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Investigating the Predictors of Body Dysmorphia in Adolescents Based on Maladaptive Schemas and Perfectionism Mediated by Emotion Regulation

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ABSTRACT

Objective: Body dysmorphic disorder (BDD) is a distressing condition characterized by persistent negative evaluations of one's body image, often leading adolescents to seek cosmetic procedures. This study aimed to examine the predictors of body dysmorphia in adolescents based on early maladaptive schemas and perfectionism, with emotion regulation as a mediating variable.

Methods: This quantitative correlational study employed structural equation modeling (SEM). The statistical population included adolescents aged 12–19 years who referred to beauty clinics in Bandar Abbas during 2024–2025. A sample of 400 participants was selected using convenience sampling. Data were collected using the Frost Multidimensional Perfectionism Scale, the Body Image Confidence Inventory (BICI), and the Cognitive Emotion Regulation Questionnaire (CERQ). Data analysis was conducted using SPSS and PLS software.

Results: The findings indicated significant direct relationships between emotion regulation and body dysmorphia ($\beta = 0.218$, $t = 3.943$), early maladaptive schemas and body dysmorphia ($\beta = 0.230$, $t = 4.315$), and perfectionism and body dysmorphia ($\beta = 0.140$, $t = 3.119$). Early maladaptive schemas and perfectionism jointly explained 78.5% of the variance in body dysmorphia, mediated by emotion regulation. Additionally, these variables accounted for 70.8% of the variance in emotion regulation. All paths were statistically significant ($p < 0.05$).

Conclusions: The results support an integrative model of adolescent BDD, demonstrating that maladaptive schemas and perfectionism influence dysmorphic symptoms both directly and indirectly through impaired emotion regulation. Enhancing emotion regulation skills may reduce the negative impact of perfectionism on body dysmorphia, underscoring the importance of preventive and therapeutic interventions for adolescents.

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Introduction

Physical appearance has always been a major concern for adolescents. It is also considered a powerful tool in personal branding. Today, the spread of media, social networks, and mass advertising has increased the anxiety about body image to a level never seen before (Badola et al., 2025). Adolescents, who are still forming their identities, are particularly vulnerable to these anxieties compared with other age groups (Branje et al., 2021). One of the consequences of this anxiety is body dysmorphic disorder (BDD), a psychological condition characterized by three features of obsessive-compulsive disorder, stress, and functional impairment (Rizwan et al., 2022). BDD disorder may cause severe low self-esteem, social distress, isolation and even suicidal thoughts (Rautio et al., 2024). Adolescence is a sensitive stage of psychological development characterized by changes in physical, cognitive, and emotional development (Mitchison et al., 2022). Due to social pressures, cultural expectations and standards of beauty, adolescents are often self-obsessed about their appearance (Ghosh & Blair, 2025). Many try unscientific and harmful methods to achieve the ideals of beauty, and when they fail to meet these standards, they often suffer from severe body dissatisfaction (Castellanos Silva & Steins, 2023).

Body dysmorphic disorder (BDD) is a psychiatric disorder characterized by a debilitating obsession with perceived imperfections in one's appearance. Individuals with BDD often invest a disproportionate amount of time and resources in efforts to hide or fix these defects, seeking repeated cosmetic surgery procedures that do not provide lasting relief (Phillips & Kelly, 2021). The impact of BDD extends beyond physical disability and often leads to serious secondary impairments, such as depression, social anxiety, obsessive-compulsive disorder, academic failure, and suicide (Hashemi & Mohammadpanah Ardakan, 2019). Consequently, it is essential to understand the psychological factors that lead to the development and persistence of body dysmorphism to design effective prevention and intervention programs for young people. One factor that can play an important role in the development and maintenance of BDD is the activation of early maladaptive schemas (EMS). According to schema-based therapy, psychological distress and emotional pain can be connected to early maladaptive schemas that develop in response to unresolved basic emotional needs from childhood (Vieira et al., 2023). Early maladaptive schemas (EMS) are broad and pervasive themes regarding oneself and one's relationships with others, originating from adverse childhood experiences. In this context, early maladaptive schemas,

perfectionism, and emotional regulation are considered key factors that may influence the severity of BDD (Esmaeilnia et al., 2018). Therefore, modelling the interaction between these factors is crucial to better understanding the disorder and designing effective interventions. Early maladaptive schemas are deeply rooted cognitive and emotional patterns from childhood that shape how we view ourselves and the world (Spicer et al., 2024). Research confirms that schemas like Defectiveness/Shame, Dependence/Incompetence, and Abandonment are strong predictors of body dysmorphic concerns in adolescents. Adolescents who hold these schemas tend to have a negative self-image and exaggerate their perceived shortcomings (Saadatmand et al., 2022).

