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ORIGINAL ARTICLE

The moderating effect of gender role on the relationships between gender and attitudes about body and eating in a sample of Italian adolescents

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Abstract
Purpose The differential prevalence of eating disorders in males and females can be explained by the impact of gender-role orientations. Inside the Italian socio-cultural context, gender socialization can be influenced by stereotypical gender beliefs, and this may contribute to the psychological distress of individuals who identify with discrepant gender roles from their biological sex. Our study explored, within the Italian context, the potential moderating effect of masculinity and femininity on the relationships between gender and attitudes about body and eating.
Methods Nine hundred and twenty Italian male and female adolescents (M = 427, F = 493; age 14–21 years) completed the Eating Disorder Inventory-2 (EDI-2) and the Bem Sex-Role Inventory (BSRI).
Results A moderating effect of gender role on the relationship between gender and bulimia, and drive of thinness emerged. Girls with higher levels of masculinity scored higher on bulimia than did their counterparts with lower levels, and boys with higher levels of femininity scored higher on bulimia and on drive for thinness than did their counterparts with lower levels. Data did not reveal a moderating effect of gender role on the relationship between gender and body satisfaction.
Conclusions Our data suggest that adolescents who endorsed a gender role that is socially considered discrepant from their biological sex (girls with higher levels of masculinity and boys with higher levels of femininity) are more likely to show higher level of bulimia and drive of thinness. This suggests the need for prevention and treatment programmes for eating disorders that take into account individuals' gender-role orientation and the influence that culturally dominant gender beliefs can exert on it.

Keywords Gender · Gender roles · Body dissatisfaction · Bulimia · Drive for thinness · Italian adolescents

Introduction

The importance that adolescents attribute to physical appearance can lead them to pursue an idealized body shape [1], and even to resort to dysfunctional attitudes and behaviours, such as body dissatisfaction, drive for thinness and bulimia, which are recognized as prodromal symptoms of eating disorders [2]. Traditionally, disordered eating behaviours have been considered a female issue, but today males show a complex relationship with their bodies, which can influence their eating attitudes [3–5]. Research has begun to focus on the differences between males and females on these issues [6]. Studies with eating disorder patients showed that these pathologies tend to display similar features in both genders [7, 8]; however, women have been found to be less satisfied with their overall physical aspect [9, 10] as with specific body parts [11, 12], and they invest more energy in their appearance [13] and report higher levels of a drive for thinness and bulimic behaviours than do males [14, 15]. In Italy, the prevalence and features of disordered eating behaviours are similar to those of

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other Western countries [3, 4, 16–18], and studies on teenagers have confirmed the existence of gender differences. Body dissatisfaction in Italian girls seems to be linked to the desire for a slimmer body and so girls tend to fall more often into abnormal eating behaviours, such as restrictive dieting or the use of purgatives methods, compared to boys. Body dissatisfaction in Italian boys, in contrast, seems to be related, on the one hand, to the desire to be slimmer and, on the other, to the desire to be more muscular [3, 5, 16, 19]. Several authors have stressed the importance of considering not gender differences but gender-role orientation for a deeper understanding of gender differences on eating behaviours [6, 20–27]. Gender role is a construct representing sex-oriented attitudes, behaviours, cognitions and emotions that are considered typically masculine or feminine in a particular cultural context [28]. The prototypical feminine gender role is characterized as affectionate, yielding, emotional and dependent, whereas the masculine gender role is typically identified as analytic, assertive, competitive and dominant [29]. Gender-role orientation has an effect on adolescents' intrapersonal and interpersonal development, influencing their self-esteem, self-perception and body satisfaction, and so it can play a role in eating disorders development [24, 30, 31]. Some studies have revealed a connection between the feminine gender role, the drive for thinness, bulimia and body dissatisfaction [6, 20, 22, 23, 32, 33]. They sustain the "hyper-femininity hypothesis", stressing that stereotypically feminine traits, such as extreme attention to body forms and beauty, passivity, dependence and strong emotionality, both in males and in females, are related to a low self-esteem and to a tendency to seek approval from others, and in extreme cases can lead to dietary restrictions and purging behaviours in pursuit of "the ideal body" [22, 34–36].

