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Drive For Muscularity in Male Adolescents: The Role of Psychological Factors (Self-Esteem, Maladaptive Perfectionism, and Interpersonal Sensitivity)

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Abstract

Background: Concerns about body image among male adolescents has become increasingly prevalent, leading to a need for muscularity. It is well known that psychological factors play a role in the development of these concerns.
Objectives: The aim of the current study was to predict the drive for muscularity based on psychological factors, including self-esteem, maladaptive perfectionism, and interpersonal sensitivity.
Methods: This cross-sectional study was conducted in 2019. Using a convenience sampling method, 150 adolescent male students from district 14 of Tehran, Iran, were selected to participate in the study. Data was collected by utilizing the following measures: drive for Muscularity scale, Rosenberg Self-Esteem scale, Almost Perfect scale-revised, and Interpersonal Sensitivity measure. Data were analyzed using the Pearson correlation coefficient and the Enter Regression method.
Results: High scores in the Drive for Muscularity scale were significantly associated with higher levels of maladaptive perfectionism, interpersonal sensitivity, and lower levels of self-esteem. Moreover, the results of the multiple regression analysis revealed that predivariables could explain 52% in the variance of the drive for muscularity.
Conclusions: Findings indicated that the psychological factors investigated in this study were risk factors for masculinity among adolescents. We suggest that clinicians take these factors into account in order to make preventive and therapeutic programs more effective.

Keywords: Adolescence, Drive for Muscularity, Interpersonal Sensitivity, Perfectionism, Self-Esteem

1. Background

As a multidimensional construct, body image has come to be defined as the attitudes that one holds towards their body (1). Researchers have used it to refer to the way individuals think, feel, and behave in regards to their physical qualities (2). Most of the literature assessing body image has focused on girls and women (3, 4); and largely ignored or minimized the experiences of boys and men (5). Recent research indicates that a significant percentage of youth experience body image concerns (6-8). Young men, for instance, have been found to favor the muscular qualities that are characteristic of a mesomorphic body type (9).

On the other hand, muscular desires are not unique to young men (6). There is increasing evidence that adolescent males are conscious of muscularity, too, as shown in their increasing engagement in resistance training activities in order to increase body mass (10-12). Other studies have revealed that there is a gender dimension to muscularity, reporting that a drive for muscularity (DFM) is a more commonplace phenomenon among males aged 14 to 16 than among females of the same age group (13-15). Although research on DFM has increased as of late, there is still a great deal left to study in this field.

An individual's desire to become more muscular can be reflected in attitudinal (e.g., desire for muscularity) or behavioral (e.g., weight lifting) manifestations (8, 16). Diehl and Baghurst (17) explained that the factors related to DFM could be divided into biological, psychological, and sociocultural factors. Within this context, the biopsychosocial model is a framework for investigating correlates of DFM in the current study. Biopsychosocial framework argued that psychological distress could have physical and social manifestation (18), therefore, in the current study, psychological factors considered in relation to DFM. Unfortunately, researchers have thus far neglected to examine the psychological factors associated with DFM among

adolescents; and instead have focused on the following areas: social and biological factors such as the media and peer pressure (4), internalization of athletic physique (19), weight concerns (1), and general somatic features (20). Therefore, investigating psychological factors can bridge this research gap. Also, in their practices clinicians have noted that among psychological constructs, self-related constructs are more important in studying individuals concerns (18). As a result of this, in the current study, we examined self-esteem, maladaptive perfectionism and internal sensitivity as predictors of DFM in adolescent boys.

With regards to psychological factors associated with DFM, research has shown that lower self-esteem in adolescent boys is related to higher DFM (6, 8, 21). The Contingencies of Self-Worth Theory proposes that global self-esteem has an important impact on body satisfaction (22, 23). Poor self-esteem in adolescents may cause eating disorders and lead to body image dissatisfaction (24). Olivardia et al. (25) found that self-esteem and body dissatisfaction variables like belittlement and muscle displeasure were negatively correlated. In their study on male students, Grossbard et al. (26) found that weaker self-esteem was associated with greater DFM. Research studies have also found that in a male population, maladaptive perfectionism significantly predicted body image dissatisfaction and related behaviors such as DFM (27, 28). Current research has predominantly focused on the relationship between maladaptive perfectionism and body dissatisfaction behaviors, where the former has been characterized as both a correlate with and a risk factor for body dissatisfaction and body image concerns (29, 30). In one study, body image concerns were found to positively correlate with adaptive and maladaptive perfectionism (31); however, another study revealed that body image concerns have a meaningful positive association with maladaptive perfectionism and a significant negative association with adaptive perfectionism (32). There are numerous studies that identify maladaptive perfectionism as a critical risk factor, with some even suggesting that DFM is an expression of maladaptive perfectionism (33, 34). More specifically, Castro et al. (35) found a correlation between maladaptive perfectionism and a higher degree of DFM among adolescent participants.