Another important variable contributing to body dysmorphia was perfectionism. Adolescents with perfectionistic tendencies have unrealistic expectations about their appearance and feel intense disappointment and frustration when these expectations are not met (Sulistyo et al., 2022). Maladaptive perfectionism, especially in cultures where appearance is highly emphasized, is a major risk factor for body dysmorphic disorder. But perfectionism alone is not sufficient to explain the severity of body dysmorphia. Many individuals in similar circumstances do not develop extreme attitudes about their appearance, even though they experience negative feelings about it. This difference can be attributed to the presence of mediating variables that affect the way emotions are dealt with. One of these key variables is the regulation of emotions. Emotional regulation is the process by which an individual controls the experience, intensity and expression of emotions (Gardner et al., 2021). This process can occur either consciously or unconsciously and can be either adaptive or dysfunctional. Adaptive emotion regulation strategies, such as cognitive reappraisal, acceptance and problem-oriented coping, help individuals manage negative emotions effectively. On the other hand, maladaptive strategies such as rumination, avoidance, blame-seeking and disaster-making may perpetuate or intensify negative emotions (Sajjadi & Askarizadeh, 2015).

Previous research has shown that emotional regulation plays an important role in disorders related to body image. For example, Grenier et al. (2021) reported that the continued use of inappropriate strategies for emotional regulation is associated with an increased incidence of symptoms of depression and anxiety. In addition, recent studies suggest that people with body dysmorphic disorder are more likely to use strategies such as rumination and avoidance, and less likely to use

adaptive strategies such as cognitive reappraisal (Greenier et al., 2021). It is therefore suggested that emotional regulation can act as a facilitator between perfectionism and body dysmorphia. This means that perfectionism is expected to lead to increased body dysmorphic concerns, especially if the individual is relying on an inappropriate coping strategy.

Dastbaz et al. (2023) investigated the prediction of body dysmorphic disorder (BDD) based on personality traits and cognitive distortions, with the mediating role of difficulties in emotion regulation in female students. They concluded that the predictive model for BDD based on the study's variables had a good model fit. Cognitive distortions, neuroticism, and difficulties in emotion regulation had a significant positive direct effect on BDD, whereas extraversion and conscientiousness had a significant negative direct effect. Furthermore, the indirect effects of cognitive distortions, neuroticism, and extraversion on BDD, mediated by difficulties in emotion regulation, were also significant. Based on these results, neuroticism and cognitive distortions are important factors for BDD, and their impact is amplified by the mediating emotional regulation disorders (Dastbaz et al., 2024). Therefore, it is recommended that school counselors organize training courses and specialized workshops to correct cognitive distortions, address neuroticism, and promote emotional management skills.

Vafapour et al. (2021) investigated the predictive role of body dysmorphic concerns, difficulties in emotion regulation, and maladaptive responses on unhealthy eating behaviors and attitudes in adolescent girls. They found that body dysmorphic concerns, difficulties in emotion regulation, and maladaptive responses had a positive and significant relationship with unhealthy eating behaviors and attitudes. Furthermore, regression analysis results showed that the predictor variables, taken together, could explain the variance in unhealthy eating behaviors and attitudes. The study's findings indicate that body dysmorphic concerns, difficulties in emotion regulation, and maladaptive responses can lead to the development of unhealthy eating behaviors and attitudes in adolescent girls (Vafapour et al., 2022).

