EFFECT OF EXPOSURE TO THINNESS IDEALS IN SOCIAL NETWORKS ON SELF-ESTEEM AND ANXIETY

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Abstract

Social networks use is related to the occurrence of eating disorders (ED). In this study, we experimentally evaluated the effect of exposure to social networks and stereotypical images of the thinness ideal on ED symptomatology and analyzed the mediator role of anxiety in this process. A sample of 321 young adults of both sexes (166 females) were randomly assigned to two experimental conditions: high and low exposure to the thin ideal. Our results indicate a decrease in self-esteem in the group exposed to the thin images and an increase in anxiety. We found the effect of the images on self-esteem is completely mediated by the increase in anxiety. No changes in body satisfaction or drive for thinness were found. Our study shows how brief exposure to images and profiles representative of the thin ideal seems to influence participants' self-esteem. These results show the need to raise awareness of the possible consequences of social media, as well as to promote a healthy use of social networks.

KEY WORDS: social media, self-esteem, anxiety, eating disorders, experiment.

Resumen

El uso de redes sociales está relacionado con la aparición de trastornos de la conducta alimentaria (TCA). Hemos evaluado experimentalmente el efecto de la exposición a redes sociales e imágenes estereotípicas del ideal de delgadez sobre la sintomatología de TCA, analizando el papel mediador de la ansiedad. Trescientos veintiún adultos jóvenes (166 mujeres) fueron asignados aleatoriamente a dos condiciones: de alta y baja carga comparativa con el ideal de delgadez. Encontramos una diminución de la autoestima en el grupo expuesto a imágenes de carga comparativa alta y un aumento de la ansiedad. El efecto de las imágenes sobre la autoestima está completamente mediado por el incremento en la ansiedad. No se encontraron cambios en la satisfacción corporal o la obsesión por la delgadez. Nuestro estudio muestra cómo la exposición breve a imágenes y perfiles representativos del ideal de delgadez parece tener un efecto sobre la autoestima de los participantes. Estos resultados evidencian la necesidad de dar a conocer las posibles consecuencias de las redes sociales, así como de promover un uso sano de las mismas.

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PALABRAS CLAVE: redes sociales, autoestima, ansiedad, trastornos de la conducta alimentaria, experimento.

Introduction

Eating disorders (ED) have a high incidence with more than 8% of women and 2% of men suffering from them at some point in their lives. Furthermore, the prevalence of ED increased from 3.5% to 7.8% between 2000-06 and 2013-18 (Galmiche et al., 2019). In Spain, the data show a prevalence of .14% to .9% for anorexia nervosa; .41% to 2.9% for bulimia nervosa; and 2.76% to 5.3% for non-specified ED (Moreno et al., 2019). Research shows that the tendency to internalization, low to medium levels of self-esteem and preoccupation with body image, are some of the risk factors for this type of disorder (Hilbert et al., 2014; Moreno-Encinas et al., 2021). Delimiting risk factors for potential development of these disorders could help to reduce their prevalence. In this regard, social comparison phenomena seem to play a key role in these pathologies (Kohler et al., 2020).

In the 1990s, early research showed the effect of fashion magazine images on body self-concept or intention to diet to lose weight (Posavac et al., 1998). Magazines have now given way to social networks: 87% of Spanish internet users aged 16-65 years use them, with a similar profile among both sexes (men 49% vs. women 51%) and an average age of 40 years (Interactive Advertising Bureau, IAB, 2020). Several studies have shown that media exposure appears to have a negative effect on consumers' body image (Groesz et al., 2002; Myers & Crowther, 2009). We see risky behaviors such as food restrictions, purging, or engaging in excessive sport, aimed at improving the body (Izydorczyk, 2018). These behaviors increase the likelihood of developing an ED (Escandón-Nagel et al., 2018; Polivy & Herman, 2002).

