is not only parents' objective behaviors but also children's perceptions of these behaviors that play a more decisive role in psychological outcomes, because these perceptions are interpreted and internalized through cognitive processes (Smetana, 2017; Pinquart, 2021). In other words, a child's subjective experience of the parenting style creates a cognitive framework that influences how emotions are processed and how the child reacts to stressful situations (Kazemi & Mousavi, 2021).

One of the most important consequences of this process is cognitive-emotion regulation, which refers to the conscious use of cognitive strategies to manage emotional experiences. Cognitive emotion regulation includes strategies such as cognitive reappraisal, acceptance, rumination, and catastrophizing, each of which has different consequences for mental health (Garnefski & Kraaij, 2018). Recent studies show that the consistent use of adaptive cognitive emotion regulation strategies is associated with reduced symptoms of depression and anxiety and increased psychological resilience, whereas maladaptive strategies can increase the risk of emotional disorders (Aldao et al., 2019; Schäfer et al., 2022). In this regard, authoritative and supportive parenting styles—characterized by a combination of emotional warmth, appropriate responsiveness, and rational structuring—have been significantly linked to the healthy development of emotion regulation. Parents who provide opportunities to talk about emotions and allow their children to experience emotions without suppression or punishment create the groundwork for the development of effective cognitive strategies (Morris et al., 2021). By contrast, authoritarian or rejecting parenting styles, characterized by excessive control and a lack of emotional support, are associated with increased use of maladaptive cognitive emotion regulation strategies, such as rumination and self-blame (Yap et al., 2020).

One of the most important factors influencing the development of cognitive-emotion regulation skills in individuals is parents' parenting methods (Nazemi-Harandi et al., 2022). These methods comprise the set of behaviors, attitudes, and styles parents use in interacting with their children

and can directly and indirectly affect an individual's cognitive, emotional, and social development (Huang et al., 2025; Zekaeifar & Mousazadeh, 2020). According to Baumrind's theory (1971), parenting styles are generally divided into four main categories: authoritarian, authoritative, rejecting-neglecting, and permissive (Thorpe & Bourne, 2025). Evidence shows that families that create a safe and supportive environment and provide opportunities for experience, rational feedback, and constructive interaction strengthen the development of their children's cognitive-emotional skills, and such children become more capable of managing emotions and applying effective emotional strategies. In contrast, families with authoritarian, restrictive, or permissive approaches have a negative effect on children's ability to manage emotions by increasing psychological pressure and creating anxiety (Akbarzadeh et al., 2024; Li et al., 2023; Kang & Guo, 2022). Therefore, family experiences and parenting methods, as the most important early environmental factors, provide different opportunities and constraints for the development of an individual's cognitive and emotional skills and play a decisive role in shaping patterns of psychological adjustment (Zekaeifar & Mousazadeh, 2020). Within this framework, what matters more than parents' actual behaviors themselves is individuals' perception of their parents' parenting methods, because these perceptions are interpreted through cognitive processes and internalized as relatively stable patterns (Kazemi & Mousavi, 2021). In other words, children's perception of their parents' parenting styles plays a key role in the formation and development of cognitive-emotional regulation skills, and examining these perceptions can lead to a deeper understanding of the mediating pathways between early family experiences and children's emotional and behavioral abilities. Among these, one of the most important cognitive processes capable of explaining this relationship is cognitive flexibility—a construct that enables the adjustment of thoughts, the changing of perspectives, and the selection of adaptive strategies when facing emotional situations (Fatima, 2025).

Cognitive flexibility is an individual's ability to change perspective, cognitively restructure situations, and select different strategies when facing challenges (Preiss, 2022). This characteristic enables the evaluation of situations from different viewpoints, adaptation to new conditions, and modification of emotional responses, and thereby facilitates the improvement of cognitive-emotion regulation (Wang et al., 2021). Research shows that individuals with higher cognitive flexibility are better able to reinterpret stressful situations, benefit from effective emotional

strategies, and prevent negative emotional consequences (Mohammad-Beigi Salahshour & Motevalli, 2023; Garavand, 2023; Wang et al., 2021). On the other hand, a study by Mu and Motevalli (2025) showed that an authoritative parenting style is associated with strengthening cognitive flexibility, whereas strict or permissive styles may hinder the formation of this flexibility. Therefore, cognitive flexibility can serve as a key mediating pathway between an individual's perception of their parents' parenting methods and their cognitive-emotion regulation skills; authoritative, opportunity-providing families strengthen this pathway and enhance children's emotion regulation skills, whereas authoritarian or permissive families weaken it.

A review of empirical research shows that cognitive emotion regulation, as a mediating construct, plays a fundamental role in explaining relationships among individual and family variables and psychological outcomes. Numerous studies have shown that cognitive emotion regulation strategies mediate the relationship between parenting styles and mental health, academic achievement, risky behaviors, emotional problems, and social adjustment. In other words, the effect of parents' interaction styles on children's developmental outcomes is largely exerted through the formation of cognitive emotion regulation patterns (Di Giunta et al., 2022; Graziano & Hart, 2022; Hao Yao et al., 2022; Huang & Wan, 2025). Domestic (Iranian) studies have also confirmed the mediating role of cognitive emotion regulation in the relationship between parenting styles and academic resilience, academic achievement, risky behaviors, emotional problems, and behavioral disorders (Chahardoli et al., 2020; Kohansal Nalkiashari et al., 2022; Davari & Bagheri, 2024). These findings indicate that cognitive emotion regulation is not merely a developmental outcome but also an explanatory mechanism through which the effects of the family environment are transmitted to individuals' psychological adjustment.

