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Self-esteem and socialisation in social networks as determinants in adolescents' eating disorders

Paula Frieiro MSW[1] 🆔 | Rubén González-Rodríguez PhD[1] 🆔 |
José Domínguez-Alonso PhD[2] 🆔

[1]Department of Psycho-socio-educational
Analysis and Intervention, Social Work
and Social services area, Universidade de
Vigo, Ourense, Spain

[2]Department of Psycho-socio-educational
Analysis and Intervention, Behavioural
science methodology area, Universidade
de Vigo, Ourense, Spain

Correspondence
Rubén González-Rodríguez, University
of Vigo, Campus das Lagoas s/n, 32004
Ourense, Spain.
Email: rubgonzalez@uvigo.es

Abstract

Eating disorders are mental health illnesses that are influenced by various individual, family and social factors. The present study aimed to examine the influence of self-esteem and socialisation through social networks on eating disorder behaviours in adolescence. The sample was made up of 721 secondary school students (49.1% girls). The sample age ranged between 12 and 18 years ($M = 13.89$, $SD = 1.37$). Participants completed the Eating Attitudes Test-26 (EAT-26) to measure disordered eating attitudes and behaviours, the Rosenberg Self-Esteem Scale and the ESOC-39 scale, which measures socialisation through social networks, in addition to a brief initial sociodemographic survey. Descriptive and multivariate analyses were carried out with MANOVA. Low self-esteem was shown to increase behaviours linked to eating disorders globally. Likewise, high socialisation through social networks was also associated with a general increase in eating disorders during adolescence. The findings of the study provide empirical support for the need to develop prevention strategies that address the improvement in self-esteem and adequate socialisation through social networks during adolescence. The development of effective interventions along these lines could be helpful to treat the behaviours and attitudes that are observed in eating disorders.

KEYWORDS
adolescence, eating disorders, self-esteem, social networks, socialisation, socio-educational intervention

1 | INTRODUCTION

1.1 | Epidemiology of eating disorders

Eating disorders (EDs) are mental health illnesses characterised by abnormal eating habits and specific psychopathological symptoms that affect the population globally (Galmiche et al., 2019). EDs represent a heterogeneous group of pathological conditions with serious physical and psychological consequences for the individual (De Caro & Di Blas, 2016). The latest classification of EDs includes anorexia nervosa (AN), bulimia nervosa (BN), binge eating disorder (BED), pica, rumination disorder, avoidant/restrictive food intake disorder (ARFID), other specified feeding or eating disorders (OSFED) and unspecified feeding or eating disorder (UFED; DSM-V) (American Psychiatric Association, 2013).

Despite the complexity involved in integrating ED prevalence data, a systematic review that analysed the studies between 2010 and 2018 found that EDs are highly prevalent worldwide. The results of a review of 94 studies on EDs yielded weighted averages of the prevalence of different EDs of 8.4% (3.3%–18.6%) for females and 2.2% (0.8%–6.5%) for males (Galmiche et al., 2019). Currently, epidemiological data indicate an increase in EDs (Hoek, 2016), in this regard, in the review of Galmiche et al. (2019), an increase from 3.5% for the

2000–2006 period to 7.8% for the 2013–2018 period was observed. In the Spanish context, Gutiérrez et al. (2015) reported that, in recent decades, EDs have emerged at younger ages (between 9 and 13 years), although in less severe forms; in this case, the authors refer to a percentage that can range from 12% to 22%. The three most common EDs are anorexia nervosa (AN), bulimia nervosa (BN) and binge eating disorder (BED) (American Psychiatric Association, 2021).

Currently, problems derived from the COVID-19 pandemic have likely added to the high prevalence, severity and high chronicity of EDs (Snyder, 2014), which have created a global context that seems to increase the risk of suffering from EDs (Graell et al., 2020; Scharmer et al., 2020). Likewise, the pandemic situation has also exacerbated barriers to care (Rodgers et al., 2020). Given all the above, EDs currently pose a real challenge for public health and providers of medical, psychological and social care.

1.2 | Self-esteem as a psychosocial risk factor in eating disorders

Self-esteem is a remarkable indicator of health and well-being, as well as an explanatory indicator of different variables of human behaviour (Rosenberg, 1965). The relationship between self-perception and self-esteem, general mental well-being and eating behaviour is considered particularly important, especially among women (Bąk-Sosnowska et al., 2021; Brechan & Kvalem, 2015; Unlu et al., 2019). In this sense, positive self-esteem helps young people to have better psychological adjustment, which, in turn, favours their social adaptation, and it can also mediate in the prevention of risky behaviours (Reina, 2010).