Comparisons of photographs on social networks appear to be a factor that increases the risk of dissatisfaction with one's body (Fardouly & Vartanian, 2015) and this, in turn, is a risk factor for developing an ED (Stice & Desjardins, 2018). Adolescent girls who use social network for longer than two hours a day show a greater self-perception of being overweight, body discrepancies, dissatisfaction and an intention to lose weight than those who spend less time on social networks (Sampasa-Kanyinga et al., 2016). In regard to Facebook, use of that social network has been positively related to body dissatisfaction and degree of internalization as well as the pursuit of the thin ideal (Meier & Gray, 2014) or the need to diet (Tiggermann & Slatter, 2014). With Instagram, it has been found that women who followed celebrity or health- and fitness-related accounts showed a higher internalization of the beauty ideal of thinness, body concern and slimming behaviors than those who followed other types of accounts - such as travel-related (Cohen et al., 2017). Instagram, unlike other social networks such as Facebook, has been related to higher levels of negative experiences and body dissatisfaction, as well as behaviors related to ED and preoccupation with the body (Saunders & Eaton, 2018). Using Instagram has also been linked to other compulsive healthy eating pathologies such as orthorexia (Turner & Lefevre, 2017). We also note the Body Positive movement which goes against this trend. It originated in social networks and aimed to challenge the social prescriptions imposed in models of beauty in favor of a broader concept of beauty and the acceptance and appreciation of the body in all its shapes and sizes. Exposure to messages from such accounts appears to increase mood, body satisfaction and body esteem (Cohen et al., 2019).

The effect of social networks on ED symptomatology is considered to be a result of the triggering of social comparison phenomena (Kohler et al., 2020; Sherlock & Wagstaff, 2019). According to this model, comparing ourselves with others whom we perceive as better in some relevant way would lead to feelings of threat and anxious reactions (Festinger, 1954; Suls & Wheeler, 2013). Anxiety therefore seems to play a significant role in the relationship between exposure to social networks and eating disorder symptomatology. On the one hand, excessive use of social networks is associated with problems of anxiety and depression (Zendle & Bowden-Jones, 2019) and exposure to bodies representative of the thin ideal is related to heightened anxiety (Harper & Tiggemann, 2008; Hendrickse et al., 2017; Kohler et al., 2020). On the other hand, the anxiety trait also appears to moderate the effect of exposure to attractive images on self-perception of attractiveness and self-esteem (Sherlock & Wagstaff, 2019) and there is evidence that anxiety acts as a related mechanism for ED behaviors (Mason et al., 2018).

Despite evidence suggesting the potential role of anxiety in these processes, this is the first study to analyze such a role through experiments. The aim of this study is therefore to assess whether exposure to images of bodies that represent the thin ideal has an effect on self-esteem, body dissatisfaction and drive for thinness in subjects who are exposed to these images and specifically to assess the role that anxiety plays in these changes. We expect, therefore, that the group of participants exposed to these images will show lower levels of self-esteem and higher levels of body dissatisfaction and drive for thinness, compared to the group not exposed to them, and that an increase in anxiety after exposure will be seen between exposure and observed changes.

Method

Participants

There was a convenience sample of 321 participants (166 of which were women, 51.7%) aged 18 to 35, and recruited via social network postings using non-probability sampling. A total of 91.4% of the participants completed the questionnaire via mobile phone, 8.1% used a computer and .5% used a tablet. In order to homogenize the sample and limit the inclusion of potential extraneous variables, participants with a body mass index (BMI) below or above the healthy weight (BMI< 18.5 or BMI > 40, World Health Organization, WHO, 2020) were excluded. Finally, participants were asked to answer the questionnaire only if they were in the study age range. No statistically significant differences were found between the experimental and control groups among the different variables of interest (Table 1).

Variable	Total sample	Low	High		Effect
		exposure	exposure	Test statistic	size
		(n= 152)	(n= 169)		size
Women (%)	52	50	54	0.56 (p= .46)	0.04
Body mass index	22.50 (3.27)	22.70 (3.18)	22.30 (3.35)	0.99 (p= .32)	0.11
Weight	66.70 (14.20)	67.65 (14.02)	65.86 (14.44)	1.28 (p= .26)	0.13
Height	1.72 (0.10)	1.72 (0.09)	1.71 (0.10)	0.91 (p= .37)	0.10
Hours of SM usage	2.72 (0.88)	3.52 (0.77)	3.49 (0.75)	-0.49 (p= .63)	0.04
Frequency of SM use	3.50 (0.76)	2.70 (0.83)	2.75 (0.93)	0.34 (p= .74)	-0.05
Mate value	19.60 (3.79)	19.80 (3.68)	19.30 (3.87)	1.12 (p= .27)	0.12
Percentage of SM use					
Instagram	87	88	85	0.60 (p= .44)	0.04
WhastApp	99	99	99	0.01 (p= .94)	0.00

 Table 1

 Descriptive analysis of the total sample and of the low and high exposure groups

Notes: SM= social media. In the case of quantitative variables, the mean and standard deviation are presented, and the test statistic is Student's t and Cohen's d to quantify the effect size. In the case of categorical variables, percentages are presented, and the test statistic is Pearson's χ^2 and Cramer's V as effect size measure.