Lavell et al. (2025) examined family psychiatric history as well as parental distress, parenting practices, adjustment to appearance and appearance messages in a clinical sample of BDD adolescents. Results showed that parents of BDD adolescents reported significantly higher levels of emotional distress than non-clinical parents ($p = .003$, $d = 1.02$). Most (92%) of parents in the BDD group reported that they had addressed their child's appearance problems and reported

significantly more frequent treatment responses than parents in the anxiety disorder group ($p < .001$, $d = 1.40$) and in the non-clinical group ($p < .001$, $d = 1.83$). There were no significant differences between the BDD and control groups in parental warmth, overprotection, or appearance messages. The results of this study confirmed cognitive-behavioral models for adolescent BDD and family-based approaches to treatment (Lavell et al., 2025).

Haidar et al. (2025) examined the interaction between body dysmorphic disorder, perfectionism and their mediation by body image and narcissism in Chinese students. The results revealed a negative association between BDD and adaptive perfectionism and narcissism, while maladaptive perfectionism and body image correlated positively with BDD. Gender differences were significant in age, narcissism, body mass index, adaptive perfectionism, and maladaptive perfectionism. Interestingly, overweight students had a higher risk of developing BDD than did underweight students. The pathway analysis showed that maladaptive perfectionism is a significant predictor of BDD, both directly and indirectly via BI ($p<.001$). However, unexpected outcomes with direct predictions of BDD through adaptive perfectionism were not observed in Chinese students, compared with indirect predictions through body image and narcissism (Haider et al., 2024).

Despite extensive research on Body Dysmorphic Disorder (BDD), a comprehensive model that concurrently investigates the influence of maladaptive schemas, perfectionism, and emotion regulation is still lacking. Most studies have examined these variables separately, whereas BDD is a multidimensional phenomenon that requires an integrated approach to understand its contributing factors. Furthermore, most of the research has been conducted on adults, with less attention paid to adolescents, a particularly vulnerable population for this disorder. To address these gaps in the literature, the present study aims to propose an explanatory model of BDD in adolescents based on maladaptive schemas and perfectionism, with the mediating role of emotion regulation. By examining the relationship between these variables, this research seeks to provide a more comprehensive understanding of the cognitive and emotional mechanisms underlying BDD. The findings are expected to help psychologists, counsellors, and mental health professionals design more effective interventions to prevent and treat the disorder, ultimately contributing to an improved quality of life for the affected adolescents.

Material and Methods

This study employed a correlational-structural equation modelling (SEM) to investigate the relationship between body dysmorphia and related psychological constructs, including early maladaptive schemas, perfectionism, and emotion regulation.

The target population consisted of all adolescents aged 12 to 19 who had been clients at the aesthetic clinics in Bandar Abbas, Iran, in 2024. Purposive sampling was used to select participants. Inclusion criteria were: ethical considerations, informed consent, age 12 to 19, visiting an aesthetic clinic, absence of any major physical illness, and a score of 45 or higher on the Body Dysmorphia Scale. Exclusion criteria were withdrawal from the study or failure to complete the questionnaires. During recruitment, each potential participant was interviewed briefly by a trained researcher and a clinical nurse. They were asked if they had a current or previous major physical disease (e.g. severe cardiovascular, neurological, endocrine or other chronic conditions) which significantly affected their daily functioning or required continuous medical care or regular hospitalization. If a participant reported such a condition, they were not enrolled. In addition to the oral interview, the same issue was examined in a Demographic Questionnaire. The form contained specific items asking the participants if they had a history of serious physical illness or a chronic illness. Any participant who reported the presence of a serious physical disease on this form was disqualified from the study. No physical examinations or access to medical records were carried out; the determination of absence of significant physical disease was based on the participants' own statements (oral and written). Only those who consistently reported no serious physical disease were considered to be eligible under this criterion. All the participants were individuals who had visited the beauty clinic with the express intention of having cosmetic surgery. They sought out elective surgical procedures to change or improve their appearance (e.g. rhinoplasty, cosmetic surgery on the face or body). Individuals who reported only non-surgical or minimally invasive cosmetic services (e.g. skin care, facials, cleansing, laser treatments, or other routine cosmetic services) were not included in the study. These patients were not exposed to the study and did not enter the screening procedure. The required sample size was calculated using Soper's a priori sample size calculator for SEM. Parameters were set at an expected effect size of 0.2, statistical power of 0.8, and a significance level (a) of 0.05 for a model