Especially during adolescence, self-esteem may be associated with the construction of one's body image, in addition to being a mediating factor for EDs (Vitousek & Hollon, 1990). It is common for low self-esteem to coexist with the psychopathologies of EDs (Izydorczyk et al., 2021; Puccio et al., 2017; Sahlan et al., 2021) because the symptoms of EDs aggravate low self-esteem, creating a vicious cycle of maintenance (Raykos et al., 2017). In this case, it is noteworthy that EDs that focus more on one's image, such as anorexia nervosa (AN) and bulimia nervosa (BN), have more influence on boys' and girls' low self-esteem (Brechan & Kvalem, 2015; Sehm & Warschburger, 2017). These claims have also been generally studied from cognitive-behavioural models that address EDs and focus on low levels of global self-esteem (Fairburn et al., 2003).

Concerning the above, the current widespread use of social networks (SNs) is worth highlighting because they are means through which people socialise, thus producing situations of social comparison in these media of global scope. These comparisons through the SNs sometimes increase individuals' psychological distress and, as a result, can reduce the overall level of self-esteem (Chen & Lee, 2013; Jan et al., 2017).

1.3 | Socialisation through the SNs

Despite the recent widespread use of SNs, the scientific literature studying the impact and connection between EDs and SNs is still in

What is known about this topic?

- Eating disorders are influenced by individual, family and social factors.
- Increasing eating disorders epidemiological data poses a challenge for public health and providers of medical, psychological and social care.
- The scientific literature that studies the impact and connection between self-esteem and the use of social networks on eating disorders is in its early development.

What this paper adds?

- During adolescence, self-esteem influences eating disorders globally, revealing an increase in eating disorders behaviours when self-esteem is low.
- The increased socialisation through social networks leads to an increased risk of behaviours related to eating disorders during adolescence.
- The empirical results show that the development of the prevention of eating disorders must consider self-esteem and socialisation in social networks.

its early development, although interest and concern about the effect of SN use on body image and the psychopathologies of EDs are increasing (Frieiro et al., 2021). In this regard, mental health professionals have been identifying unhealthy behaviours, such as intensive use of time on SNs or the type of shared images that promote disordered eating attitudes and behaviours (Frieiro et al., 2021; Šmahelová et al., 2019).

On another hand, to understand the processes between EDs and SNs, we must mention the theory of objectification (Fredrickson & Roberts, 1997) and the experiential consequences of being a woman in a culture that sexually objectifies the female body. Concerning the objectification of women, the representation of unrealistic perspectives of an average person's appearance is noteworthy (Levesque, 2011). In addition, these types of SNs evolve rapidly and have become dominant socialisation platforms, in which conventional beauty and aesthetic consumer culture canons are available through continuous publications of new content (Opara & Santos, 2019).

Additionally, based on the media exposure of the SNs, pressures to lose weight through the visualisation of diet-culture content and thinness promotion are very common, as is the exposure to the advertising and promotion of light foods, all of which can precipitate risk factors such as body dissatisfaction, the use of diets or bulimic behaviours (Boswell & Kober, 2016; Gismero González, 2020; Rodgers & Melioli, 2016; Rosenberg, 1965). To the social media exposure itself are added the dynamics of interaction through 'likes' and comments received about the shared photographs, issues that must be present for us to understand EDs (Tiggemann et al., 2018).

On another hand, SNs have a relevant impact on people's self-esteem and life satisfaction (Mehdizadeh, 2010). Although generally

speaking, the use of SNs focuses on information-seeking, communication, building and maintaining relationships, many people end up making ascending and descending comparisons with other users. Through upward comparisons, people may envy the characteristics of others and their lifestyles from a global viewpoint. As a result, self-esteem can be negatively affected (Jan et al., 2017; Vogel et al., 2014).

Finally, the influence that the pandemic situation (COVID-19) has had on media exposure is noteworthy: (a) increase in overall media consumption; (b) increased exposure to harmful content related to diet and physical appearance, particularly on the SNs; (c) greater use of video-conferencing and the consequent exposure of one's image while working from home (Rodgers et al., 2020). All this may be associated with an increase in ED behaviours.

Knowledge of the relationship between the use of SNs and self-esteem related to EDs is necessary to promote prevention in the use of these media, generating skills and providing sufficient information so as not to succumb to the messages issued on SNs about the Western ideal of body perfection (Frieiro et al., 2021).