Research in recent years, using longitudinal designs and causal models, has provided strong evidence regarding the role of cognitive emotion regulation in mental health. The results of these studies show that the consistent use of maladaptive strategies such as rumination, catastrophizing, and self-blame increases the risk of depression, anxiety, internalizing problems, and reduced social adjustment; conversely, cognitive reappraisal, acceptance, planning, and positive refocusing are associated with increased psychological well-being, resilience, academic performance, and favorable interpersonal relationships (Aldao et al., 2019; Chen-Bouck et al., 2024; Huang et al., 2025). Furthermore, Iranian studies have also reported the effectiveness of mindfulness-based

interventions, cognitive-behavioral therapy, and emotion regulation training in improving cognitive functioning, reducing emotional problems, and promoting mental health (Shiri, 2021; Hataminejad et al., 2024; Mahmoudi, 2025). This evidence indicates that cognitive emotion regulation is a flexible and trainable construct that can be a primary target of psychological prevention and intervention programs.

Overall, a review of theoretical foundations and research findings shows that cognitive emotion regulation is one of the most important constructs explaining mental health and individual adjustment, influenced by the complex interaction of cognitive, emotional, familial, and social factors. The theoretical models of Gross, Garnefski, Berking, Gratz and Roemer, as well as social learning and attachment theories, all emphasize that the quality of cognitive emotion regulation strategies results from learning processes, early life experiences, and an individual's cognitive characteristics. On the other hand, both domestic and international research evidence shows that promoting adaptive cognitive emotion regulation strategies can play an important role in enhancing mental health, improving academic performance, reducing psychological harm, and improving the quality of social relationships. Therefore, attention to this construct is important not only theoretically but also from a practical standpoint, and it can form the basis for designing educational, therapeutic, and preventive interventions across different age groups (Gross, 2015; Garnefski & Kraaij, 2018; Kashdan et al., 2020; Graziano & Hart, 2022).

Given the theoretical, practical, and cultural importance of this topic, the present study is necessary in order to determine the role of cognitive flexibility in the relationship between perceived parenting methods and cognitive-emotion regulation. Such knowledge, in addition to completing the theoretical framework in the field of developmental and emotional psychology, can provide a solid foundation for designing targeted preventive and educational interventions and can have an impact on promoting the mental health and emotional resilience of the Iranian population. Accordingly, the main objective of the study is to examine the mediating role of cognitive flexibility in the relationship between perceived parental parenting methods and the ability for cognitive-emotion regulation within the Iranian social context, and to precisely identify the mediating pathways of this relationship.

In general, the main problem of the research is that, despite existing evidence regarding the effects of parenting styles on emotional skills, it is still unclear how children's perception of their parents'

parenting methods shapes cognitive-emotion regulation skills through cognitive flexibility, and how this relationship operates within the Iranian social context. Accordingly, the main research question is posed as follows: does cognitive flexibility play a mediating role in the relationship between perceived parental parenting methods and children's cognitive-emotion regulation skills?

Material and Methods

The present study is fundamental in purpose and, in nature, a quantitative study with a descriptive-correlational design based on structural equation modeling (SEM). This approach was chosen in light of the study's main objective—namely, examining the direct and indirect relationships among perceived parental parenting styles, cognitive flexibility, and cognitive emotion regulation in adolescents. Structural equation modeling is recognized as one of the most powerful multivariate analysis methods in behavioral science research due to its simultaneous capability for evaluating the measurement model and the structural model, estimating measurement error, and testing mediating effects. Accordingly, in addition to testing the direct relationships among the variables, the present study also examined the mediating role of cognitive flexibility in explaining the relationship between parenting methods and cognitive emotion regulation. The use of this method allowed for empirical testing of the study's conceptual model and evaluation of its fit with the empirical data, thereby increasing the explanatory power of the proposed model.

The statistical population of the study included all adolescents aged 12 to 17 enrolled in schools in the city of Qazvin during the 1404 (2025-2026) academic year. This age group, being in one of the most sensitive periods of cognitive, emotional, and social development, constitutes a suitable population for examining the interaction among the variables under study. The research sample was selected through convenience sampling, and the sample size was determined based on Kline's (2023) methodological recommendations for structural equation modeling, with at least 15 to 20 observations considered for each free parameter of the model. In the first stage, 140 adolescents entered the study; however, after data screening and the removal of incomplete questionnaires with illogical response patterns or insufficient quality, data from 135 participants were used for the final analysis. Inclusion criteria included being within the study's age range, being enrolled in schools in Qazvin, having the ability to understand and complete the questionnaires, having no reported severe cognitive or psychiatric disorders, written parental consent, and adolescents' informed

willingness to participate. In addition, questionnaires with more than 20% missing data, random responses, or cases of participant withdrawal were excluded from the study to ensure data quality and the validity of the results.