with 4 latent variables (perfectionism, Maladaptive Schemas, emotional regulation, and body dysmorphia). The calculation indicated a minimum requirement of 342 participants. To increase statistical power and potential for generalizability, 400 individuals were finally recruited for the study. For ethical research considerations, respondents received a detailed briefing and key information about the purpose of the study. Informed consent was obtained, and respondents willingly decided to take part in the study. To guarantee anonymity, secrecy, and the avoidance of potential harm, the names and identities of the research participants were not disclosed. Data were collected using the following standardized instruments.

Measurement scale

1. Frost Multidimensional Perfectionism Scale (FMPS)

The Frost multidimensional perfectionism scale (FMPS) was used to assess the dimensions of perfectionism (Frost & Marten, 1990). The 35-item questionnaire includes six subscales: concern about mistakes, doubts about actions, parental expectations, parental criticism, personal standards and organization. Items are rated on a four-point Likert scale, ranging from 1 (strongly disagree) to 4 (strongly agree). In the original validation study, they reported internal consistency coefficients (Cronbach's alpha) for subscales from .73 to .93 and total alpha of the scale from .90 to .99. An Iranian validation study by Abbaspour (2006) using a sample of students yielded a Cronbach's alpha of .75 for the total scale and a range of .63 to .83 for the subscales. The reliability of the test version was reported to be .76.

2. Cognitive Emotion Regulation Questionnaire (CERQ)

The CERQ is a self-report questionnaire consisting of 36 items that identify the cognitive strategies that people use to cope with life-threatening events. The questionnaire measures nine different cognitive coping strategies: self-blame, acceptance, rumination, positive refocusing, refocusing on planning, positive re-evaluation, putting things in perspective, catastrophic, and other-blame (Garnefski et al., 2007). The answers are recorded on a five-point scale from 1 (seldom) to 5 (almost always). The sub-scores range from 4 to 20, and the total score may be from 36 to 180. Higher scores on the subscale indicate a greater frequency of this specific strategy. They reported the Cronbach's alpha coefficients of nine sub-components, ranging from 0.62 to 0.80. The psychometric properties of the Persian version have been studied by Hassani (2011), who

confirmed its validity and reported an acceptable reliability with Cronbach's alpha coefficients ranging from .68 to .82 for the subscale(Hasani, 2011).

3. Body Image Concern Inventory (BICI)

This 19-item inventory, developed by Littleton et al. (2008), measures discontent and concern about one's physical appearance. Items are scored on a five-point Likert scale, with total scores ranging from 19 to 95. Higher scores indicate greater dissatisfaction with body image. Littleton et al. (2008) reported excellent internal consistency with a Cronbach's alpha of .93. This questionnaire was first translated into a Persian version and validated by Bassaknejad and Ghaffari (2008) for university students (Bassaknejad & Ghaffari, 2008). Cronbach's alpha was reported to be 0.93 for female students, 0.95 for male students, and 0.95 for the total sample in their study. Convergent validity was demonstrated by significant correlations between the Fear of Negative Visual Evaluations ($r = .55$, $p < .001$) and the Fear of Negative Evaluations ($r = .43$, $p < .001$). In this study, internal consistency was calculated for this scale, and Cronbach's alpha was .89.

4. The Maladaptive Schema Scale

Young Schema Aligned (MSS-YSQ) assesses maladaptive patterns of thoughts, behaviors and emotions. The MSS-YSQ is aligned with the schemas defined in the Young Schema Questionnaire (YSQ) in 1990, but is shorter (76 questions) and uses contemporary psychometric techniques. Developed by Young (1990), the 76-item Young Schema Questionnaire assesses nineteen early maladaptive schemas. Items are scored on a 6-point Likert scale (1 = completely untrue*; 6 = describes me perfectly), with every five items corresponding to a single schema. A subscale mean score greater than 2.5 signifies a dysfunctional schema. The instrument has demonstrated proven reliability and validity across multiple studies (Young, 1999). The Persian version was standardized by Mahdavi and Azadi (2021), yielding Cronbach’s alpha coefficients of 0.97 for females and 0.98 for males (Mahdavi & Azadi, 2021). The study established reliability through internal consistency, construct validity via Confirmatory Factor Analysis (CFA), and norms using percentile ranks. Results indicated that reliability coefficients were satisfactory (0.70) for all domains, except for "Other-Directedness," which showed moderate reliability (0.67).