1.4 | Research objectives and research questions

The serious consequences of EDs and the influence of self-esteem and SNs in these disorders require further investigation into their repercussions in phases especially susceptible to the development of EDs, such as adolescence. For this reason, the objectives of this study focus on:

a. Evaluating the influence of positive and negative self-esteem on the subscales of ED risk (diet, bulimia, food preoccupation and oral control) in a Spanish sample of secondary school students.
b. Verifying the relationship between socialisation through SNs (dependence on SNs, strengthening friendship, social facilitation and violence and rejection in the SNs) and the risk of EDs in young people from Spain who study secondary education.

Therefore, the following research hypotheses were established:

H1 'Self-esteem (positive or negative) is predicted to reveal significant differences in EDs (diet, bulimia, food preoccupation and oral control) during the individual's adolescence'.

H2 'EDs (diet, bulimia, food preoccupation and oral control) are expected to be significantly influenced by socialisation through SNs (dependence on SNs, strengthening friendship, social facilitation and violence and rejection on SNs) in adolescence'.

2 | MATERIALS AND METHODS

2.1 | Participants

The sample of this work was made up of 721 students aged between 12 and 18 years ($M = 13.89$, $SD = 1.37$; 49.1% females). The size of the population was 92,285 students, so the sample involved a margin

of error of 3.64% for a 95% confidence level. The inclusion criteria were being enrolled in the 2019/2020 academic year in a Secondary Education institute in the Autonomous Community of Galicia (Spain). Public and private, and urban and rural schools were invited to participate in the study. Students had to be enrolled between the 1st and 4th grades of Compulsory Secondary Education (CSE). To access the population, the public base of the educational centres of the Autonomous Community of Galicia was consulted and the centres were contacted by email. The educational centres whose directors expressed their willingness to participate received a telephone communication to further specify the research and thus agree on a first presentation visit to the centre. Among the centres whose directors agreed to participate, an intentional selection was made, determining that the four provinces of the Autonomous Community were represented and that 50% of the centres were located in urban and rural areas respectively.

2.2 | Measures

2.2.1 | Eating disorders

Disordered eating attitudes and behaviours were measured with the Spanish version of the Eating Attitudes Test-26 (EAT-26) (Garner & Garfinkel, 1979), which identifies the symptoms of EDs according to feelings, attitudes and behaviours. The EAT-26 comprises 26 items, distributed in four subscales; Diet, Bulimia, Food Preoccupation and Oral Control. Items are rated on a six-point Likert scale, ranging from 1 (*always*) to 6 (*never*). A score of 20 or higher indicates a high level of concern about body shape and dietary behaviour, as well as an increased risk of developing an ED pathology. As the main objective of the study was to identify people who were at risk of developing EDs, only the composite score was used in this study. The EAT-26 has reported reliability coefficients ranging from 0.86 to 0.90. The alpha coefficient of the current sample was excellent ($\alpha = 0.93$).

2.2.2 | Self-esteem

Self-esteem was measured with the Spanish version of the Rosenberg Self-Esteem Scale (Rosenberg, 1965), which consists of 10 items that assess levels of global self-esteem, based on positive and negative beliefs and perceptions about oneself. The questionnaire uses a four-point Likert scale ranging from 0 (*strongly disagree*) to 3 (*strongly agree*) and is scored on a metric ranging from 0 (poor) to 30 (excellent). The scale is scored by adding the items after reverse-scoring the negatively worded items. In this case, the two-factor structure (positive self-esteem and negative self-esteem) was used. The reliability coefficients for the Rosenberg Self-Esteem Scale are very high, ranging from 0.87 to 0.93. The alpha coefficient achieved for the sample was moderate ($\alpha = 0.83$).

2.2.3 | Socialisation through social media

Socialisation through the SNs was measured through the ESOC-39, a socialisation scale in the virtual social network developed by the LISIS Group (2013). It evaluates the interaction between adolescents on the SNs. The scale is a Likert-type scale and ranges from 1 to 4 points; the frequency is 1 = Never/Not at all and 4 = Always/Very Much. The scale has two distinct parts: the first consists of seven items that provide structural information (Items 1, 2, 3, 4, 5, 6 and 7). The second part is made up of 32 items that are grouped into four factors that explain 41% of the variance. The factors it measures are Dependence on SNs, Strengthening Friendship, Social Facilitator and Violence and Rejection on SNs. The alpha coefficient of the current sample was good ($\alpha = 0.89$).