Research data were collected using three standardized psychometric instruments. Cognitive emotion regulation was assessed using the Cognitive Emotion Regulation Questionnaire (CERQ; Garnefski et al., 2001), consisting of 36 items and 9 cognitive strategies, which evaluates adaptive and maladaptive emotion regulation strategies on a five-point Likert scale. Adolescents' perception of their parents' parenting methods was measured using Buri's 30-item Parental Authority Questionnaire (Buri, 1991), comprising three styles: authoritative, authoritarian, and permissive. Cognitive flexibility was measured using the Cognitive Flexibility Inventory by Dennis and Vander Wal (2010), consisting of 19 items in its validated Persian version. All instruments have shown good construct validity, convergent validity, and reliability in domestic and international studies, and in the present study their internal consistency was re-evaluated using Cronbach's alpha coefficient; the alpha coefficients for the cognitive emotion regulation questionnaire, the parenting styles questionnaire, and the cognitive flexibility questionnaire were 0.89, 0.82, and 0.85, respectively, indicating satisfactory reliability of the instruments for subsequent analyses.

The research procedure was carried out in accordance with standard field-research guidelines and with full observance of research ethics principles. After obtaining the necessary permits from the education department and the administrators of the selected schools, the research objectives were explained to administrators, parents, and students, and informed parental consent and adolescents' agreement to participate were obtained. Questionnaires were completed in groups within the school setting under the researcher's supervision, and before beginning, participants were given the necessary instructions regarding how to complete the instruments, the confidentiality of information, and the voluntary nature of participation. The average completion time for the questionnaires was about 30 to 45 minutes, and all responses were recorded anonymously. After data collection, the questionnaires were reviewed for completeness, response patterns, outliers, and missing data, and only qualifying data were entered into the statistical analysis stage.

Data analysis was carried out at two levels: descriptive and inferential. In the descriptive section, indices including frequency, percentage, mean, standard deviation, skewness, and kurtosis were calculated to describe the characteristics of the sample and the study variables. Before testing the

structural model, statistical assumptions including data normality, multicollinearity, outliers, convergent validity, discriminant validity, and construct reliability were examined. Then, SmartPLS 3 software was used to test the study's conceptual model, and SPSS version 26 was used for preliminary analyses. The validity of the measurement model was evaluated based on factor loadings, average variance extracted (AVE), composite reliability (CR), Cronbach's alpha, and the HTMT index. Subsequently, the structural model was evaluated through path coefficients, coefficients of determination (R^2), effect size (f^2), the predictive relevance index (Q^2), and a bootstrapping test with 5,000 resamples. The significance of direct and indirect relationships was examined based on the t-statistic and bootstrap confidence intervals at a 0.05 significance level. This analytical strategy allowed for the simultaneous testing of the measurement model and the structural model, control of measurement errors, and precise estimation of mediating effects, providing, from a methodological standpoint, the highest level of precision for testing the research hypotheses.

Results

The research findings were tested using structural equation modeling and the partial least squares (PLS-SEM) approach. Figures (1-1) and (1-2) display the study's conceptual model at the measurement and structural levels, respectively. In the measurement model, the relationships between latent variables (constructs) and observed variables (items) are examined through factor loadings. Factor loadings indicate the degree to which each item contributes to explaining its corresponding construct; the higher their value, the stronger the item's role in measuring that construct, while items with lower factor loadings contribute less to explaining the construct. In the structural model, the relationships among the study's constructs are evaluated through path coefficients. These coefficients indicate the strength and direction of the effect of independent variables on dependent variables and constitute the primary basis for hypothesis testing. The significance of these relationships was examined using the t-statistic. At the 95% confidence level, a relationship is considered significant when the absolute value of the t-statistic is greater than 1.96. In this case, the path coefficient is interpretable, and conclusions can be drawn regarding the confirmation or rejection of the study's hypotheses. This index also enables the identification of strong and weak relationships between variables and plays an important role in the final analysis

of the model. In Figure (1-2), the t-values for each item as well as the relationships among constructs are displayed; the values on the paths between constructs represent the t-statistic for structural relationships, while the values associated with the items represent factor loadings at the measurement-model level. Accordingly, the significance or non-significance of relationships among the study variables is judged based on these indices, and where significant, the path coefficients can be interpreted and the hypotheses examined.