A recent meta-analysis reported that femininity may be more critical in predisposing women, rather than men, towards eating psychopathology [37].

Regarding the relationship between masculinity and disordered eating behaviours, results are more controversial. In some studies, it has emerged that stereotypically masculine traits are associated with lower levels of disordered eating behaviours [22, 38, 39], while others reported that masculinity was associated with higher levels of eating disorder behaviours in women [23, 34, 36, 40].

Especially, studies on bulimia have reported high levels of disordered eating in masculine-typed women [41–43]. They have proposed an alternative explanation to the hyper-feminine hypothesis, emphasizing the social pressure experienced by women who do not conform to traditional gender roles [42]. Silverstein et al. [41] introduced the "gender ambivalence hypothesis", while Klingenspor [43] introduced the "self-discrepancy hypothesis". Basically, these positions assume that the drive for thinness, evacuation and purging may occur when individuals live a conflict related to their gender and do not adhere to traditional aspirations associated with their sexual role [41, 43, 44]. We found only one published article that analysed the influence of masculinity and femininity on body satisfaction and eating attitudes in a sample of Italian homosexuals, heterosexuals and transsexual males and females [45]. This study revealed that differences were explained by gender-role orientation and not by biological sex. Feminine participants, regardless of gender or sexual orientation, displayed higher degrees of a drive for thinness, bulimia and body dissatisfaction compared to their masculine counterparts.

Starting from this premise, the aim of the present research was to investigate the relationships between gender and drive for thinness, body dissatisfaction and bulimia, considering the potential moderator effect of masculinity and femininity on these relationships in a sample of Italian adolescents. We expected to find in our sample higher levels of body dissatisfaction, drive for thinness and bulimia in female and in male adolescents who identified with feminine gender roles. Starting from discordant reported findings, we also explored the role of masculinity in attitudes about body and eating.

Methods

Measures

The *Bem Sex-Role Inventory* BSRI [29, 46] is a widely used self-administered instrument for measuring gender-role identification. It consists of three subscales: Masculinity (M), Femininity (F) and Social Desirability (SD), in which each consist of 20 adjectives. For our purposes, we used scores on the femininity and masculinity scales only. The adjectives that compose the Masculinity scale are socially desirable "masculine" personality characteristics (e.g. "independent", "makes decisions easily", "willing to take risks", "acts as a leader", "competitive") and the ones that compose the Femininity scale are socially desirable "feminine" personality characteristics (e.g. "affectionate", "loyal", "eager to soothe hurt feelings", "soft spoken", "tactful"). Participants respond to items using a 7-point Likert-type scale ranging from 1 = *never or almost never true* to 7 = *always or almost always true* to indicate how well each adjective describes them. For each scale, the score ranges from 0 to 20 with higher scores indicating higher levels of masculinity and femininity. Scoring yields scores for each subject indicating both the level of masculinity and that of femininity. In the Italian version of BSRI, the internal consistency of the Femininity scale was $\alpha = 0.68$ for females and $\alpha = 0.84$ for males. The

internal consistency of the Masculinity scale was $\alpha = 0.84$ for females and $\alpha = 0.71$ for males.

The *Eating Disorders Inventory-2*, EDI-2 [47, 48], is a 91-item measure of psychological and behavioural symptoms commonly associated with anorexia and bulimia with responses on a 7-point Likert-type scale. It consists of 11 subscales, three of which are eating disorder-specific (a drive for thinness, bulimia and body dissatisfaction), and eight are relevant, but not specific, to eating disorders (e.g. ineffectiveness, perfectionism, interpersonal distrust). In this study, we considered only the three eating disorder-specific scales. The internal consistencies of the scales were drive for thinness, $\alpha = 0.84$; bulimia, $\alpha = 0.80$; and body dissatisfaction, $\alpha = 0.83$.