Results

Data were collected using standardized questionnaires for perfectionism, body dysmorphia, and cognitive emotion regulation. The analysis was conducted in two parts: descriptive and inferential.

Descriptive Findings

Table 1. Frequency Distribution of Participants by Gender and Academic Major

Variable	Category	Frequency	Percentage
Gender	Male	200	50%
	Female	200	50%
	Total	400	100%
Academic Major	Experimental Sciences	100	25%
	Technical/Vocational	100	25%
	Humanities	100	25%
	Other Majors	100	25%
	Total	400	100%

As shown in Table 1, the sample was equally distributed by gender, with 50% male (n=200) and 50% female (n=200) participants. Regarding the academic major, the participants were evenly distributed across four categories: 25% in Experimental Sciences, 25% in Technical/Vocational fields, 25% in Humanities, and 25% in other majors.

Findings Related to the Research Hypothesis

This research addresses the following hypotheses. Each hypothesis is presented in this section along with its corresponding analysis results. Prior to this, the assumptions for linear regression analysis and the assessment of normality are presented.

Assumptions of Linear Regression Analysis

1. The criterion variable and the predictor variable(s) are measured on a continuous interval scale, as is evident from the operational definitions and the questionnaires used.
2. The normality of the distribution of scores for the criterion variable was assessed using the Kolmogorov-Smirnov (K-S) test.

Table 2. Normality Test for the Studied Constructs

Variable Name	Sig. (p-value)
Perfectionism	0.311
Cognitive Emotion Regulation	0.112
Body Dysmorphia	0.322
Maladaptive Schemas	0.231

3. The assumptions of homoscedasticity, normality, and residual independence were checked, as well as their non-correlation with predictor variables.

4. Assessment of collinearity and multicollinearity, which refer to the correlation between independent variables in the regression model.

5. The independence of errors was verified by the Durbin-Watson test, where the statistic between 1.5 and 2.5 was considered acceptable.

For the multilinearity assessment, the Tolerance and Variance Inflation Factor (VIF) metrics were used. The calculation relationship between these indices is VIF = 1 - (1 - R^2j), where R^2j is the coefficient of determination of the dependent variable of the regression model with the j-th predictor. A tolerance value of less than 0.1 or a VIF of more than 10 indicates multicollinearity. In this study, all variables were within acceptable tolerable ranges.

Table 3. VIF Values in the Model Predicting Adolescent Body Dysmorphia

Variable Name	VIF
Perfectionism	2.893
Cognitive Emotion Regulation	1.445
Body Dysmorphia	1.445
Maladaptive Schemas	1.534

As the VIF values for all variables are less than 10, the assumption of no multicollinearity is met.

Table 4. Significance of t-values in the Predictive Model of Adolescent Body Dysmorphia

Path	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Cognitive Emotion Regulation -> Body Dysmorphia Disorder	0.218	0.218	0.055	3.943	0.001
Perfectionism -> Body Dysmorphia Disorder	0.140	0.139	0.045	3.119	0.001
Perfectionism -> Cognitive Emotion Regulation	0.243	0.242	0.053	4.593	0.001
Maladaptive Schemas-> Dysmorphia Disorder	0.23	0.23	0.055	4.315	0.001
Maladaptive Schemas-> Cognitive Emotion Regulation	0.423	0.423	0.06	7.041	0.001

Based on the findings in Table 4, the t-statistics for all paths in the predictive model are significant and greater than the conventional threshold of 2.0.

Table 5. Path Coefficients for the Predictive Model of Adolescent Body Dysmorphia

Variable	Body Dysmorphia Disorder	Cognitive Emotion Regulation
Cognitive Emotion Regulation	0.218	
Early Maladaptive Schemas	0.230	0.423
Negative Affect	0.393	0.254
Perfectionism	0.140	0.243

According to the findings in Table 5, the path coefficient for the relationship between cognitive emotion regulation and body dysmorphia disorder is 0.218, between negative affect and body dysmorphia disorder is 0.393, and between negative affect and cognitive emotion regulation is 0.254. Therefore, the relationship of negative affect with body dysmorphia disorder, mediated by cognitive emotion regulation, is significant ($p < 0.05$).