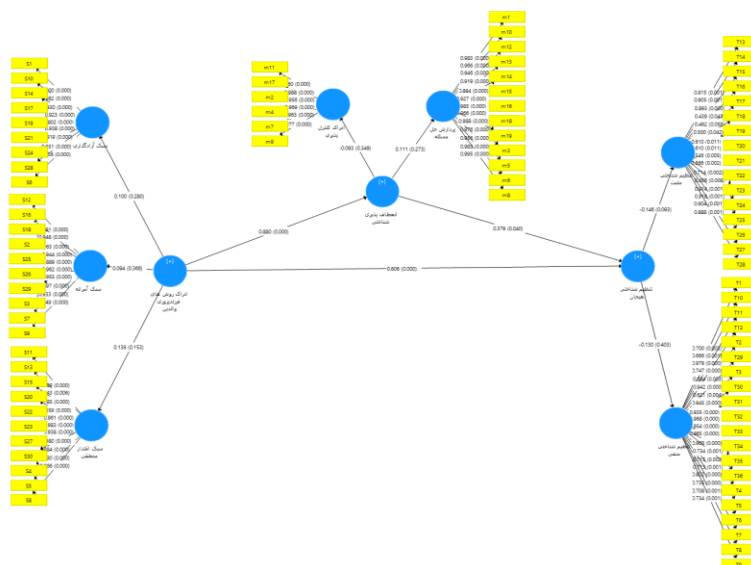


Figure 1. Path coefficients and significance values

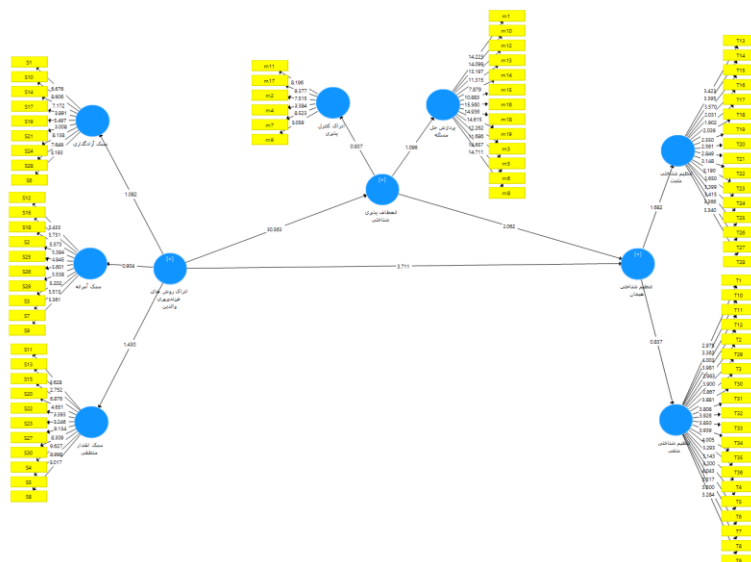


Figure 2. t-statistic values

Test of the Main Research Hypothesis

The main research hypothesis examines the mediating role of cognitive flexibility in the relationship between children's perception of their parents' parenting methods and their cognitive emotion regulation. This hypothesis was formulated with the aim of explaining the mechanism of the indirect effect of the independent variable on the dependent variable through a mediating variable.

Table 1. Main research hypothesis and its statistical hypotheses

No.	Hypothesis / Statistical hypothesis
Main hypothesis	Cognitive flexibility plays a mediating role in the relationship between perceived parental parenting methods and children's cognitive emotion regulation.
	H0: Cognitive flexibility does not play a mediating role in this relationship. H1: Cognitive flexibility plays a mediating role in this relationship.

Table 2. Results of the test of the main research hypothesis

Hypothesis	Path coefficient	t-statistic	Significance level	Test result
Fourth	0.334	2.011	0.045	Accepted

The results of the test of the main research hypothesis show that cognitive flexibility plays a significant mediating role in the relationship between children's perception of their parents' parenting methods and cognitive emotion regulation. The path coefficient of 0.334 indicates that this mediating effect is of moderate strength.

Furthermore, the t-statistic of 2.011 and significance level of 0.045 (less than 0.05) show that this effect is statistically significant, and the null hypothesis is rejected. It can therefore be concluded that cognitive flexibility, as a mediating variable, explains part of the effect of perceived parenting on cognitive emotion regulation.

Test of the First Sub-Hypothesis

The first sub-hypothesis examines the relationship between children's perception of their parents' parenting methods and their cognitive emotion regulation. This hypothesis was designed to test the existence or non-existence of a significant relationship between these two variables and was examined in the form of a null hypothesis and an alternative hypothesis.

Table 3. First sub-hypothesis and its statistical hypotheses

No.	Hypothesis / Statistical hypothesis
First sub-hypothesis	There is a significant relationship between children's perception of parental parenting methods and their cognitive emotion regulation.
	H0: There is no significant relationship between these variables. H1: There is a significant relationship between these variables.

Table 4. Results of the test of the first sub-hypothesis

Hypothesis	Path coefficient	t-statistic	Significance level	Test result
First	0.606	3.711	0.000	Accepted

The results of the hypothesis test show that there is a positive and significant relationship between children's perception of their parents' parenting methods and cognitive emotion regulation. The path coefficient of 0.606 indicates that this relationship is of relatively favorable strength. Furthermore, the t-statistic of 3.711 and significance level of 0.000 (less than 0.05) show that this relationship is statistically significant, and the null hypothesis is rejected. It can therefore be concluded that a more positive perception of parental parenting methods is associated with a higher level of cognitive emotion regulation in children.