75

20

76

20

0.03 (p = .98)

0.00 (p = .93)

0.00 (p = .98)

0.01

0.00

0.00

75

20

Instruments

Youtube Facebook

Tik Tok

- a) Ad hoc sociodemographic variable's questionnaire. As sociodemographic variables, participants' sex, weight, height, and use of social networks were recorded by means of a questionnaire based on the annual study of social networks (IAB, 2020).
- b) Mate Value Questionnaire (Edlund & Sagarin, 2014). It was applied, which assesses the subject's perception of his or her mate value by means of four items (Likert scale 1-7). The questionnaire items were translated and back-translated into Spanish. The exploratory factor analysis of the items in the sample presents a single dimension according to the parallel analysis that explains 57.2% of the variance and a sufficient fit (RMSEA= .0803). The questionnaire also showed good reliability (Cronbach's alpha= .83), and suitable criterion and discriminant validity showing in the control group negative correlations with the Eating Disorder Inventory (EDI) dimensions evaluated (self-esteem: n= 152; r= -.568; p< .001; body dissatisfaction: n= 152; r= -.338; p< .001; drive for thinness: n= 152; r= -.254; p= .002), and showing no relationship with anxiety (n= 152; r= .115; p= .161).
- c) Eating Disorder Inventory-3 (EDI-3; Garner, 2004), Spanish version by Elosua et al. (2010). The EDI-3 assesses low self-esteem (6 items), body dissatisfaction (10 items) and obsession with thinness (7 items), on a 6-option Likert response scale, where a higher score indicates greater symptomatology (lower self-esteem, greater body dissatisfaction and greater drive for thinness). In the study sample,

- good reliability was found for self-esteem (α = .87), body dissatisfaction (α = .86) and drive for thinness (α = .9).
- d) State-Trait Anxiety Inventory (STAI; Spielberger et al., 1983), short Spanish form from Perpiñá-Galvañ et al. (2011). The brief version of the STAI presents 6 items evaluated on a scale from 0 to 3, where a higher score is indicative of greater anxiety. In this study we used only the STAI-state subscale and a good reliability was found (α = .80).

Procedure

A randomized experimental design was used with two experimental conditions relating to exposure to Instagram images and profiles: one with a high exposure to the thin ideal and the other with a low exposure. In the high exposure condition, the images contained people with bodies within the thin ideal and the Instagram profiles were of celebrities who met the ideal of beauty and success.

In the high exposure condition, participants first looked at eight images featuring people with bodies that fell within the thin ideal (Figure 1) and were then directed to the Instagram profile of two famous people: Ester Expósito² and Rodrigo Guirao³. For the selection of images, criteria that are currently considered as meeting the perfect body were used: slim bodies with low percentage of fat, and toned in the case of women, more muscular for men (see for example: Murray & Touyz, 2012; Ridgeway & Tylka, 2005; Tiggemann et al., 2007; Watson et al., 2019). The Instagram profiles were chosen based on this definition of the thin ideal and by selecting two profiles with high numbers of followers and deemed to be influential on social networks. In the low exposure group, participants viewed eight images of the same items of clothing as in the former group but without using models and they were then directed to one Instagram profile of plants⁴ and one of animals⁵. As a control, images were selected that avoided representations of the human body (Mabe et al., 2014). To ensure that participants were paying attention to the images, participants were asked to perform a series of tasks. For the images, they were asked to rate the attractiveness of the garments and also to state whether they would consider buying them. For the Instagram profiles, they were asked to count how many times they could see a certain element in the first 15 images of the profile (for this purpose, neutral elements were chosen from each profile's images such as a guitar or a clock).