Table 6. The Relationship between Perfectionism and Adolescent Body Dysmorphia Mediated by Emotion Regulation

Criterion Variable	Predictor Variable	Regression Coefficients				
		Coefficient of Determination (R^2)	Path Coefficient (β)	t-value	Sig. (p-value)	Sample Size
Body Dysmorphia Disorder	Perfectionism	0.785	0.140	3	0.001	400
	Emotion Regulation	0.785	0.218	4	0.001	400
	Maladaptive Schemas	0.785	0.230	4		400

The findings indicate that the path coefficient (β) and bootstrapping t-value for the relationship between emotion regulation and body dysmorphia disorder are 0.218 and 4, respectively. The coefficient of determination (R^2) is 0.785, indicating that 78.5% of the variance in body dysmorphia disorder is explained by the model. The analysis confirms that the relationship between negative affect and body dysmorphia disorder, as mediated by emotion regulation, is significant ($p < 0.05$).

Table 7. Relationship between Perfectionism and Emotion Regulation in Adolescents

Criterion Variable	Predictor Variable	Regression Coefficients				
		Coefficient of Determination (R^2)	Path Coefficient (β)	t-value	Sig. (p-value)	Sample Size
Emotion Regulation	Perfectionism	0.708	0.243	5	0.001	400

The findings in Table 7 show that the path coefficient and bootstrapping t-value for the relationship between negative affect and cognitive emotion regulation are 0.254 and 5, respectively. The coefficient of determination (R^2) for emotion regulation is 0.708, meaning that 70.8% of its variance is explained by the effect of negative affect. Therefore, the relationship is significant ($p < 0.05$).

Table 8. Results for Cronbach's Alpha, Composite Reliability (rho A), and Average Variance Extracted (AVE) for Latent Variables

Latent Variable	Cronbach's Alpha (α > 0.7)	Rho A	Composite Reliability (CR > 0.7)	Average Variance Extracted (AVE > 0.5)
Body Dysmorphia Disorder	0.829	0.841	0.871	0.558
Cognitive Emotion Regulation	0.775	0.788	0.842	0.573
Perfectionism	0.714	0.727	0.814	0.669
Maladaptive Schemas	0.829	0.831	0.881	0.595

Table 8 presents the results for Cronbach's Alpha, composite reliability (CR), and Average Variance Extracted (AVE) for the latent variables. These results indicate that all constructs demonstrate acceptable reliability and internal consistency, as they meet the standard threshold criteria ($\alpha > 0.7$, CR > 0.7, AVE > 0.5). This confirms that the measurement tools are dependable.

Table 9. Results of Endogenous Constructs R^2 and Adjusted R^2

Variable Name	R Square	R Square Adjusted
Body Dysmorphia Disorder	0.785	0.782
Emotion Regulation	0.708	0.706

Based on the findings in Table 9, the R-squared value for the endogenous construct of body dysmorphia disorder is 0.785. This indicates that 78.5% of its variance is explained by the combined effects of early maladaptive schemas, perfectionism and emotion regulation. Furthermore, the R-squared value for emotion regulation is 0.708, indicating that 70.8% of its variance is explained by the effect of perfectionism.

Discussion

This study investigated the predictors of body dysmorphia in adolescents, focusing on maladaptive schemas and perfectionism mediated by emotion regulation. The findings strongly supported the proposed model, showing that both cognitive and emotional regulation problems are important

factors in dysmorphic concerns among high-risk adolescents. The model explained a substantial proportion of the variance in both BDD (R^2 = .785) and emotion regulation (R^2 = .708), highlighting the clinical significance of these interrelated psychological constructs.