Test of the Second Sub-Hypothesis

The second sub-hypothesis is devoted to examining the relationship between children's perception of their parents' parenting methods and their cognitive flexibility. This hypothesis was formulated with the aim of examining the role of parenting methods in individuals' cognitive ability to change perspectives and adapt to different conditions.

Table 5. Second sub-hypothesis and its statistical hypotheses

No.	Hypothesis / Statistical hypothesis
Second sub-hypothesis	There is a significant relationship between children's perception of parental parenting methods and their cognitive flexibility.
	H0: There is no significant relationship between these variables. H1: There is a significant relationship between these variables.

Table 6. Results of the test of the second sub-hypothesis

Hypothesis	Path coefficient	t-statistic	Significance level	Test result
Second	0.379	2.062	0.040	Accepted

The results of the hypothesis test show that there is a positive and significant relationship between children's perception of their parents' parenting methods and their cognitive flexibility. The path coefficient of 0.379 indicates that this relationship is of moderate strength. Furthermore, the t-statistic of 2.062 and significance level of 0.040 (less than 0.05) indicate that this relationship is significant at the 95% confidence level. The null hypothesis is therefore rejected and the research hypothesis confirmed. This result indicates that a more positive perception of parental parenting methods can lead to increased cognitive flexibility in adolescents.

Test of the Third Sub-Hypothesis

The third sub-hypothesis examines the relationship between cognitive emotion regulation and cognitive flexibility. This hypothesis was formulated with the aim of explaining the role of emotion regulation in individuals' cognitive ability to adapt and change when facing different situations.

Table 7. Third sub-hypothesis and its statistical hypotheses

No.	Hypothesis / Statistical hypothesis
Third sub-hypothesis	There is a significant relationship between cognitive emotion regulation and cognitive flexibility.
	H0: There is no significant relationship between these variables. H1: There is a significant relationship between these variables.

Table 8. Results of the test of the third sub-hypothesis

Hypothesis	Path coefficient	t-statistic	Significance level	Test result
Third	0.880	30.563	0.000	Accepted

The results of the hypothesis test show that there is a positive and highly significant relationship between cognitive emotion regulation and cognitive flexibility. The path coefficient of 0.880 indicates that this relationship is very strong.

Furthermore, the t-statistic of 30.563 and significance level of 0.000 indicate a very high level of significance for this relationship at the 95% confidence level. The null hypothesis is therefore rejected and the research hypothesis confirmed. This result suggests that individuals with higher cognitive emotion regulation also possess greater cognitive flexibility.

Discussion

The findings of the present study showed that the proposed conceptual model has a good fit, and the relationships among perceived parental parenting methods, cognitive flexibility, and cognitive emotion regulation in adolescents follow a clear theoretical pattern. The most important finding of the study was the confirmation of the mediating role of cognitive flexibility in the relationship between parenting methods and cognitive emotion regulation. This result indicates that parenting experiences do not lead directly to emotional outcomes; rather, they are first processed through the development of higher-order cognitive capacities and then manifest in the form of emotion regulation patterns. Hence, cognitive flexibility can be considered one of the most important cognitive mechanisms through which the effects of the family environment are transmitted to adolescents' emotional adjustment.

The mediating role of cognitive flexibility shows that the family is not only an environment for transmitting social values and norms but also provides the groundwork for the development of the brain's executive functions. Adolescents whose parents use parenting methods based on emotional warmth, responsiveness, support for autonomy, and rational structure have more opportunities to experience problem-solving, cognitive reflection, and perspective change in the face of challenging situations. These experiences gradually strengthen cognitive flexibility and increase adolescents' ability to select adaptive emotion regulation strategies. Cognitive flexibility therefore acts as the connecting link between the family environment and emotional outcomes.

The results of the first hypothesis also showed that adolescents' positive perception of their parents' parenting methods has a positive and significant relationship with cognitive emotion regulation. This finding indicates that the quality of parent-child interaction is one of the most fundamental factors shaping emotion-management styles during adolescence. A supportive family environment—by providing a sense of psychological security, opportunities to experience emotions, emotional dialogue, and constructive feedback—creates the groundwork for greater use of adaptive strategies such as cognitive reappraisal, planning, and acceptance, and reduces the likelihood of using maladaptive strategies such as rumination, self-blame, and catastrophizing.

Theoretically, this finding is consistent with social learning theory, the attachment perspective, and the process model of emotion regulation. According to these approaches, parents are children's first models for emotional learning and directly and indirectly transmit ways of interpreting, expressing, and managing emotion to their children. As a result, authoritative and supportive parenting styles facilitate the development of cognitive emotion regulation by strengthening adaptive cognitive appraisals and increasing a sense of control, whereas controlling or rejecting styles, by limiting cognitive autonomy, create the groundwork for the formation of inefficient emotion regulation strategies.

The findings related to the second hypothesis showed that the perception of parental parenting methods has a positive and significant relationship with cognitive flexibility. This result indicates that cognitive flexibility is not merely an innate or biological trait but develops through ongoing interaction with early social environments, particularly the family. Families that provide children with opportunities for decision-making, problem-solving, experiencing autonomy, and tolerating error strengthen the development of executive functions and mental flexibility. In contrast, family

environments based on excessive control or insufficient support can limit the development of this cognitive capacity.