DFM might be influenced by factors like interpersonal sensitivity, which can refer to a fear of rejection or criticism by others (36, 37). There is evidence suggesting that highly sensitive adolescents are more prone to depression (38); and some studies have shown that depression significantly predicted muscle dysmorphia and DFM (39, 40). In their study, Diehl and Baghurst (17) identified a significant relationship between interpersonal sensitivity and muscle dysmorphia in relation to DFM. In addition, studies have demonstrated that adolescents who experience high interpersonal sensitivity tend to be more concerned about their body image, which leads to a decreased level of body image satisfaction, subsequently increasing DFM (41, 42). Finally, as previously mentioned, the majority of research conducted in Iran thus far has focused on female-centric constructs like the desire for thinness in both male and female populations; however, male-centric constructs like the drive for muscularity has not yet been examined. Thus, it is important that more male-centric constructs, such as the drive for muscularity, are further assessed, especially among adolescents.

2. Objectives

The link between psychological variables and DFM in Iranian adolescents has been underinvestigated. Considering that there is a great deal still to learn about the causes and manifestations of DFM, it is critical to identify factors that may impact it is the development. With this in mind, the current study aimed to contribute to the growing literature on the influence of psychological factors on DFM in an adolescent population.

3. Methods

The present study was a descriptive correlational study that was conducted in 2019. The research population included male adolescent students at public high schools in district 14 of Tehran, Iran. Using the convenience sampling method, a total of 150 adolescents were selected based on the Tabachnick and Fidell sample size formula (n = 10 m + 50). Only adolescents who were 15 - 18 years of age and had at least one year of bodybuilding experience were included in the study. Based on the abovementioned inclusion criteria and participant self-reported drive for a muscular body, qualified adolescents were selected by administering a preliminary interview. At the outset, participants were provided with study information and assured that their information would be confidential. It should be noted that the only exclusion criteria was a history of physical or psychological difficulties.

3.1. Research Instruments

3.1.1. Drive for Muscularity Scale

The Drive for Muscularity scale (DMS) is a 15-item self-report tool that measures an individual's desire for a more muscular physique through attitudinal and behavioral prompts (8). Participants respond to the questionnaire items using a Likert scale ranging from Neve (1) to Always (6). The overall score for the scale ranges from 15 to 90,

wherein higher scores show a greater drive for muscularity. McCreary and Saucier reported on the questionnaire's high internal consistency (α = 0.90) for males (43). Additionally, the measure has strong test-retest correlations with 7 - 10 day intervals (α = 0.93) (44). In Iran, the Farsi' translation of the DMS has demonstrated good internal consistency (Cronbach's alpha = 0.91), as documented by Besharat et al. (45).

3.1.2. Rosenberg Self-Esteem Scale

Rosenberg Self-Esteem scale (RSES) is a self-report scale that consists of 23 items that measures feelings of worthiness in children and adolescents (46). Responses are measured on a 4-point Likert-type scale, generating a total score that ranges from 0 to 30. Higher scores are indicative of higher levels of self-esteem. Test-retest correlations reported for the scale range from 0.82 to 0.88, indicating high reliability. Cronbach's Alpha for various samples has been reported to fall between 0.77 to 0.88 (24). Specifically, in a sample of Iranian adolescent boys, Cronbach's Alpha coefficient of RSES was reported as 0.82 by Shafiee and Saffarinia (47).

3.1.3. Interpersonal Sensitivity Measure

Interpersonal Sensitivity measure (RSES) is a self-report scale that consists of 23 items that measures feelings of worthiness in children and adolescents (46). Responses are measured on a 4-point Likert-type scale, generating a total score that ranges from 0 to 30. Higher scores are indicative of higher levels of self-esteem. Test-retest correlations reported for the scale range from 0.82 to 0.88, indicating highly reliability. Cronbach's Alpha for various samples has been reported to fall between 0.77 to 0.88 (24). Specifically, in a sample of Iranian adolescent boys, Cronbach's Alpha coefficient of RSES was reported as 0.82 by Shafiee and Saffarinia (47).

