



Mirror Mirror: A Look into Muscle Dysmorphia

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ABSTRACT

Muscle dysmorphia is a subcategory of body dysmorphic disorder. With muscle dysmorphia, there is an extreme desire to gain body mass, and this is characterized by many psychological and behavioral symptoms. Olvardia (2001) proposed that mirror checking is a symptom of muscle dysmorphia. The purpose of this study is to continue the investigation into mirror checking as a diagnostic symptom of muscle dysmorphia. Our hypothesis was that participants who score higher on a scale of muscle dysmorphia will spend more time looking in a mirror, and will look more often, than those who score low on the scale of muscle dysmorphia. Participants were male enrolled in Psychology courses at Western Kentucky University. Participants were placed in front of a full-body length mirror and completed three questionnaires regarding levels of muscle dysmorphia, as well as completed one distractor truth task. The session was recorded in order to allow coding for mirror checking behavior. With our findings, we hope to determine the relation between mirror checks and presence of muscle dysmorphia in participants. Data collection is still ongoing and is projected to be finished by March 2019.

INTRODUCTION

Muscle Dysmorphia (MD) is a subcategory of Body Dysmorphic Disorder (BDD) that is characterized by attitudes and behaviors that demonstrate an extreme desire to gain body mass (Grieve, 2007). The *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5)* categorizes MD as a specifier for BDD. (*American Psychological Association, 2013*). The DSM-5 states that MD is present if "the individual is preoccupied with the idea that his or her body build is too small or insufficiently muscular" (*American Psychological Association, 2013, p. 241*).

Whereas the criteria for MD specifically is limited in the DSM-5, comprehensive diagnostic criteria is provided by Olvardia (2001). First, a person believes that his or her body is not sufficiently lean and muscular. Second, this belief causes clinically significant distress or impairment in social, occupational, or other important areas of functioning as demonstrated by a) frequently giving up activities in the gym because of a compulsion to workout and diet, b) avoiding situations where one's body is exposed, c) displaying clinically significant distress in important areas of function due to the preoccupation, and d) continuing to work out, diet, or use performance-enhancing substances despite adverse physical and physiological consequences. Third, the preoccupation exhibited has a primary focus on being too small or inadequately muscular. MD is categorized by multiple psychological and behavioral symptoms. Attitudes that are characteristic of muscle dysmorphia include an extreme dislike of the current body shape. Behaviors indicative of muscle dysmorphia include excessive weight lifting, large consumption of protein rich foods, taking muscle enhancing steroids, and mirror gazing (Grieve, 2007).

Specific to the interest of the current study, we focused on research surrounding the idea of body checking behaviors. The main checking behavior for individuals with MD is mirror-checking. Previous research has found that weightlifters with MD practice mirror checking three times more per day than weightlifters without muscle dysmorphia (Olvardia, Pope, & Hudson, 2000). This check is not always in typical mirrors found at the gym or in a home, but individuals with MD might also look at themselves in unusual reflections, such as store windows or the back of a spoon (Olvardia, 2001). If this symptom is severe enough, the individual might also carry around a pocket mirror at all times. Olvardia (2001) explained that men are normally disatisfied with what they see; however, the checking continues because the underlying compulsion is too strong. Windeisen, Veale, and Arson (2011) came to a similar conclusion in their investigation of mirror gazing in BDD. They found evidence to support the notion that gazing in a mirror triggers an increase in distress. The uncertainty and distress related to their appearance in the individuals with BDD caused a conflict with urges to avoid and continue looking in the mirror.

While preliminary research has been done on mirror checking and its relation to muscle dysmorphia, it has not been extensively studied. A limitation of previous research is that mirror checking behaviors have not been experimentally studied and have been in the form of self-report questionnaires. These previous studies also focused on BDD and eating disorders, not on MD. Few experimental studies have explored actual frequent behavior of men with MD. Previous research by Olvardia (2001) estimated that BDD is already an underreported disorder. Therefore, establishing mirror checking as a diagnostic symptom could allow for clinicians to more confidently make a diagnosis. This study aims to specifically measure the relation between mirror checks and level of muscle dysmorphia in participants.

The purpose of the study is to continue investigation into mirror checking rates. We also aim to expand the literature on mirror checking by using real-time observations of mirror checks in the lab setting versus only self-reports.