² https://www.instagram.com/ester exposito/

³ https://www.instagram.com/rodrigoguirao/

⁴ https://www.instagram.com/still_____/

⁵ https://instagram.com/animals.co?igshid=btzr0girlnbv/





Note: Above-left: Female t-shirt; above-right: Men's t-shirt; bottom-left: Female t-shirt on female model; bottom-right: Male t-shirt on male model.

Data was collected via a fully anonymous online questionnaire. First, information was collected on demographic variables, social network use and the mate value questionnaire. After these questions, subjects were assigned to one of the experimental conditions using a pseudo-random method based on chance (Shadish et al., 2002). That is, users were asked to state whether the last digit of their ID number was odd or even, and, depending on the answer, they were assigned to one of the experimental conditions. No relevant variable is expected to be associated with this circumstance. Immediately after it was displayed, information regarding the outcome variables was recorded. Given that the time elapsed between pre- and post-intervention measurements was short, it was considered appropriate to measure the outcome variables (self-esteem, body dissatisfaction, drive for thinness and anxiety) only after the intervention, thus avoiding biases derived from learning or carryover when performing a pre-experimental application with the same tests used to assess the results. Prior to the intervention, sociodemographic information and information about social network use was recorded. Additionally, in order to assess the equivalence of the groups after they had been assigned in terms of self-esteem and body self-esteem, the mate value questionnaire (Edlund & Sagarin, 2014) was applied. This is a variable that is positively related to self-esteem (Brase & Guy, 2004; Goodwin et al., 2012) and body satisfaction (Arthur et al., 2020).

The study was approved by Comillas Pontifical University's Ethics Committee in December 2020 (2021/25).

Data analysis

To assess the effect of experimental exposure in self-esteem, body dissatisfaction, drive for thinness and anxiety, groups' scores were compared by a *t*-Student for independent samples. The effect size was quantified using Cohen's standardized mean difference (Cohen's *d*). A mediation analysis was subsequently performed to evaluate the role of anxiety in the differences found. In this analysis we worked with typified variables to help with interpreting the coefficients. Analyses were carried out using the IBM SPSS statistics v26 (2019) package and module 4 of PROCESS for SPSS (Hayes, 2017).

Results

Analysis of the experimental effect

Participants from the high exposure group displayed lower levels of self-esteem than subjects from the low exposure group, t(319)=2.26, p=.02, d=.25. Although descriptively the results point in the direction of our hypotheses (Table 2), no effect was found on body dissatisfaction, t(319)=1.28, p=.20, d=.14, or drive for thinness, t(319)=.56, p=.57, d=.06. We did find, however, that anxiety was higher after exposure to thinness images, t(319)=2.15, p=.03, d=.24.

 Table 2

 Means, standard deviations of the control and experimental groups and results of the experimental effect

Variable		Low exposure (n= 152)		oosure 69)	Cohen´s d	
	М	SD	М	SD		
Self-esteem*	1.31	0.88	1.53	0.91	0.25	
Body dissatisfaction	1.62	1.03	1.77	0.97	0.14	
Drive to thinness	1.57	1.12	1.64	1.21	0.06	
Anxiety	1.13	0.43	1.23	0.40	0.24	

Note: *The self-esteem scale measures low self-esteem, therefore, high scores correspond to low self-esteem

Mediating the impact of anxiety on the experimental effect

The results of the mediation analysis show that the effect of the experimental condition on self-esteem is mediated by the participant's anxiety (Table 3). Thus, the direct effect of the experimental condition on self-esteem is not significant (B = .15, SE .10, t = 1.47, p = .14), whereas the indirect effect is significant (B = .11, SE = .05, 95% CI: .01 - .20). A significant relationship was observed between the

experimental design and anxiety (B = .24, SE = .11, t = 2.15, p = .03), and between anxiety and self-esteem (B = .42, SE = .05, t = 8.37, p < .001).

 Table 3

 Results of the anxiety mediation model on the relationship between experimental effect and self-esteem

Effect		SE	95% CI	t	р
Intervention→ Self-esteem		0.10	0535	1.47	.14
Intervention→Anxiety		0.11	.0246	2.15	.03
Anxiety → Self-esteem		0.05	.3252	8.37	< .001
Intervention→Anxiety→ Self-esteem		0.05	.0120	-	-

Discussion

The primary objective of this study was to determine whether exposure to images of bodies representing the thin ideal has a short-term effect on self-esteem, drive for thinness and body dissatisfaction. Our results indicate that short-term exposure to bodies representative of the thin ideal on social networks does have an effect on participants' anxiety and self-esteem, with the former acting as a mediating mechanism for the latter. However, no effect on body dissatisfaction or drive for thinness was detected, although descriptively both results point in the expected direction.