2.3 | Procedure

Cross-sectional data collection was carried out by the research team during school hours of the secondary schools between the months of September 2019 and March 2020. In the classroom, the voluntary nature of the questions was again stressed, offering the option of not answering these questionnaires. The directors of the educational centres were informed that they could carry out the surveys on paper or using computer support. Later, each tutor decided how to carry them out, generally choosing computer support when they had tablets or laptops in their classrooms. A total of 104 surveys were carried out on paper and were manually recorded by the research team, while the rest were carried out in digital format. Participants completed the sociodemographic survey that included questions on gender, age, socioeconomic status and geographical region of the school (urban/rural), followed by the questionnaire comprising the aforementioned measures.

Data were analysed using the statistical software SPSS version 23 for Windows (IBM SPSS Inc.). First, the reliability analysis of the questionnaires for this sample (Instruments section) was carried out. Second, a descriptive analysis (means and standard deviations) was performed. Finally, after verifying that the data complied with the assumptions of multivariate normality (Shapiro–Wilk), autocorrelation (Durbin-Watson,)

and homogeneity (White's test), multivariate analysis was used through MANOVA to determine the existence of statistically significant differences in the EDs due to self-esteem or socialisation in the SNs. Likewise, to observe the effects of the analyses, Wilks' Lambda was used as a reference (values between 0 and 1; if it is equal to 1, it indicates that all the means are the same). Finally, univariate analyses of variance (ANOVAs) were performed to determine statistically significant differences in the variables, and Tukey's DHS post hoc test was applied.

2.4 | Ethical considerations

The present study was carried out following the Declaration of Helsinki of 1975 and approved by the Ethic Committee of the University. The principals of each school were informed about the objectives of the study, as well as the data collection procedure, and we received approval from school principals. Similarly, the participants' parents and guardians gave their informed consent in writing after they were informed of the study's objectives and data collection procedures. Voluntary participation in the study was also emphasised, and the indications contained in Organic Law 3/2018, of December 5, on the Protection of Personal Data and guarantee of digital rights were followed.

3 | RESULTS

3.1 | Relationship of self-esteem with EDs

The scores obtained in positive and negative self-esteem as a function of the subscales of the EDs are presented in Table 1. In general, scores higher for risk of EDs were observed when the individual had low self-esteem, either positive or negative.

The results of the *MANOVA* (Table 2) indicated significant differences in positive self-esteem [Wilks' $\lambda = 0.94$, $F(8, 1428) = 5.04$, $p < 0.001$, $\acute{\eta}_p^2 = 0.028$, power = 0.999] and negative self-esteem [Wilks' $\lambda = 0.95$, $F(8, 1432) = 3.88$, $p < 0.001$, $\acute{\eta}_p^2 = 0.021$, power = 0.991] as a function of the EDs. Univariate analyses yielded significant differences in positive self-esteem as a function of diet [$F(2, 717) = 16.23$, $p < 0.001$,

TABLE 1 Means, standard deviations of positive and negative self-esteem as a function of the eating attitudes subscales

ED/PS	Low (n = 208)	Medium (n = 336)	High (n = 177)	Total (n = 721)
Diet	6.14 (5.82)	4.76 (5.67)	3.04 (3.72)	4.74 (5.42)
Food preoccupation	2.65 (3.74)	2.30 (3.60)	1.39 (2.94)	2.18 (3.52)
Bulimia	2.44 (3.78)	2.11 (3.52)	1.06 (2.06)	1.95 (3.34)
Oral control	4.76 (5.48)	4.62 (5.39)	3.04 (3.30)	4.27 (5.03)
ED/NS	Low (n = 203)	Medium (n = 380)	High (n = 138)	Total (n = 721)
Diet	6.18 (5.88)	4.46 (5.37)	3.59 (4.61)	4.78 (5.46)
Food preoccupation	2.51 (3.73)	2.18 (3.57)	1.76 (3.04)	2.19 (3.52)
Bulimia	2.52 (3.62)	1.89 (3.36)	1.36 (2.73)	1.97 (3.35)
Oral control	4.94 (5.11)	4.16 (5.19)	3.65 (4.35)	4.28 (5.03)

Abbreviations: ED, eating disorders; NS, negative self-esteem; PS, positive self-esteem.