The results revealed significant direct and indirect pathways contributing to BDD. Consistent with the study's primary hypothesis, both perfectionism (β = .140) and early maladaptive schemas (β = .230) were significant direct predictors of BDD severity. This is in line with the well-established body of literature that identifies maladaptive perfectionism as a core risk factor for body image disorder, particularly its tendency to promote unrealistic appearance standards and intense self-criticism (Haider et al., 2024; Sulistyo et al., 2022). Similarly, the strong correlation between EMS and BDD supports schema-based theories that the core beliefs of inadequacy, shame, and inadequacy - often rooted in negative childhood experiences - make individuals susceptible to exaggerating their perceived shortcomings and seeking external validation (Saadatmand et al., 2022; Spicer et al., 2024; Vieira et al., 2023).

The observed direct associations between perfectionism, early maladaptive schemas (EMS), and BDD are consistent with Haider et al.'s (2024) pathway analysis among Chinese university students. Notably, individuals with an overweight status demonstrated heightened vulnerability—a pattern that may be particularly salient within our aesthetic clinic sample. Similarly, Dastbaz et al. (2024) reported that emotion regulation difficulties mediated the relationship between cognitive distortions, neuroticism, and BDD in female participants, underscoring the exacerbating role of regulatory impairments (Dastbaz et al., 2024). Our study extends these findings to the adolescent cohort and incorporates EMS, providing a more integrative perspective on the cognitive-affective mechanisms underlying BDD. In the adolescent population, our results are consistent with those of Rizwan et al. (2021) and Ghosh and Blair (2025), which highlight the role of identity-building and media-driven appearance-based pressures in increasing body image problems, often culminating in the obsessive-compulsive symptoms of BDD (Ghosh & Blair, 2025; Rizwan et al., 2022).

Although there are only small differences from previous research, they are worth noting. For example, Haider et al. (2024) did not find any significant direct effects of adaptive perfectionism on the risk of BDD. Conversely, our focus on the suboptimal dimensions, assessed by the Frost

multidimensional perfectionism scale (FMPS), revealed a consistent positive association. This difference may reflect the cultural specificities of Iranian adolescents, where social norms regarding appearance are particularly strict.

The direct predictive contributions of early maladaptive schemas (EMS) and perfectionism are consistent with established theoretical models that identify these constructs as core psychological vulnerabilities in the body image of disturbances. EMS are enduring cognitive-affective structures, typically formed during childhood in response to unmet emotional needs such as those related to secure attachment or autonomy, and predispose individuals to internalized beliefs of defectiveness and shame. These maladaptive self-perceptions often manifest as heightened vigilance toward perceived physical flaws (Spicer et al., 2024; Vieira et al., 2023). In adolescent populations, schemas such as Defectiveness/Shame, Dependence/Incompetence, and Abandonment have been previously emphasized in empirical studies (Saadatmand et al., 2022) may exacerbate the psychosocial volatility of puberty, a developmental phase characterized by rapid bodily changes and evolving identity structures (Mitchison et al., 2022). Perfectionism, particularly in its maladaptive forms (e.g., excessive concern over mistakes, rigid parental expectations), imposes unrealistic standards that perpetuate a persistent discrepancy between actual and ideal self-image. This incongruence often results in chronic frustration and self-critical affect when appearance-related goals remain unattainable (Frost & Marten, 1990; Sulistyo et al., 2022). The observed standardized path coefficients (β = .140–.230), though modest, are statistically significant and suggest that EMS and perfectionism function as distal risk factors, exerting their influence through both proximal cognitive distortions and broader developmental mechanisms.

The mediating role of emotion regulation represents a novel and significant contribution, providing insight into the mechanisms by which cognitive deficits manifest themselves as clinical symptoms in body dysmorphic disorder (BDD). Deficits in emotion regulation, characterized by maladaptive strategies such as rumination, avoidance, and self-blame, are partly responsible for the relationship between early maladaptive schemas (EMS), perfectionism, and BDD severity (Garnefski et al., 2007). The presence of residual direct effects suggests a partial mediation, indicating that while EMS and perfectionistic standards have a direct effect on dysmorphic cognitions, their emotional consequences (e.g., shame, anxiety) can overwhelm the regulatory capacities, leading to compulsive behaviors such as hiding of perceived flaws or pursuit of cosmetic procedures (Phillips

& Kelly, 2021). The incorporation of negative affect as a bridging construct further enriches this explanatory model: increased emotional distress not only intensifies the symptoms of BDD but also disrupts regulatory functioning, creating a recursive loop in which affective dysregulation increases the activation of schema and perfectionistic rumination (Gardner et al., 2021; Sajjadi & Askarizadeh, 2015). This affective pathway accounts for the elevated R^2 values observed in the structural model, underlining the importance of proximal emotional processes that are often underrepresented in cognitively focused frameworks.