3.1.4. Almost Perfect Scale-Revised Form

The Almost Perfect scale-revised form (APS-R) is a 23-item scale that was originally intended to be a measurement of perfectionism with its three facets of standards, order, and discrepancy (48). Although in this study, we operationalized maladaptive perfectionism as the discrepancy scale (12 items). In this scale, each item is scored on a seven-point Likert scale ranging from strongly disagree (1) to strongly agree (7). The total score for the discrepancy subscale ranges from 12 to 84, with higher scores interpreted as the greater disparity between the individual's personal standards and their performance. Barnett and Sharp showed that the APS-R exhibited good reliability (α = 0.94) (32).

In Iran, research results supported the three-factor structure of the APS-R scale in a student sample, with Cronbach's Alpha of 0.83 for discrepancy subscale (49).

3.2. Statistical Analysis

Descriptive statistics such as frequency, percentage, mean and standard deviation were calculated. Inferential statistics like Pearson correlation and Enter regression were also utilized to analyze study data. Statistical analysis was conducted using IBM SPSS software for Windows, version 23.0.

4. Results

The linear relationship between predictor variables and DFM was assessed and 8 participants that are located further than two standard deviations above or below the best-fit line were excluded from the equation as outliers. Based on the participant demographic variables, the mean age was 16.31 $\pm$ 5.37 fell in the 15 - 18 years age range. Study demographic information is noted in fully depicted in Table 1.

Table 1. Demographic Characteristics[a]

	Values
Age	
15	22 (15.49)
16	69 (48.59)
17	34 (23.95)
18	17 (11.97)
Current steroids use	
Yes	26 (18.31)
No	116 (81.69)
Educationallevel	
1st grade of high school	34 (23.95)
2nd grade of high school	83 (58.45)
3rd grade of high school	25 (16.60)
Bodybuilding exercises, y	
1 - 2	103 (72.54)
2 - 3	27 (19.01)
> 3	12 (8.45)

[a]Values are expressed as No. (%).

Table 2 shows that the Skewness of the distribution of scores was in the range (2 and -2) and the kurtosis was also in the range (3 and -3), indicating that the data was normally distributed.

Table 2. Descriptive Statistics of Research Variables

Variables	Mean ± SD	Min	Max	Skewness	Kurtosis
Self-esteem	14.18 ± 4.08	5	22	0.207	-0.612
Maladaptive perfectionism	51.67 ± 8.39	16	73	-0.301	-0.592
Interpersonal sensitivity	83.13 ± 11.26	59	126	0.185	0.312
Drive for muscularity	57.44 ± 9.91	21	81	-0.125	-0.219

As evident in Table 3, all the predictive variables showed a significant relationship with DFM. Of these, self-esteem was correlated negatively with DFM ($r = -0.38$, $P < 0.01$). Furthermore, maladaptive perfectionism ($r = 0.32$, $P < 0.01$) and interpersonal sensitivity ($r = 0.25$, $P < 0.01$) had a significantly positive relationship with DFM. Also, the results of collinearity noted in Table 3 show that tolerance and variance inflation factor (VIF) are within the range of acceptance.

A multiple regression model indicated significance ($F = 36.22$, $P < 0.001$). Table 4 provides detailed information on the predictor variables. The following variables were significant predictors of DFM: self-esteem (beta = -0.26) at $P < 0.001$, Maladaptive perfectionism (beta = 0.18) and interpersonal sensitivity (beta = 0.16) at $P < 0.05$. The adjusted R^2 value was 0.52, suggesting that predictive variables could explain 52% of the variance in the drive for muscularity.

5. Discussion

The aim of the current study was to predict the drive for muscularity based on psychological factors. As the results showed, the relationship between self- esteem and DFM was significant, which was consistent with previous research studies (6, 8, 19, 24). For instance, Olivardia et al. (25) found that self-esteem and body dissatisfaction variables, like muscle displeasure, were negatively correlated. It is worth noting that based on the Contingencies of Self-Worth theory, greater contingent self-esteem is associated with greater DFM in adolescent males (22). The relationship between self-esteem and body dissatisfaction has been found to be fairly strong among adolescents (8). Also, appearance features strongly in adolescent self-evaluations, particularly when their self-esteem is low. Higher levels of muscle dysmorphia have been reported to correlate with low self-esteem and body dissatisfaction (23). Moreover, adolescents with muscle dysmorphia experience a significant degree of anxiety in situations where they show their physique to others (24). Their experience of social anxiety leads to a drive to improve the musculature of their physiques. In this study, there was a significantly positive relationship between maladaptive perfectionism and DFM, which echoes the findings of previous studies (27, 28, 31, 33). For instance, Wade and Tiggemann (28) found that body dissatisfaction in combination with maladaptive perfectionism is a strong risk factor for muscle dysmorphia and related constructs like DFM. In terms of how perfectionism affects DFM, it may be that the highest levels of body dissatisfaction, which can act as a risk factor for the later development of DFM, is associated with high levels of concern over mistakes that result in criticism of oneself as a person (25). Also, Boone et al. (31) reported that individuals who scored high on perfectionism scales are unsatisfied with their body frequently show body-checking behaviors and engage critically in musculature self-evaluations as evidenced in consulting reflective surfaces such as mirrors. Therefore, these types of unrealistic self-evaluations may increase the drive to become muscular.