The results also showed that cognitive emotion regulation and cognitive flexibility have a very strong and significant relationship. This finding confirms that these two constructs are part of an integrated cognitive-emotional system and mutually reinforce one another. Individuals with higher cognitive flexibility are able to reinterpret emotional situations from different angles, consider alternative solutions, and avoid impulsive emotional responses. Conversely, limitations in cognitive flexibility are typically associated with greater use of maladaptive emotion regulation strategies such as rumination, catastrophizing, and self-blame.

The convergence of the present study's results with domestic and international studies shows that the family's role in adolescents' mental health is transmitted more through cognitive and self-regulatory processes than directly. Recent research has also consistently shown that cognitive flexibility, self-regulation, and cognitive emotion regulation are among the most important mediating mechanisms in the relationship between early life experiences and psychological outcomes. Therefore, the findings of this study not only confirm previous results but, by presenting a coherent structural model, clarify the position of cognitive flexibility as a central construct in this network.

Theoretically, the findings of this study support integrated cognitive-emotional models and executive-function theories. These frameworks are based on the premise that executive functions, particularly cognitive flexibility, underlie many self-regulatory and emotional-adjustment processes. Accordingly, parenting experiences, by shaping these cognitive capacities, guide the course of adolescents' emotional development. The present results provide suitable empirical evidence for this perspective and show that understanding emotional adjustment is not possible without simultaneous attention to the family context and cognitive processes.

From a practical standpoint, the results emphasize the importance of designing family-centered and cognition-centered interventions. Training parents in authoritative parenting methods, improving parents' communication skills, strengthening emotional support, and creating opportunities for adolescents' decision-making autonomy can lead to the development of cognitive flexibility and, consequently, improved cognitive emotion regulation. Furthermore, teaching

cognitive flexibility skills in schools and counseling centers can be used as one of the most effective strategies for preventing emotional problems and promoting adolescents' mental health. Overall, the findings of the present study show that perceived parental parenting methods, cognitive flexibility, and cognitive emotion regulation are three interconnected components in the system of adolescents' psychological development. In this model, the family plays the role of a contextual factor, cognitive flexibility plays the role of a mediating cognitive mechanism, and cognitive emotion regulation plays the role of the final outcome. This explanatory model, in addition to expanding existing knowledge about cognitive-emotional mechanisms, can provide a solid theoretical and practical basis for designing mental-health promotion programs, parent training, and preventive interventions during adolescence.

The present study had limitations that should be considered when interpreting the findings. Among the most important limitations were the emerging nature of the research topic and the shortage of credible scientific sources, particularly English-language sources, which limited the ability to develop the theoretical framework and comprehensively compare findings with previous studies. In addition, limited access to some domestic (Iranian) research, including unpublished or restricted-access theses and dissertations, reduced the coverage of relevant empirical evidence. Accordingly, it is recommended that future research expand the statistical population across different geographic regions and age groups, use longitudinal or experimental designs, employ structured clinical interviews alongside self-report instruments, and examine the role of variables such as attachment style, self-control, and social support as mediating or moderating variables, in order to provide more precise and robust evidence for explaining the relationships among the study variables. In addition, the use of multi-source data (such as reports from parents and teachers) could reduce self-report bias and increase the validity of the findings.

From a practical standpoint, the findings of this study emphasize the necessity of designing and implementing family-based interventions. Accordingly, holding training workshops for parents focused on promoting the authoritative parenting style, developing counseling programs aimed at reducing the use of authoritarian and permissive parenting styles and replacing them with supportive and rational approaches, and implementing positive parenting-skills training programs through school-family cooperation, could help improve the quality of parent-child interaction and improve children's cognitive and emotional outcomes.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving human participants were reviewed and approved by the ethics committee of Imam Khomeini International University. The patients/participants provided their written informed consent to participate in this study.

Author contributions

All authors contributed to the study conception and design, material preparation, data collection, and analysis. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

References

- Ahmadi, Z. (2021). Comparison of cognitive emotion regulation strategies according to university students' interpersonal sensitivity, and development of a training package based on the psychosocial model of the emergence of interpersonal sensitivity, and comparison of the effect of training this package with Gross's emotion regulation on students' interpersonal sensitivity (Doctoral dissertation in General Psychology). University of Isfahan.
- Akbarizadeh, F., Soleimani, A., Kachooei, M., & Farahani, H. A. (2024). The relationship between mothers' adverse childhood experiences and children's psychological problems: The mediating role of emotion regulation and mentalization. *Iranian Journal of Psychiatry and Clinical Psychology*, 30(1), 12–25.
- Aldao, A., Nolen-Hoeksema, S., & Schweizer, S. (2019). Emotion-regulation strategies across psychopathology: A meta-analytic review. *Clinical Psychology Review*, 86, 101–116.
- Amanollahi, F. (2022). Predicting job burnout based on positive or negative self-concept and cognitive flexibility in working women in Isfahan (Master's thesis). Feyz-ol-Eslam Institute of Higher Education, Faculty of Humanities.
- Asadi, M. (2025). Developing a model of tendency toward risky behavior based on self-differentiation, cognitive flexibility, and cognitive emotion regulation with the mediating role