From a theoretical point of view, these findings support an integrative model of BDD cognitive impairment in adolescents. The disorder seems to be driven not only by what the adolescent thinks (i.e., perfectionistic standards, schema-driven beliefs), but also by the way he or she handles the feelings that are triggered by these thoughts. This perspective goes beyond purely cognitive conceptualization to highlight the dynamic interaction between embedded vulnerabilities and regulatory processes in real time.

The clinical implications of this model are substantial. First, a multi-pronged therapeutic approach is justified. Interventions for BDD in adolescents should not only address distorted appearance-related beliefs but also explicitly address the underlying schemas and perfectionism. Schema Therapy technique (e.g., identifying and challenging schemas like Defectiveness/Shame) and perfectionism-focused Cognitive Behavioral Therapy (CBT) can be important in addressing the underlying cognitive drivers. Second, and perhaps most importantly, the development of emotion regulation skills should be a central component of treatment. Therapeutic modalities such as dialectical behavior therapy (DBT) or acceptance and commitment therapy (ACT), which teach coping skills, mindfulness, and cognitive reappraisal, can help adolescents break the cycle of negative emotions triggering and reinforcing dysmorphic preoccupations. The research findings indicated that perfectionism had both direct and indirect effects on Body Dysmorphic Disorder (BDD). Consequently, it is recommended that psychologists, counsellors, and mental health specialists utilise these findings to design more effective interventions for the prevention and treatment of this disorder, ultimately improving the quality of life for adolescents with BDD. Furthermore, the findings revealed the direct and indirect influence of early maladaptive schemas on BDD. Schemas in the domains of Disconnection and Rejection, Other-Directedness, Impaired

Autonomy and Performance, Impaired Limits, and Overvigilance/Inhibition played a significant role in forming negative thoughts and impairing emotion regulation. Since these factors drive adolescents towards negative thinking patterns associated with BDD, it is suggested that school counsellors, educators, and families implement plans and training to modify these schemas and enhance emotion regulation skills.

This study has several limitations that need to be acknowledged. First, the cross-sectional design prevents definitive conclusions on causation; longitudinal or experimental studies are required to establish the temporal precedence of these relationships. For example, it is possible that severe BDD could gradually erode the capacity to regulate emotions. Secondly, using a purposive sample of aesthetic clinics from one city (Bandar Abbas, Iran) may limit the generalization of findings to a wider group of adolescents or other cultural contexts. Thirdly, the sole reliance on self-reported questionnaires raises the possibility of a common methodological error, which could have increased the observed correlations and the high R^2.

Future research should address these limitations by employing longitudinal and multi-method designs that incorporate clinical interviews, behavioral observations (e.g., attentional bias tasks), and informant reports to provide a more objective and nuanced assessment. Replicating this model in diverse cultural and community-based samples is essential to test its cross-cultural validity. Finally, future studies could explore potential moderators of these pathways, such as gender, social media usage, or family environment, to further refine our understanding of who is most at risk.

In conclusion, this study provides strong evidence for an integrative model of adolescent body dysmorphic disorder, in which early maladaptive schemas and perfectionism contribute to dysmorphic symptoms both directly and indirectly through their negative impact on emotion regulation. The findings highlight that BDD is not just a disorder of distorted perception, but is deeply interlinked with fundamental cognitive deficits and an impaired ability to manage emotional distress. These results have significant implications for clinical practice and support complex interventions that address not only the surface-level symptoms but also the underlying cognitive and affective mechanisms that drive and maintain this debilitating disorder. By addressing these core factors, clinicians can provide more effective and enduring support to adolescents struggling with their body image.

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 ethics committee of Islamic Azad University.

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.

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