We hypothesize that participants who score higher on a scale of MD will spend more time looking in a mirror than those who score low on the scale of MD.

METHOD

Participants

Participants for this study included 43 male students enrolled in a psychology course from Western Kentucky University who received credit in a course for participating. 7 individuals were removed from our analyses because of missing data resulting in a final sample of 36 persons. Participants reported a mean age of 19.53 years, $SD = 3.32$; range = 18 to 37). With respect to race, 29 participants reported being "White/Caucasian," 7 "African American," 2 "Asian," 1 "Mixed/Race/ethnicity," 1 "Middle Eastern," and 1 "Hispanic." With respect to education level, 27 participants reported an education level of college freshman, 11 college sophomore, 2 college junior, and 2 college senior.

Measures

Demographics. Participants were asked to indicate their age, gender, ethnicity, education level, height, weight, and frequency of lifting weights and exercising.

Body Satisfaction. The 25-item Body Assessment Scale (BAS; Lorenzen, et al., 2004) was used to assess participants' level of satisfaction with different components of their body, measuring overall body satisfaction. The BAS indicates degree of satisfaction using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Muscle Dysmorphia. The 25-item Muscle Dysmorphia Questionnaire (MDQ; Grieve et al., 2014) was used to measure symptoms of muscle dysmorphia. The MDQ allows the participants to rate each statement on a six-point Likert scale, from 1 (strongly disagree) to 6 (strongly agree).

Drive for Muscularity. The 15-item Drive for Muscularity (DMS; McCreary & Sarras, 2000) was used to access the drive for muscularity in participants. The DMS allows participants to rate each statement on a six-point Likert scale, from 1 (never) to 6 (always).

Procedure

Participants were recruited from Western Kentucky University. All participants volunteered to complete the study via an online University Study Board. Participants completed a questionnaire packet in the research laboratory. After reviewing the informed consent form, Participants were seated in a chair facing a mirror with a camera attached on top and were asked to complete the questionnaire packet. The experimenter left the room for ten minutes and told the participant they would be back. The packet began with the demographics page, followed by the three questionnaires, the BAS, MDQ, and DMS. As a distractor task, the last page of the packet consisted of math problems that increased in difficulty from beginning to end. Only addition, subtraction, and multiplication problems were used, and the math problems were created for this study. Following completion, the participants were thanked for their participation and debriefed on the study's true purpose.

RESULTS

Preliminary Analysis

Responses to the 25 question BAS were summed to obtain a total score for body satisfaction. For the current sample, the mean BAS score was 82.07 ($SD = 13.41$), with a range from 50 to 105. These responses to 34 question MDQ were summed to obtain a total score for mood disorder. For the current sample the mean MDQ score was 87.84 ($SD = 17.90$), with a range of 51 to 134. Finally, responses to the 15 question DMS were summed to obtain a total score for muscularity drive. For the current sample the mean DMS score was 46.83 ($SD = 12.77$). Cronbach's Alpha was calculated for BAS ($\alpha = .88$), MDQ ($\alpha = .85$), and DMS ($\alpha = .87$). We then calculated body mass index (BMI) using participants' self-reported height ($M = 70.81$ inches; $SD = 3.32$) and weight ($M = 184.79$ pounds; $SD = 53.47$). The mean BMI for the participants was 25.78 ($SD = 6.69$).

Hypothesis Testing

Our hypothesis was that participants who score higher on a scale of muscle dysmorphia will spend more time looking in a mirror, and will look more often, than those who score low on the scale of muscle dysmorphia. In order to test our hypothesis a correlation analysis was conducted. The number of seconds participants spent looking at the mirror, and number of times the participants looked in the mirror, were correlated with MDQ scores, BAS scores, DMS scores, and BMI scores. Results of the correlations are shown in Table 1.

Table 1:
Correlations Among the Variables

Variable	MDQ	BAS	DMS	BMI	Seconds
MDQ	—	.87	-.001	.25	.08
BMI	—	.07	.07	.04	.01
BAS	—	-.26	-.19	.02	.02
DMS	—	-.74	-.28	.02	.77
BMI	—	.23	-.35	-.08	.38
Seconds	—	.35	.42	-.05	.51

Note: Correlations are under the diagonal; r values are above the diagonal. Statistically significant correlations are **bolded**. MDQ = Muscle Dysmorphia Questionnaire scores, BMI = Body Mass Index scores, BAS = Body Assessment Scale scores, DMS = Drive for Muscularity Scale scores, Minutes = number of times participants looked into the mirror, Seconds = number of seconds participants spent looking into the mirror.