Procedure

The respondents were recruited among high school students. The eligibility criteria required that participants be between 14 and 21 years old.

Among the twenty schools initially contacted, six accepted the invitation to participate. The general purposes of the study were explained to the students. Participation was voluntary, and participants were told that the information provided would be anonymous and confidential, and that only group data would be reported. Written informed consent was obtained from legal-age participants, while for minors, it was obtained from their parents. A *demographic questionnaire* was constructed in order to collect family and personal information like age, profession and educational level of parents, the presence of sibling, age, weight, height and gender. To reveal gender, we used a multiple choice type of question which included two options, male and female.

The questionnaires were administered during school time to 1012 students; 92 questionnaires (8%) were excluded due to incomplete data. In our data collection, excluding the BMI levels, we did not survey clinical parameters for eating disorders diagnosis. The study has been approved by the Ethics Committee of the Department of Philosophy, Psychology, Pedagogy of University of Cagliari, Italy.

Participants

The respondents were 920 Italian high school students (53.6% girls and 46.4% boys) aged between 14 and 21 years ($M = 16.40$; $SD = 1.70$). The male subsample reported a mean age of 16.48 ($SD = 1.7$, Skewness = 0.129; Kurtosis = −1.1) and the female subsample reported a mean age of 16.34 ($SD = 1.6$; Skewness = 0.16; Kurtosis = −1.2) ($t = 1.2$, $df = 918$, $p > 0.05$). The male subsample reported an average BMI of 21.31 ($SD = 2.9$; Skewness = 0.09; Kurtosis = 2.36) and the female subsample reported an average BMI of 20.5 ($SD = 2.9$; Skewness = −1.2; Kurtosis = 2.8) ($t = 6.3$, $df = 918$, $p > 0.05$). 278 participants (30.3%) reported that they were only children, while the remainder 642 (69.7%) reported having at least one sibling; of these, 496 (77.2%) were first-born sons. As regards their fathers educational level, 137 (14.9%) held a university degree, 321 (34.8%) a high school degree, 367 (39.9%) a middle school certificate and 29 (3.1%) a primary school certificate. The fathers subsample reported a mean age of 51.93 ($SD = 6.3$). As regards their mothers educational level, 148 (16.08%) held a university degree, 359 (39.02%) a high school degree, 340 (36.9%) a middle school certificate and 15 (1.6%) a primary school certificate. The mothers subsample reported a mean age of 44.5 ($SD = 5.4$).

Analyses

Regression analyses were performed to assess whether gender role interacts with gender to predict body dissatisfaction, drive for thinness and bulimia; our analysis was based on a set of six regression models. Separate models were run using the masculinity and femininity scales. The predictors were gender, gender role (masculinity or femininity) and interaction between gender and gender role. Gender was a dummy variable coded as 0 for males and 1 for females, while gender role was a continuous variable. Before computing the interaction between gender and gender role, the score on the masculinity or femininity scale was centred by subtracting the sample mean [49].

Results

The descriptive statistics are shown in Table 1. The overall regression was statistically significant for all six models (R^2 from 0.01 to 0.05). Gender was significant for the models that predicted drive for thinness and body dissatisfaction, but not for those that predicted bulimia (Table 2). Females reported significantly higher scores on drive for thinness and body dissatisfaction scales compared to males. Femininity was significant for two models: the one that predicted the drive for thinness and the one that predicted bulimia. No model reported a significant t value for masculinity.