- of self-control in adolescents (Master's thesis). Islamic Azad University, Marvdasht Branch, Faculty of Humanities.
- Bandura, A. (1977). *Social learning theory*. Prentice Hall.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Prentice Hall.
- Baumrind, D. (1971). Current patterns of parental authority. *Developmental Psychology*, 4, 1–103.
- Bowlby, J. (1969). *Attachment and loss: Vol. 1. Attachment*. Basic Books.
- Bowlby, J. (1988). *A secure base: Parent-child attachment and healthy human development*. Basic Books.
- Cassidy, J. (2016). The nature of the child's ties. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (3rd ed., pp. 3–24). Guilford Press.
- Chen-Bouck, L., Patterson, M. M., & Peng, A. (2024). Relations of coping strategies and cognitive emotion regulation to Chinese children's academic achievement goals and academic performance. *Frontiers in Psychology*, 15, 1454886.
- Dajani, D. R., & Uddin, L. Q. (2019). Demystifying cognitive flexibility: Implications for clinical and developmental neuroscience. *Trends in Cognitive Sciences*, 23(8), 667–678.
- Davari, Sh., & Bagheri, N. (2024). Explaining the causal relationships between parenting styles and academic achievement among second-grade high-school students, based on the mediating role of cognitive emotion regulation. *Psychological Achievements*, 31(2), 477–500.
- Dennis, J. P., & Vander Wal, J. S. (2010). The cognitive flexibility inventory: Instrument development and estimates of reliability and validity. *Cognitive Therapy and Research*, 34(5), 241–253.
- Di Giunta, L., Lunetti, C., Gliozzo, G., Rothenberg, W. A., Lansford, J. E., Eisenberg, N., & Virzì, A. T. (2022). Negative parenting, adolescents' emotion regulation, self-efficacy in emotion regulation, and psychological adjustment. *International Journal of Environmental Research and Public Health*, 19(4), 2251.
- Eskandari, Z. (2024). *Predicting cognitive flexibility based on psychological capital and responsibility in teachers* (Master's thesis). Islamic Azad University, Marvdasht Branch, Faculty of Educational Sciences and Psychology.

- Fatima, S. (2025). Unique associative patterns of adolescents' perceptions of mothers' and father's parenting in relation to inhibition and cognitive flexibility. *Cognitive Development*, 75, 101585.
- Garavand, H. (2023). The role of psychological flexibility in coronavirus anxiety with the mediating role of cognitive emotion regulation among university students. *Journal of Positive Psychology*, 9(1), 65–86.
- Garnefski, N., & Kraaij, V. (2018). Cognitive emotion regulation strategies and psychological adjustment. *Personality and Individual Differences*, 125, 110–114.
- Garnefski, N., Kraaij, V., & Spinhoven, P. (2001). Negative life events, cognitive emotion regulation and depression. *Personality and Individual Differences*, 30(8), 1311–1327.
- Graziano, P. A., & Hart, K. C. (2022). Parenting and child emotion regulation: Implications for development and intervention. *Developmental Psychology*, 58(3), 455–470.
- Gross, J. J. (1998). The emerging field of emotion regulation: An integrative review. *Review of General Psychology*, 2(3), 271–299.
- Gross, J. J. (2015). Emotion regulation: Current status and future prospects. *Psychological Inquiry*, 26(1), 1–26.
- Gross, J. J., & Thompson, R. A. (2007). Emotion regulation: Conceptual foundation. In J. J. Gross (Ed.), *Handbook of emotion regulation* (pp. 3–27). Guilford Press.
- Hao Yao, Chen, S., & Gu, X. (2022). The impact of parenting styles on undergraduate students' emotion regulation: The mediating role of academic–social student–faculty interaction. *Frontiers in Psychology*, 13, 972006.
- Hataminejad, M., Norouzi Homayoun, M. R., & Sadri-Damirchi, E. (2024). Effectiveness of cognitive-behavioral play therapy and transcranial direct current stimulation on cognitive emotion regulation, executive functions, and communication skills in children with autism spectrum disorder. *Psychology of Exceptional Individuals*, 14(56), 107–144.
- Hosseini, L., & Davari, R. (2021). Examining the role of parenting styles in predicting alexithymia and emotion regulation strategies among high-school students in Tehran. *Journal of School Psychology*, 10(1), 46–57.
- Huang, J., Shen, X., & Wang, J. L. (2025). The long-term effects of childhood maltreatment: Examining the indirect and cross-lagged pathways of maladaptive cognitive emotion regulation strategies and internalizing problems. *Development and Psychopathology*, 1–9.