There is a growing literature from *ex post facto* studies showing an association between social network use and the diagnosis or existence of ED symptomatology (Holland & Tiggeman, 2016; Rounsefell et al., 2020). This type of study usually shows high levels of co-variability between the different variables of use (frequency, intensity, type of behavior or content) and the symptomatic variables (self-esteem, body dissatisfaction or aiming for thinness, for example). However, due to its design, this type of research does not enable us to evaluate the direction of causality or rule out the existence of possible confounding variables. As for experimental studies, they have shown the effect of exposure to attractive bodies or bodies representative of the thin ideal on different variables such as self-esteem (Lee et al., 2014; Vogel et al. 2014), body satisfaction (Haferkamp et al., 2011; Harper et al., 2008; Krawczyk et al., 2015; Yu et al., 2018), motivation to diet (Jin et al., 2019; Lewallen et al., 2016) or concern over physique (Seekis et al., 2020; Tiggemann et al., 2015). However, the results are heterogeneous and less consistent.

In relation to self-esteem, Tiggemann and Zaccardo (2015) found that exposure to Instagram images of inspirational content for fitness and healthy eating (fitspiration) reduced participants' appearance-related self-esteem, although not other types of self-esteem such as social or performance-related self-esteem. However, neither Sherlock and Wagstaff (2019) nor Yu and Yung (2018) found an effect on participants' self-esteem from beauty or fitness-related images or bodies that represented or did not represent the thin ideal. Meanwhile, some studies have shown that body dissatisfaction may increase after exposure to social network content. For example, when participants have been exposed to profiles of attractive versus unattractive people (Haferkamp et al., 2011) or underweight versus

overweight people (Lee et al., 2014) differences in body dissatisfaction have indeed been found. However, studies that have involved experimental manipulations that are more similar to those in this study have not found such differences either (Fardouly et al., 2015; Lee et al., 2014; Sherlock & Wagstaff, 2019; Yu & Yung, 2018).

In most of the studies analyzed as well as our own study, exposures are of low duration, not over a long period of time. It is therefore to be expected, as is the case, that the effects found are of small or moderate size (d= 0.25 in the present study, d= 0.43 in Haferkamp et al., 2011, d= 0.36 in Tiggemann & Zaccardo, 2015). Thus, discrepancies in the results observed between the different experimental studies may derive from the specific power of each study or the intensity of the materials used in the exposure. In this regard, the exposure applied in experimental designs may lack ecological validity, generating weak effects of risk factors and not allowing the evaluation of long-term or cumulative effects (for example, Striegel-Moore & Bulik, 2007), meaning that the effects studied may be underestimated.

On the other hand, the differential effect of the intervention on the variables could indicate the variables' different sensitivity to the intervention. Thus, there appears to be greater support for modifying self-esteem than for that of body dissatisfaction. Behavior modification studies seem to indicate that self-esteem is a variable that is susceptible to change during brief interventions such as, for example, during three intervention sessions (Clore & Gaynor, 2006) or 8 minutes of listening to a recording (Friedenberg & Gillis, 1980). In addition, the variables analyzed as a result could reveal different levels of sensitivity to the specific materials used in the studies. In this study and several similar investigations (for example, Holland & Tiggemann, 2016; Jin et al., 2019; Mabe et al. 2014), existing photos and social network profiles are used and selected on the basis of stimuli the researcher considers salient to his or her research. However, these images may lead to different responses among participants than those considered. For example, Instagram images and profiles not only show the body representative of the ideal of beauty or thinness, but more generally a lifestyle and even an economic status of fame and success that, by bringing the consumer closer to the celebrity's personal life, could provoke comparisons that affect aspects of the person's self-concept, excluding weight from other variables that are only related to physique (for example De Veirman et al., 2017).