The interaction between gender and gender role was significant for models that predicted bulimia and for one of the two models that predicted a drive for thinness. As regards the models that predicted bulimia, the interaction of gender with femininity was significant ($\beta = -0.214$, $t(825) = -4.321$, $p < 0.001$), with semi-partial correlation (sr) equivalent to −0.149. This means that the interaction can explain the 2.22% of variance in bulimia. The interaction of gender with masculinity was significant ($\beta = 0.251$, $t(831) = 3.493$,

Table 1 Scores on EDI-2 and BSRI

	Males $n=427$				Females $n=493$				t	p
	M	SD	Skewness	Kurtosis	M	SD	Skewness	Kurtosis		
Drive for thinness	22.57	17.19	0.47	0.60	29.88	25.75	1.98	4.89	−4.95	**< 0.001**
Body dissatisfaction	34.28	20.96	0.80	1.52	38.42	32.64	2.18	5.69	−2.20	**0.03**
Bulimia	22.45	19.30	1.81	9.11	23.38	16.84	0.50	1.16	−0.77	*n.s*
Femininity	93.54	16.94	−0.23	0.33	91.61	16.79	−0.32	0.04	1.66	*n.s*
Masculinity	94.71	17.48	−0.25	0.34	91.82	17.72	−0.18	0.07	2.38	**0.02**

Bold values indicate results significant at some level ($p < .001$, $p < .05$)

Table 2 Regression analysis of the effects of gender, gender role and interaction gender × gender role on drive for thinness, body dissatisfaction and bulimia

Predictors	Drive for thinness				Body dissatisfaction				Bulimia			
	β	β*	t	p	β	β*	t	p	β	β*	t	p
Dependent variables												
Gender	8.22	0.18	5.21	**<0.001**	5.01	0.09	2.49	**0.013**	0.91	0.02	0.72	0.472
Gender role (Masculinity)	−0.07	−0.06	−1.13	0.26	−0.09	−0.06	−1.11	0.267	−0.09	−0.09	−1.71	0.088
Gender × Gender role (Masculinity)	0.00	0.00	0.00	1.00	−0.04	−0.02	−0.31	0.753	0.25	0.18	3.49	**0.001**
Model validity												
R^2	0.04				0.01				0.02			
R^2_{adj}	0.03				0.01				0.01			
F	10.49				3.68				4.74			
p	**<0.001**				**0.01**				**0.003**			
Dependent variables												
Gender	8.91	0.19	5.64	**<0.001**	5.58	0.10	2.76	**0.006**	0.36	0.01	0.28	0.777
Gender role (Femininity)	0.226	0.16	3.38	**0.001**	0.05	0.03	0.62	0.537	0.15	0.14	2.80	**0.005**
Gender × Gender role (Femininity)	−0.201	−0.10	−2.14	**0.032**	0.14	0.06	1.14	0.253	−0.32	−0.21	−4.32	**<0.001**
Model validity												
R^2	0.05				0.01				0.02			
R^2_{adj}	0.04				0.01				0.02			
F	13.878				4.26				6.30			
p	**<0.001**				**0.005**				**<0.001**			

Bold values indicate results significant at some level ($p < .001$, $p < .05$)

Note β unstandardized coefficients; β* standardized coefficients

$p=0.001$), with the sr equivalent to 0.120. This means that the interaction can explain the 1.44% of variance in bulimia. As regards the model predicting the drive for thinness, the interaction of gender with femininity was significant ($\beta = -0.104$, $t(824) = -2.145$, $p=0.032$), with the sr equivalent to −0.073. This means that the interaction can explain the 0.53% of variance in the drive for thinness.

The nature of the interaction of gender with femininity in predicting bulimia is shown in Fig. 1. The gender prediction of bulimia was affected by the degree of femininity: males with higher scores on femininity tended to