The study data also indicated that adolescents who had higher scores of interpersonal sensitivity had higher DFM. Fear of rejection and criticism as a major manifestation of interpersonal sensitivity correlated with a high level of DFM, which echoes the findings of previous research studies (17, 39, 40). This finding is explained in a study by Wolke and Sapouna (40), which reported that adolescents with higher levels of interpersonal sensitivity often have poorer perceptions of their bodies and show more symptoms of muscle dysmorphia. Also, Nuran et al. revealed that being excessively sensitive in interpersonal relationships made individuals vulnerable to psychological disorders like depression (36). On the other hand, Maida and Armstrong explained that depression positively predicted body image concerns (37). Therefore, it can be inferred that interpersonal sensitivity can impact body images concerns like DFM. Therefore, a probable reason for the consistency of the current study results with previous research is that based on the biopsychosocial model (17) and the point of some clinician (18), self-related constructs accounts for a wide range of adolescents' diversions, regardless of social and cultural differences.

Finally, the results showed that the interactions between self-esteem, maladaptive perfectionism, and interpersonal sensitivity predict DFM among adolescents. To the best of our knowledge, there are no studies explicitly

Table 3. Pearson Correlation Matrix

Variables	Correlations				Collinearity Statistics	
	1	2	3	4	Tolerance	VIF
Self-esteem	1				0.361	4.019
Maladaptive perfectionism	-0.22[a]	1			0.512	3.245
Interpersonal sensitivity	-0.36[a]	0.45[a]	1		0.273	2.346
Drive for muscularity	-0.38[a]	0.32[a]	0.25[a]	1	-	-

[a] $P < 0.01$.

Table 4. Multiple Regression Results

Variables	B	SE	β	T	P	R^2	Adj R^2	F	P
Constant	85.06	7.47	-	17.24	0.001	0.58	0.52	36.22	0.001
Self-esteem	-7.15	2.01	-0.26	-4.48	0.001				
Maladaptive Perfectionism	6.74	2.66	0.18	2.64	0.02				
Interpersonal sensitivity	4.55	2.23	0.16	2.41	0.04				

investigating the interaction of these variables on DFM in male adolescent samples. It is worth noting that a low level of self-esteem makes people underestimate their own abilities and consistently seek affirmation from others (24). Therefore, low self-esteem, along with high interpersonal sensitivity, wherein an individual is particularly vulnerable to negative evaluation from others, leads them to focus on particular aspects of themselves. One aspect that plays an important role in adolescent identity formation is body image (8). Adolescent males' concern over others-evaluations leads to establish extremely rigid and inflexible criteria in regard to their physiques. Therefore, the interaction of these factors causes more body dissatisfaction and a need to have a more muscular body.

5.1. Research Limitations

The current study had a number of limitations. As the study was conducted on a male adolescent population, the results cannot be generalized to female adolescents or other age groups. Another limitation was the sampling method and size, which limits the generalizability of the results. Therefore, we suggest that future research studies be conducted on different age groups and with a larger sample size.

5.2. Clinical Applications

The present study has important implications for clinical practitioners. Firstly, the study demonstrates the need to specifically target interventions and assessment plans at school-aged students, as this is when adolescents begin to experience the negative consequences associated with their desire for a muscular physique. Secondly, the findings suggest that DFM should be taken seriously, and clinicians who work with adolescents need to be cognizant of the relationship between higher DFM and psychological factors.

5.3. Conclusions

The findings of the present study suggest that muscularity concerns in adolescence are linked to various psychological factors. More longitudinal research on DFM and contributing factors is necessary. Moreover, being dissatisfied with one's body is related to several negative psychological concerns. Furthermore, these concerns are not just present in adults but were seen in high school students and appear to peak in adulthood. Thus, body image studies need to include younger children. This study lays the groundwork for preventive programs, which, in turn, can help prevent the formation of disordered beliefs and behaviors in the first place.

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Footnotes

Authors' Contribution: Salman Zarei was responsible for all study including data collection, data analysis, manuscript drafting, and writing.

Conflict of Interests: The author declares that he has no conflict of interest.

Ethical Approval: This study was approved by the ethics committee of Iran University of Medical Sciences (code: IR.IUMS.REC.1397.302202).

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