TABLE 2 Multivariate analysis (MANOVA) of positive and negative self-esteem as a function of the eating attitudes subscales

	F	p	$\acute{\eta}_p^2$	Power
Positive self-esteem				
Diet	16.23	0.000	0.043	1.00
Food preoccupation	6.52	0.002	0.018	0.908
Bulimia	9.07	0.000	0.025	0.974
Oral control	7.18	0.001	0.020	0.933
Negative self-esteem				
Diet	10.86	0.000	0.029	0.991
Food preoccupation	1.83	0.160	0.005	0.384
Bulimia	5.22	0.006	0.014	0.832
Oral control	2.93	0.054	0.008	0.572

$\acute{\eta}_p^2 = 0.043$, power = 1.00], food preoccupation [$F(2, 717) = 6.52$, $p < 0.01$, $\acute{\eta}_p^2 = 0.018$, power = 0.908], bulimia [$F(2, 717) = 9.07$, $p < 0.001$, $\acute{\eta}_p^2 = 0.025$, power = 0.974] and oral control [$F(2, 717) = 7.18$, $p < 0.01$, $\acute{\eta}_p^2 = 0.020$, power = 0.933]. Subsequently, post hoc analyses (Tukey's DHS) revealed more problems with diet-related behaviours in individuals with low (M = 6.14, SD = 5.82) and medium (M = 4.76, SD = 5.67) self-esteem compared to those with high positive self-esteem (M = 3.04, SD = 3.72); more problems with food preoccupation in adolescents with low (M = 2.65, SD = 3.74) and medium (M = 2.30, SD = 3.60) positive self-esteem compared to those with high positive self-esteem (M = 1.39, SD = 2.94); more problems with bulimia in individuals with low (M = 2.44, SD = 3.78) and medium (M = 2.11, SD = 3.52) positive self-esteem compared to those with high positive self-esteem (M = 1.06, SD = 2.06); and more oral control in adolescents with low (M = 4.76, SD = 5.48) and medium (M = 4.62, SD = 5.39) positive self-esteem compared to those with high positive self-esteem (M = 3.03, SD = 3.30).

Regarding negative self-esteem, univariate analyses only showed significant differences as a function of diet [$F(2, 719) = 10.86$, $p < 0.001$, $\acute{\eta}_p^2 = 0.029$, power = 0.991] and bulimia [$F(2, 719) = 5.22$, $p < 0.01$, $\acute{\eta}_p^2 = 0.014$, power = 0.832]. There were no significant differences in negative self-esteem as a function of food preoccupation [$F(2, 719) = 1.83$, $p > 0.05$, $\acute{\eta}_p^2 = 0.005$, power = 0.384], or oral control [$F(2, 719) = 2.93$, $p > 0.05$, $\acute{\eta}_p^2 = 0.008$, power = 0.572]. Likewise, a posteriori analyses (Tukey's DHS) revealed more problems in diet-related behaviours in individuals with low negative self-esteem (M = 6.18, SD = 5.88) compared to those with medium (M = 4.46, SD = 5.37) and high negative self-esteem (M = 3.59, SD = 4.61). Also regarding bulimia, there were more problems in adolescents with low negative self-esteem (M = 2.52, SD = 3.62) compared to those with high negative self-esteem (M = 1.36, SD = 2.73).

3.2 | Relationship between socialisation through social networks and EDs

Second, descriptive analyses showed that high socialisation through SNs leads to a greater presence of ED symptoms (Table 3).

Next, the *MANOVA* data (Table 4) yielded significant differences in all the factors that make up socialisation through SNs as a function of EDs: dependence [Wilks' $\lambda = 0.97$, $F(8, 1430) = 2.88$, $p < 0.05$, $\acute{\eta}_p^2 = 0.014$, power = 0.878], friendship [Wilks' $\lambda = 0.93$, $F(8, 1432) = 6.85$, $p < 0.001$, $\acute{\eta}_p^2 = 0.037$, power = 1], social facilitator [Wilks' $\lambda = 0.95$, $F(8, 1430) = 4.85$, $p < 0.001$, $\acute{\eta}_p^2 = 0.026$, power = 0.999] and violence [Wilks' $\lambda = 0.87$, $F(8, 1430) = 12.64$, $p < 0.001$, $\acute{\eta}_p^2 = 0.066$, power = 1].

Finally, univariate analyses yielded significant differences in dependence on socialisation through SNs as a function of diet [$F(2, 718) = 3.09$, $p < 0.05$, $\acute{\eta}_p^2 = 0.010$, power = 0.696], but not of food preoccupation [$F(2, 718) = 0.05$, $p > 0.05$, $\acute{\eta}_p^2 = 0.000$, power = 0.059], bulimia [$F(2, 718) = 1.72$, $p > 0.00$, $\acute{\eta}_p^2 = 0.005$, power = 0.363], or oral control [$F(2, 718) = 0.92$, $p > 0.05$, $\acute{\eta}_p^2 = 0.003$, power = 0.211]. Consequently, post hoc analyses (Tukey's DHS) revealed more problems in diet-related behaviours in individuals with high dependence on socialisation through SNs (M = 5.46, SD = 5.32) compared to those with low dependence (M = 4.03, SD = 5.17).