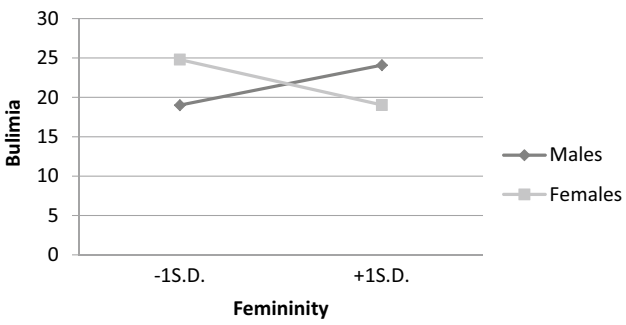

Fig. 1 Moderating role of femininity on gender and bulimia

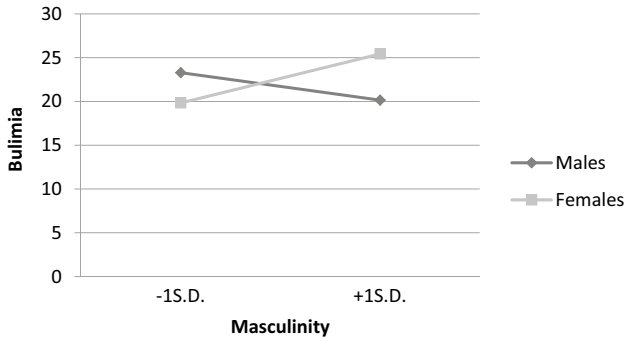

Fig. 2 Moderating role of masculinity on gender and bulimia

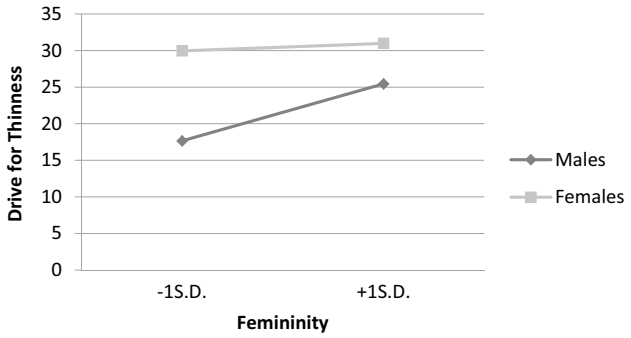

Fig. 3 Moderating role of femininity on gender and drive for thinness

have greater levels of bulimia than had males with lower scores, while females with lower scores on femininity tended to have greater levels of bulimia than had women with higher scores.

The nature of the interaction of gender with masculinity in predicting bulimia is shown in Fig. 2. The gender prediction of bulimia was affected by the degree of masculinity: males with lower scores on masculinity tended to have greater levels of bulimia than males with higher scores, while females with higher scores on masculinity tended to have greater levels of bulimia than women with lower scores.

The nature of the interaction of gender with femininity in predicting the drive for thinness is shown in Fig. 3. The gender prediction of drive for thinness was affected by the degree of femininity for males but not for females. Specifically, males with higher scores on femininity tended to have greater levels of a drive for thinness than had males with lower scores.

Discussion

The aim of this study was to evaluate, in a large sample of Italian adolescents, the moderating effect of gender role on the relationships between gender and drive for thinness, body dissatisfaction and bulimia. Starting from the discussed literature, we expected to find higher levels of body dissatisfaction, drive for thinness and bulimia in female and in male adolescents who identified with feminine gender roles. Starting from discordant findings emerging from the literature, we also explored the role of masculinity in attitudes about body and eating.

In line with a part of the international literature [9–19], our results showed that Italian girls scored higher on drive for thinness and body dissatisfaction than did Italian boys. We also found that femininity but not masculinity was significantly associated to a drive for thinness and bulimia. The "hyper-femininity hypothesis" [6, 20, 22, 23, 32–36] might seem to have been confirmed by this result, because it reveals that stereotypically feminine traits, such as passivity, dependence and strong emotionality can lead to dietary restrictions and purging behaviour in pursuit of what is perceived to be the ideal body. However the finding of a significant moderating effect of gender role challenges in part this interpretative hypothesis, although the variance explained by the significant models is very low. Specifically, girls with high levels of masculinity and boys with high levels of femininity obtained significantly higher scores on the bulimia dimension compared to their counterparts with gender-role orientations corresponding to their biological sex. Furthermore, boys with higher levels of femininity obtained significantly higher scores on the drive-for-thinness dimension compared to boys with lower levels of femininity. In line with previous studies, our data seem to be in favour of the "gender ambivalence" [41] and the "self-discrepancy" hypotheses [43].