Finally, some studies seem to indicate that the effect of experimental interventions is moderated by different personnel variables (Fardouly et al., 2015; Lee at al., 2014; Yu & Yung, 2018). For example, a high tendency towards social comparison (Fardouly et al., 2015) or a high level of body discrepancy (Yu & Yung, 2018) seem to increase the effect of experimental exposure to social networks. On this, the meta-analysis by Groesz et al. (2002) regarding exposure to images of thinness indicates that the effects are greater among populations that display a prior vulnerability to the activation of these schemas (for example, in people with ED). Therefore, the heterogeneity of normo-typical samples in relation to these variables may reduce the power of the studies.

Our results indicate that the change in self-esteem is mediated by the change in participants' anxiety. Subjects who showed greater anxiety after exposure were

also those who displayed lower levels of self-esteem. Furthermore, when the anxiety effect is managed, the impact of the treatment on self-esteem is not significant, that is, the entire effect of the intervention on self-esteem seems to occur through the increase in anxiety. This result would support the social comparison model to explain the social network effect - at least in the case of self-esteem. Different studies seem to show that individuals' tendency to make social comparisons plays a role in the relationship between exposure to images and social networks (Meier & Gray, 2014; Tiggemann & Zaccardo, 2015). It would be the triggering of these social comparison mechanisms that would activate anxiety if others are perceived to be more beautiful or physically fit, for example (Kohler et al., 2020). This state would be enhanced by social networks where people tend to show themselves at their best (Mehdizadeh, 2010). Indeed, the more time one spends on social networks, the greater the tendency to consider that others have better lives and are happier than oneself (Chou & Edge, 2012). This upward comparison would enhance the feeling of threat and thus perceived anxiety (Sherlock & Wagstaff, 2019).

As regards the limitations of this study, first, despite being widely used instruments in research, it should be noted that the EDI-3 is an instrument that has been mostly applied using a female sample (for example, Clausen et al., 2011; Rothstein et al., 2017) and some items may not be shown to be invariant with respect to the sex variable. On the other hand, the STAI-e has been conceptualized in certain contexts as a measure of general negative affect rather than anxiety (Balsamo et al., 2013). An interaction between the intervention performed and the measure of self-esteem cannot be ruled out. Thus, an increase in negative affect derived from the experimental intervention affects not so much their self-esteem. but rather their own evaluation of their self-esteem. A final limitation of the study is that both the online experimental format and the low intensity of exposure under the experimental condition reduce control over the actual exposure of the participants, which could lead to an underestimation of the actual effect studied. In any case, despite these limitations, the uncovered effect denotes the enormous repercussion that continuous exposure to these images on social networks can have. Future research should therefore seek to conduct more ecological experimental studies through, for example, longitudinal studies to understand the long-term cumulative effects of exposure to these images of bodies within the thin ideal.

In conclusion, our study shows how brief exposure to images and profiles representative of the thin ideal seems to have an effect on participants' self-esteem. In addition, this effect seems to be mediated by an increase in anxiety arising from the experimental exposure. Notably, 87% of participants used the social network Instagram - a social network associated with the highest negative experiences and behaviors relating to body concerns (Saunders & Eaton, 2018). In addition, 43% of the participants claim to spend between 3-4 hours on social networks and 63% of them report logging into social networks more than 20 times a week. Understanding the consequences of using social networks and promoting healthy use of them is critical today to ensure good mental health (Cohen et al., 2017; Fardouly & Vartanian, 2015; McLean et al., 2017; Morán-Pallero & Felipe-Castaño, 2021; Sampasa-Kanyinga et al., 2016; Saunders & Eaton, 2018; Zendle & Bowden-Jones, 2019). It is therefore important to teach how to make good use of social networks

in childhood and adolescence as well as train health professionals in the effects they can have on individuals, and to promote greater social awareness of their use and work on preventing future problems.