Likewise, significant differences were observed in the strengthening of friendship through SNs as a function of diet [$F(2, 718) = 21.78$, $p < 0.001$, $\acute{\eta}_p^2 = 0.057$, power = 1], food preoccupation [$F(2, 718) = 10.19$, $p < 0.001$, $\acute{\eta}_p^2 = 0.028$, power = 0.986], bulimia [$F(2, 718) = 19.04$, $p < 0.001$, $\acute{\eta}_p^2 = 0.050$, power = 1] and oral control [$F(2, 718) = 16.45$, $p < 0.001$, $\acute{\eta}_p^2 = 0.044$, power = 1]. Tukey's post hoc analyses (DHS) showed more problems in diet-related behaviours in individuals with a high strengthening of friendships through the SNs (M = 5.46, SD = 5.32) compared to those with low strengthening of friendships (M = 4.03, SD = 5.17). Higher scores were also observed in problematic diet-related behaviours, food preoccupation, bulimia and oral control in individuals with medium scores in strengthening of friendship (diet: M = 4.99, SD = 5.25; food: M = 2.29, SD = 3.47; bulimia: M = 1.98, SD = 3.12; oral control: M = 4.19, SD = 4.69) and high scores in strengthening of friendship (diet: M = 6.76, SD = 7.12; food: M = 3.09, SD = 4.69; bulimia: M = 3.25, SD = 4.69; oral control: M = 6.18, SD = 6.71) versus those with low scores in strengthening of friendship (diet: M = 3.01, SD = 3.70; food: M = 1.40, SD = 2.32; bulimia: M = 1.05, SD = 2.12; oral control: M = 3.12, SD = 3.75).

Likewise, significant differences were also found in social facilitation as a function of diet [$F(2, 718) = 11.98$, $p < 0.001$, $\acute{\eta}_p^2 = 0.032$, power = 0.995], food preoccupation [$F(2, 718) = 6.49$, $p < 0.05$, $\acute{\eta}_p^2 = 0.018$, power = 0.907], bulimia [$F(2, 718) = 11.12$, $p < 0.001$, $\acute{\eta}_p^2 = 0.030$, power = 0.992] and oral control [$F(2, 718) = 7.61$, $p < 0.05$, $\acute{\eta}_p^2 = 0.021$, power = 0.946]. Post hoc analyses (Tukey's DHS) revealed higher scores in diet-related behaviours, food preoccupation, bulimia and oral control in individuals with high social facilitation scores (diet: M = 6.28, SD = 6.29; food: M = 3.01, SD = 4.37; bulimia: M = 2.71, SD = 3.78; oral control: M = 5.40, SD = 5.77) compared to those with medium scores (diet: M = 4.72, SD = 5.31; food: M = 1.97, SD = 3.20; bulimia: M = 2.04, SD = 3.32; oral control: M = 4.15, SD = 5.13), and low scores (diet: M = 3.70, SD = 4.61; food: M = 1.86, SD = 3.11; bulimia: M = 1.24, SD = 2.51; oral control: M = 3.53, SD = 3.77).

TABLE 3 Means and standard deviations of socialisation on the virtual social network as a function of the eating attitudes subscales

ED/dependence	Low (n = 192)	Medium (n = 371)	High (n = 158)	Total (n = 721)
Diet	4.03 (5.17)	4.83 (5.58)	5.46 (5.32)	4.76 (5.43)
Food preoccupation	2.11 (3.24)	2.22 (3.57)	2.18 (3.73)	2.18 (3.51)
Bulimia	1.59 (2.93)	2.04 (3.61)	2.21 (3.14)	1.96 (3.34)
Oral control	3.94 (4.14)	4.27 (5.37)	4.68 (5.17)	4.27 (5.03)
ED/Friendship	**Low (n = 206)**	**Medium (n = 372)**	**High (n = 143)**	**Total (n = 721)**
Diet	3.01 (3.70)	4.99 (5.25)	6.76 (7.12)	4.78 (5.46)
Food preoccupation	1.40 (2.32)	2.29 (3.47)	3.09 (4.69)	2.19 (3.53)
Bulimia	1.05 (2.12)	1.89 (3.12)	3.25 (4.69)	1.96 (3.35)
Oral control	3.12 (3.75)	4.19 (4.69)	6.18 (6.71)	4.29 (5.04)
ED/social facilitation	**Low (n = 245)**	**Medium (n = 300)**	**High (n = 176)**	**Total (n = 721)**
Diet	3.07 (4.61)	4.72 (5.31)	6.28 (6.29)	4.76 (5.43)
Food preoccupation	1.86 (3.11)	1.97 (3.20)	3.01 (4.37)	2.18 (3.52)
Bulimia	1.24 (2.51)	2.04 (3.32)	2.71 (3.78)	1.93 (3.24)
Oral control	3.53 (3.77)	4.15 (5.13)	5.41 (5.77)	4.25 (4.93)
ED/violence	**Low (n = 208)**	**Medium (n = 376)**	**High (n = 137)**	**Total (n = 721)**
Diet	2.95 (3.91)	4.54 (5.13)	8.12 (6.68)	4.76 (5.45)
Food preoccupation	1.33 (2.55)	2.02 (3.30)	3.95 (4.63)	2.19 (3.52)
Bulimia	1.04 (2.41)	1.67 (2.90)	4.14 (4.58)	1.96 (3.35)
Oral control	2.93 (3.84)	3.96 (4.52)	7.16 (6.62)	4.28 (5.03)