- Huang, S., & Wan, Z. (2025). Parenting styles and school bullying among Chinese adolescents: The mediating effects of social support and cognitive reappraisal. *BMC Psychology*, 13(1), 409.
- Ionescu, T. (2022). Cognitive flexibility: From theory to practice. *Current Directions in Psychological Science*, 31(5), 415–421.
- Johnco, C., Wuthrich, V. M., & Rapee, R. M. (2023). Cognitive flexibility and emotion regulation in adolescents. *Journal of Affective Disorders*, 320, 235–243.
- Kang, J., & Guo, H. (2022). The effects of authoritative parenting style on young adult children's prosocial behaviour: The mediating role of emotion regulation. *China Journal of Social Work*, 15(2), 162–177.
- Kashdan, T. B., Disabato, D. J., Goodman, F. R., & Doorley, J. D. (2020). Psychological flexibility: A meta-analysis. *Psychological Bulletin*, 146(9), 764–794.
- Khalifah Al-Shammari, K., Momeni Khodamorad, Y., & Yazdanbakhsh, K. (2025). The mediating role of emotion regulation in the relationship between attachment styles and social skills and anxiety in children with autism spectrum disorder. *Journal of Psychological Science*, 24(145), 23–44.
- Kraft, L., Ebner, C., Leo, K., & Lindenberg, K. (2023). Emotion regulation strategies and symptoms of depression, anxiety, aggression, and addiction in children and adolescents: A meta-analysis and systematic review. *Clinical Psychology: Science and Practice*, 30(4), 485.
- Lazarus, R. S. (1991). *Emotion and adaptation*. Oxford University Press.
- Li, D., Li, W., & Zhu, X. (2023). Parenting style and children emotion management skills among Chinese children aged 3–6: The chain mediation effect of self-control and peer interactions. *Frontiers in Psychology*, 14, 1231920.
- Mahmoudi, F. (2025). Effectiveness of mindfulness training on cognitive flexibility, academic performance, and emotion regulation among elementary students with learning disorders in Savadkuh County (Master's thesis). Rahian-e Novin-e Danesh Institute of Higher Education, Sari, Department of Persian Literature.
- Moghaddasi Aghdam, Kh. (2014). Comparison of cognitive emotion regulation strategies, attachment styles, assertiveness, and locus of control among runaway and non-runaway girls (Master's thesis). University of Mohaghegh Ardabili.

- Mohammad-Beigi Salahshour, H., & Motevalli, M. (2023). Examining the relationship between cognitive flexibility and mindfulness with emotion regulation in type-2 diabetic patients. *Journal of Excellence in Counseling and Psychotherapy*, 12(45), 1–16.
- Mohammadian, N. (2025). Examining the relationship between cognitive fusion, frustration tolerance, and cognitive emotion regulation with emotional adjustment among students of Ahvaz Azad University (Master's thesis). Payame Noor University of Mazandaran Province, Ramsar Payame Noor Center.
- Morris, A. S., Silk, J. S., Steinberg, L., Myers, S. S., & Robinson, L. R. (2021). The role of parenting in children's emotion regulation. *Developmental Psychology*, 57(7), 1197–1211.
- Mu, Y., & Motevalli, S. (2025). Mediating role of cognitive flexibilities in the relationship between parenting styles and self-esteem among children. *Iranian Journal of Psychiatry*, 20(2), 200.
- Nazemi Harandi, A., Jazayeri, Sh., & Saberi, H. (2022). Predicting children's socio-emotional problems based on parenting styles with the mediating role of social support. *Journal of Arak University of Medical Sciences (Rahavard-e Danesh)*, 25(1), 72–87.
- Nesaeian, A., & Asadi Gandomani, R. (2018). Predicting emotion regulation based on attachment styles and perceived parenting styles in adolescents. *Journal of Pediatric Nursing*, 5(1), 1–10.
- Pinquart, M. (2021). Associations of parenting styles with emotion regulation. *Journal of Child and Family Studies*, 30(5), 1205–1217.
- Preiss, D. D. (2022). Metacognition, mind wandering, and cognitive flexibility: Understanding creativity. *Journal of Intelligence*, 10(3), 69.
- Shiri, A. (2021). Comparison of the effectiveness of emotional-efficacy-based therapy and mindfulness-based cognitive therapy in reducing internet dependency, psychological vulnerability, and maladaptive cognitive emotion regulation strategies among students with internet addiction (Doctoral dissertation in General Psychology). University of Tabriz.
- Wang, X., Liu, X., & Feng, T. (2021). The continuous impact of cognitive flexibility on the development of emotion understanding in children aged 4 and 5 years: A longitudinal study. *Journal of Experimental Child Psychology*, 203, 105018.
- Yap, M. B. H., Pilkington, P. D., Ryan, S. M., & Jorm, A. F. (2020). Parenting and emotion regulation. *Clinical Child and Family Psychology Review*, 23(2), 192–213.

- Zarei, S., Hosseini, Sh., & Ahmadi, M. (2022). The role of cognitive flexibility in the relationship between parenting styles and adolescents' emotion regulation. *Developmental Psychology Quarterly*, 18(2), 145–162.
- Zekaeifar, A., & Mousazadeh, T. (2020). The role of parents' parenting styles in predicting the social development of 5- and 6-year-old preschool children. *Social Psychology Research*, 10(37), 87–100.