In our sample, adolescent girls who adhere to cultural meanings associated with stereotypical masculinity reported high scores in bulimia, and adolescent boys who adhere to cultural meanings associated with stereotypical femininity reported high scores in bulimia and high scores in drive for thinness. We think that these data could be also interpreted to the light of some reflections on the genders' beliefs in Italy. Due to specific historical, political, economic and religious reasons, in Italy is still present a strong binary conceptualization of gender, from which derives a perceivable gap between traditional and modern gender beliefs [50–52].

At present, traditional masculine and feminine identities in Italy have been thrust into "crisis" by realities such as single professional women, two-career families, gay and lesbian families and the greater social visibility of transgender people. However, the transformation in gender

beliefs taking place more slowly and laboriously in Italy than in other Western countries and the traditional idea of masculinity as associated with the characteristics of the "stronger sex", and of femininity as associated with the characteristics of the "weaker sex", still exist [46, 47]. This is evidenced by the still-present suspicion and prejudices against women who voluntary choose not to have children, the sexist beliefs and female derogation that are supported by some institutional public figures and, again, by the acceptance of the society's idea that men are legitimately dominant [53]. While most of these gender beliefs are unfavourable to women, men also have struggles due to the persistence of certain ideas about masculinity, such as the still-present stigma against some practices of male body care, which characteristic is considered to be synonymous with weakness and effeminacy or the still-predominant image of a "successful" male, which has been realized in terms of work and capability of ensuring the economic livelihood of his family [50–52].

The beliefs about physical characteristics that best express masculinity and femininity are also strongly influenced by the media.

The phenomenon of sexual objectification, which is the evaluation of a person uniquely based on his or her sexual functions, is particularly pronounced in the Italian media [54].

A recent survey revealed that about 70% of women represented in Italian publicity campaigns were classifiable as models or as being sexually available, while about 85% of the men fell into roles of professionals, male models or sportsmen. Other studies showed that in Italy, the most exalted feminine qualities are beauty and youth, at the expense of skills and merit, while the most exalted masculine qualities are power, success and "know-how" [53]. Modern Italian male adolescents have to deal with male role models that are increasingly centred on appearance and performance. Simply browse through an Italian men's magazine to realize the importance attributed to the body and its forms. Being slim, athletic and attractive are synonymous with being self-confident, successful with women, popular and leader in the social and professional contexts. Our culture is gradually building standards of male physical perfection that are similar to those already in force for women [54], but it associates these to the image of a man who cannot allow himself any tenderness or weakness.

This context could generate feelings of insecurity and anxiety in teenagers who do not identify themselves within these stereotyped gender patterns. We assume that male that identify himself as "sensitive to needs of others, understanding, compassionate, eager to soothe hurt feelings, warm, tender, loves children, and gentle" and female that described herself as "aggressive, self-reliant, makes decisions easily, self-sufficient, individualistic, competitive, ambitious" may feel an ambiguity that can expose them to the risk of developing psychological distress, a deep need for approval from others and lower self-esteem [55, 56] which could be expressed through behaviours, such as bulimia and drive for thinness, highly connoted by the need to appear more attractive and by a contemporary ambivalence towards others, themselves and their own bodies.

We have also tried to speculate about the reasons why masculinity and femininity moderate the relationship between gender and bulimia and drive for thinness, and not between gender and body dissatisfaction. From this angle, our results seem to suggest that these behaviours are not simply connected to a social standard of beauty and thinness but could be considered related to self-definition, also with respect to gender, gender roles and social expectations about adherence to gender roles.

Drive for thinness, purging (e.g. vomiting) and bingeing, in fact, more than body satisfaction, could be symbolically referred to the ambivalent and inherent need to fill emotional voids and get rid of emotional weight [57]. In this perspective, these behaviours could be interpreted as a symptomatic swing between acceptance and rejection of the roles of women and men, of sexual identity, of the body size and of the specific way of being in the world. It is also possible that the actual Italian socio-cultural context tends to encourage the maximum expression of these kinds of ambivalent behaviours rather than others, and may also, to some extent, trigger and amplify psychopathological individual and relational latent factors. However, these findings should be studied in depth because the variance explained by our significant models is very low and this is probably because many other factors are involved in explaining the variability of these attitudes in our sample. Data revealed that connections between our research variables may be mediated by other ones that we did not consider.