Abbreviation: ED, eating disorders.

Finally, significant differences were found in violence or rejection on SNs as a function of diet [$F(2, 718) = 42.51$, $p < 0.001$, $\acute{\eta}^2_p = 0.105$, power = 1], food preoccupation [$F(2, 718) = 25.27$, $p < 0.001$, $\acute{\eta}^2_p = 0.066$, power = 1], bulimia [$F(2, 718) = 42.63$, $p < 0.001$, $\acute{\eta}^2_p = 0.106$, power = 1] and oral control [$F(2, 718) = 33.32$, $p < 0.001$, $\acute{\eta}^2_p = 0.085$, power = 1]. Post hoc analyses (Tukey's DHS) indicated that the highest scores in problematic behaviours related to diet and oral control were observed in adolescents with high scores in SN violence (diet: $M = 8.12$, SD = 6.68; oral control: $M = 7.16$, SD = 6.62) versus medium scores (diet: $M = 4.54$, SD = 5.13; oral control: $M = 3.96$, SD = 4.52), compared to those who obtained low scores (diet: $M = 2.95$, SD = 3.91; oral control: $M = 2.93$, SD = 3.84). Finally, higher scores in problematic behaviours related to food preoccupation and bulimia were found in individuals with high scores in violence (food: $M = 3.95$, SD = 4.63; bulimia: $M = 4.14$, SD = 4.58) versus medium scores (food: $M = 2.02$, SD = 3.30; bulimia: $M = 1.67$, SD = 2.90) and low scores (food: $M = 1.33$, SD = 2.55; bulimia: $M = 1.04$, SD = 2.41).

4 | DISCUSSION

The first objective of this research was to identify the influence of positive and negative self-esteem on EDs, in each of the subscales or domains of the EAT-26 questionnaire: Diet, Food Preoccupation, Bulimia and Oral Control. Based on previous studies (American

Psychiatric Association, 2021; Argyrides et al., 2020; Drosdzol-Cop et al., 2017; Jordana-Ovejero et al., 2020) using the same measuring instruments, a relationship between self-esteem and EDs was expected (H1. *Self-esteem is predicted to present significant differences in EDs*). The data confirm this hypothesis, as self-esteem influences ED globally, revealing an increase in ED behaviours when self-esteem is low. The results were consistent with that reported by previous research, which reflects that high self-esteem is associated with individuals' ED behaviours (Jordana-Ovejero et al., 2020; Maganto et al., 2016; van Noort et al., 2018).

However, it is observed that low positive self-esteem increases ED related to diet, food preoccupation, bulimia and oral control, whereas negative self-esteem only occurs in ED behaviours related to diet and bulimia. Other authors who have also explored these variables argue that when self-esteem is low the overall risk of ED increases (Petisco-Rodríguez et al., 2020). Given the confirmed influence of self-esteem, authors such as Naeimi et al. (2016) or Argyrides et al. (2020) state that global self-esteem serves as a protective and preventive factor against ED.