In addition, a logistic regression equation was performed with the number of seconds that participants looked in the mirror as the dependent variable. Scores from the MDQ, BAS, and DMS, and BMI were entered as predictor variables. The overall R^2 for the model was .47, indicating that the four variables accounted for 47% of the variance in the number of seconds participants looked at the mirror. As shown in Table 2, only DMS scores were significant predictors.

Table 2:
Regression Analysis Outcomes

Variable	Beta	SE	t
BMI	-.04	.174	.10
BAS	-.32	.183	.08
MDQ	-.23	.171	.43
DMS	.62	.208	.05

Note: Statistically significant correlations are **bolded**. MDQ = Muscle Dysmorphia Questionnaire scores, BMI = Body Mass Index scores, BAS = Body Assessment Scale scores, DMS = Drive for Muscularity Scale scores.

A median split on MDQ scores (median = 84.00) yielded a high ($M = 101.81$; $SD = 14.96$) and low MDQ group ($M = 74.88$; $SD = 7.58$), $t(31) = -26.93$, $p < .001$. A series of independent sample t -test were ran to see if there was a difference between the high MDQ group and the low MDQ group. Results indicated that there were no significant differences between the high ($M = 9.77$; $SD = 14.50$) and low ($M = 3.41$; $SD = 4.25$) MDQ groups on the number seconds they looked in the mirror, $t(24) = -1.52$, $p = .14$. There were also no significant differences in terms of number of times participants looked in the mirror between the high ($M = 3.46$; $SD = 4.07$) and low ($M = 1.69$; $SD = 1.84$) MDQ groups, $t(24) = 1.42$, $p = .15$. In terms of body satisfaction, there were no significant differences between the high ($M = 81.62$; $SD = 13.59$) and low ($M = 83.76$; $SD = 10.52$) MDQ groups, $t(31) = -0.51$, $p = .62$. Finally, there was a significant difference between the high ($M = 53.31$; $SD = 10.26$) and low ($M = 37.82$; $SD = 10.49$) MDQ groups for drive for muscularity, $t(31) = -4.28$, $p < .001$.

DISCUSSION

While the results of this study did not support our hypothesis, the findings were interesting nonetheless. Several of the correlations we hypothesized would be correlated together showed a low to no correlation. Data analysis demonstrated moderately high r values and low p values for MD. Data collection is still ongoing, and we predict that with more data the trends will increase in strength and more statistically significant correlations will be produced.

The results of this study demonstrated a statistically significant difference when participant scores were split into a high-MD and low-MD group. Participant scores for the high-MD group were correlated with a higher score on the DMS. Participant scores for the low-MD group were correlated with a lower score on the DMS.

Results demonstrated a statistically significant correlation between participant scores on the DMS and both the number of times participants looked in the mirror and the duration of time spent looking at the mirror.

Another central finding of this study was the correlation between BMI score and the number of times participants looked in the mirror. A correlation was also found between BMI score and the time spent looking at the mirror. Both correlations were negatively correlated. Participants with a higher BMI score spent significantly less time looking in the mirror than the lower BMI scoring participants as shown in Table 1. Participants with a higher BMI score also looked less often in the mirror than the lower BMI scoring participants, also shown in Table 1.

These findings are novel and require more research. Applications for these findings can be applied to a clinical setting in the form of diagnostic criteria for muscle dysmorphia. The finding that high and low MDQ groups score differently on the DMS, further evidence that DMS is an efficient tool in evaluating levels of MD. Since MD is an underreported and infrequently diagnosed disorder (Olvardia, 2001) evidence that makes it easier to recognize and treat is crucial. Mirror checking, measured in total times participants looked and the amount of time spent looking is a well-known symptom of MD (Olvardia, 2001). Previous research has shown that male weightlifters diagnosed with MD report mirror checking behavior three times more than male weightlifters who do not have MD (Olvardia, 2001). The implication for the results of this study are that the correlation between DMS scores and mirror checking behavior can be used to improve diagnostic criteria, through more well defined objective behaviors.

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