The focus on appearance in making self-evaluations has been implicated in the low levels of self-esteem often observed in adolescence [58], and different studies revealed that low self-esteem and a negative self-concept are strong predictors of eating disorders as bulimia, drive for thinness and body dissatisfaction [59–62]. Self-esteem is constructed since childhood and family relations play a key role in theses processes and in supporting teenager psychological and physical changes. Adolescents who experienced negative emotional relationships with their parents, an insecure attachment, poor levels of cohesiveness, flexibility and emotional warmth, are more likely to develop an incomplete and insecure self and low levels of self-esteem that, in turn, could make them develop erroneous belief on their own body, weight and nutrition, and more dependent to external judgments and to the society's view of what is attractive and what is beautiful [2, 33, 45, 63]. Different studies revealed that these subjects seem to be

more inclined to internalize some non-realistic ideals of beauty that comes from the media and also to a non-realistic judgement of their own physical appearance [63, 64]. Future research could deepen the link between gender and disordered eating behaviours, taking into account other variables such as self-esteem, attachment style and family functioning, and also organization of the personality at the structural level, possible co-morbidities, etc.

Our research, also, has a cross-sectional and correlational design with a simultaneous assessment of gender roles and disordered eating behaviours. This does not make it possible to establish any causal link between these variables. Likewise, similar to the vast majority of studies that have investigated the link between gender and disordered eating behaviour, this study has evaluated the research variables only through self-report measures completed by the subjects. It is thought that the participant's answers, due to the nature of the issues, might be affected by cognitive bias such as denial, idealization and social desirability. A qualitative investigation that tests the gender roles might be run in order to overcome this limit.

Another limitation of our study is that we referred to a binary conceptualization of gender to explore our hypothesis. The present research could be replicated involving participants who identify themselves as trans/queer, or possess different sexual orientations, to explore in a more complex way the relationships between gender identity, stereotypical gender roles, sexual orientation and eating disorder behaviours.

Finally, data was collected from a sample of high school students and we did not keep under control clinical parameters. Dysfunctional attitudes about body and eating do not necessarily lead to eating disorders as defined by psychopathology and psychiatric nosology. To extend our reflection to clinical settings, future research should repeat this study using clinical samples in order to obtain a better understanding of the associations between gender, gender roles and eating pathology, taking into account the cultural context.

The methodological limits that we have just indicated make it rather difficult to produce final and conclusive interpretations, and to reflect of the clinical application of our results in therapeutic setting or in planning specific prevention programmes. However, knowing that girls with high levels of masculinity and boys with high levels of femininity obtained significantly higher scores on the bulimia (for males and females) and drive-for-thinness (only for males) dimension compared to their counterparts with gender-role orientations corresponding to their biological sex could have an empirical interest. Keeping this information in mind, researchers could use this preliminary evidence to plan follow-up studies that revealed effects, on body dissatisfaction, bulimia and drive of thinness, of early informational and preventive interventions on these topics. It could be very useful to involve children and adolescents in the debate about the roles that genders, relations between genders and gender stereotypic could have on their body image and in their eating attitudes, and to promote individual capability to manage the social, cultural and relational pressure to adhere to traditional feminine and masculine gender roles. These studies could provide important inputs to plan interventions of health promotion and would involve pupils, parents and teachers from nursery school [43].

Compliance with ethical standards

Conflict of interest On behalf of all the authors, the corresponding author states that there is no conflict of interest.

Ethical approval In conducting the present research, ethical guidelines were followed. All procedures performed were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Participation in the study was voluntary and the information provided was anonymous and confidential.

Informed consent Written informed consent was obtained from all participants prior to participation in the study.

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