Concerning the use of SNs, for some years, the positive correlations between the use of SNs and EDs among younger people have been corroborated (Hummel & Smith, 2015; Mabe et al., 2014). Consequently, the second objective focused on determining whether socialisation through SNs is determinant in the risk of ED for adolescents. The results obtained confirm our second hypothesis (H2. *Eating disorders are expected to be significantly influenced*

TABLE 4 Multivariate analysis (MANOVA) of socialisation through the virtual SN as a function of the eating attitudes subscales

	F	p	η_p^2	Power
Dependence				
Diet	3.09	0.046	0.010	0.696
Food preoccupation	0.058	0.944	0.000	0.059
Bulimia	1.72	0.179	0.005	0.363
Oral control	0.926	0.397	0.003	0.211
Friendship				
Diet	21.78	0.000	0.057	1.00
Food preoccupation	10.19	0.000	0.028	0.986
Bulimia	19.04	0.000	0.050	1.00
Oral control	16.45	0.000	0.044	1.00
Social facilitation				
Diet	11.98	0.000	0.032	0.995
Food preoccupation	6.49	0.002	0.018	0.907
Bulimia	11.12	0.000	0.030	0.992
Oral control	7.61	0.001	0.021	0.946
Violence				
Diet	42.51	0.000	0.105	1.00
Food preoccupation	25.27	0.000	0.066	1.00
Bulimia	42.63	0.000	0.106	1.00
Oral control	33.32	0.000	0.085	1.00

by socialisation through SNs), showing that increased socialisation through SNs leads to increased risk behaviours for ED. These data agree with different studies on the subject (Macedo et al., 2019; Saunders & Eaton, 2018).

More specifically, in the present study, it was shown how young people with high dependence on socialisation through SNs reported more problems in diet-related behaviours, although not with food preoccupation, bulimia or oral control. However, high values in the SNs when they are used to strengthen friendship, as social facilitators, or are related to violence produce a greater increase in the subscales of diet, food preoccupation, bulimia and oral control. We note that adolescents show a greater increase in ED behaviours when they perceive violence or rejection on the SNs. Along the same lines, Hummel and Smith (2015) stated that receiving negative feedback through SNs increased the risk of ED-related attitudes.

Finally, and related to our results, we highlight that Santarossa and Woodruff (2017) indicated the need to continue investigating the association between the consumption of SNs and self-esteem, issues that affect EDs. As SNs continue to be a part of our lives as an indispensable means of communication and socialisation, it is necessary to continue generating knowledge about these growing problems. In addition, future research should consider the importance of studying the context of COVID-19, of which we still do not know all of its repercussions on EDs (Rodgers et al., 2020). An attempt should be made to gain an in-depth understanding of issues such as the extent to which the pandemic has influenced ED care and increased the use of SNs among people with EDs.

In general terms, it is essential to generate universal preventive strategies that affect self-esteem concerning its impact on EDs (Jordana-Ovejero et al., 2020), as well as the impact of the social networks. More specifically, prevention should incorporate the development of informative and educational material on the risks of the use of social networks and self-esteem for EDs, which can be implemented in training sessions at the educational levels of Secondary Education and High School (Hinojo-Lucena et al., 2019). In this sense, preventive interventions should include advice and education on the use of social networks for students with especially low self-esteem. Training in coping with rejection and interpersonal criticism can be beneficial. To reduce the effect of self-esteem and the use of social networks, it is also necessary to emphasise the identification and modification of the key cognitive beliefs and the affective and behavioural reactions in interpersonal relationships. In this sense, we suggest interventions through games, group communication, role-playing and other group dynamics (You et al., 2019). As for the use of social networks, prevention and limitation measures should also be considered. This should begin with the social media companies themselves, through the restriction of publications and the closure of accounts that promote behaviours that may be related to a decrease in self-esteem or linked to EDs (Frieiro & Rodríguez, 2020). The legal measures imposed by some countries can also serve as an example for future preventive actions. In this line, countries such as the United Kingdom have banned the use of beauty filters on social networks like Instagram. On another hand, this year, the Norwegian Ministry of Infancy and Equality has approved a law to place limitations on 'unreal beauty', prohibiting influencers and advertisers from publishing retouched images without informing about this in the same publication.

Among the limitations is that the fact that the results are based on adolescents' responses to a self-report, so the conclusions obtained should be taken with caution. It would also be interesting to increase the number of individuals in the sample and carry out longitudinal designs that analyse the evolution of these eating behaviours as a function of self-esteem and the use of SNs.

In this sense, this research provides empirical support for the influence of self-esteem and the use of SNs on EDs. The findings provided contribute to identify variables that act as risk factors for EDs, thus generating a debate on the need to develop prevention strategies and effective interventions for EDs.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

INSTITUTIONAL REVIEW BOARD STATEMENT

The study was conducted according to the guidelines of the Declaration of Helsinki, and approved by the Ethic Committee of the Universidade de Vigo (code of ethics: 3/2020).

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ORCID

Paula Frieiro https://orcid.org/0000-0001-5888-6674
Rubén González-Rodríguez https://orcid.org/0000-0003-1806-1103
José Domínguez-Alonso https://orcid.org/0000-0002-1844-000X

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