References

- Arthur, L. C., Brooks, R. C., & Blake, K. R. (2020). Female self-sexualization covaries with mate value but not mate availability. *Adaptive Human Behavior and Physiology*, 6(3), 277-291. doi: 10.1007/s40750-020-00133-5
- Balsamo, M., Romanelli, R., Innamorati, M., Ciccarese, G., Carlucci, L., & Saggino, A. (2013). The State-Trait Anxiety Inventory: Shadows and lights on its construct validity. *Journal of Psychopathology and Behavioral Assessment*, 35, 475-486. doi: 10.1007/s10862-013-9354-5.
- Brase, G. L., & Gucy, E. C. (2004). The demographics of mate value and self-esteem. Personality and Individual Differences, 36(2), 471-484. doi: 10.1016/S0191-8869(03)00117-X
- Chou, H. T. G., & Edge, N. (2012). "They are happier and having better lives than I am": The impact of using Facebook on perceptions of others' lives. *Cyberpsychology, Behavior, and Social Networking*, 15(2), 117-121. doi: 10.1089/cyber.2011.0324.
- Clausen, L., Rosenvinge, J. H., Friborg, O., & Rokkedal, K. (2011). Validating the Eating Disorder Inventory-3 (EDI-3): A comparison between 561 female eating disorders patients and 878 females from the general population. *Journal of Psychopathology and Behavioral Assessment*, *33*(1), 101-110. doi: 10.1007/s10862-010-9207-4.
- Clore, J., & Gaynor, S. (2006). Self-statement modification techniques for distressed college students with low self-esteem and depressive symptoms. *International Journal of Behavioral Consultation and Therapy*, 2(3), 314. doi: 10.1037/h0100786
- Cohen, R., Fardouly, J., Newton-John, T., & Slater, A. (2019). #BoPo on Instagram: An experimental investigation of the effects of viewing body positive content on young women's mood and body image. *New Media & Society*, *21*(7), 1546-1564. doi: 10.1177/1461444819826530
- Cohen, R., Newton-John, T., & Slater, A. (2017). The relationship between Facebook and Instagram appearance-focused activities and body image concerns in young women. *Body Image*, *23*, 183-187. doi: 10.1016/j.bodyim.2017.10.002
- De Veirman, M., Cauberghe, V., & Hudders, L. (2017). Marketing through Instagram influencers: The impact of number of followers and product divergence on brand attitude. *International Journal of Advertising*, *36*(5), 798-828. doi: 10.1080/02650487.2017.1348035
- Elosua, P., López-Jáuregui, A., & Sánchez-Sánchez, F. (2010). *Adaptación española del Eating Disorder Inventory-3. Normalización y validación* [Spanish adaptation of the Eating Disorder Inventory-3. Standardization and validation]. Madrid, Spain: TEA.
- Escandón-Nagel, N., Peró, M., Grau, A., Soriano, J., & Feixas, G. (2018). Emotional eating and cognitive conflicts as predictors of binge eating disorder in patients with obesity. *International Journal of Clinical and Health Psychology*, *18*(1), 52-59. doi: 10.1016/j.ijchp.2017.09.003
- Fardouly, J., & Vartanian, L. R. (2015). Negative comparisons about one's appearance mediate the relationship between Facebook usage and body image concerns. *Body Image, 12*, 82-88. doi: 10.1016/j.bodyim.2014.10.004
- Festinger, L. (1954). A theory of social comparison processes. *Human Relations, 7*(2), 117-140. doi: 10.1177/001872675400700202

- Friedenberg, W. P., & Gillis, J. S. (1980). Modification of self-esteem with techniques of attitude change: A replication. *Psychological Reports*, *46*(3), 1087-1095. doi: 10.2466/pr0.1980.46.3c.1087
- Galmiche, M., Déchelotte, P., Lambert, G., & Tavolacci, M. P. (2019). Prevalence of eating disorders over the 2000-2018 period: A systematic literature review. The *American journal of clinical nutrition*, *109*(5), 1402-1413. doi: 10.1093/ajcn/ngy342
- Garner, D. (2004). *Eating Disorder Inventory-3 (EDI-3) professional manual*. Lutz, FL: Psychological Assessment Resources.
- Goodwin, R., Marshall, T., Fülöp, M., Adonu, J., Spiewak, S., Neto, F., & Hernandez Plaza, S. (2012). Mate value and self-esteem: Evidence from eight cultural groups. *PloS one, 7*(4), e36106. doi: 10.1371/journal.pone.0036106
- Groesz, L. M., Levine, M. P., & Murnen, S. K. (2002). The effect of experimental presentation of thin media images on body satisfaction: A meta-analytic review. *International Journal of Eating Disorders*, *31*(1), 1-16. doi: 10.1002/eat.10005
- Haferkamp, N., & Krämer, N. C. (2011). Social comparison 2.0: Examining the effects of online profiles on social-networking sites. *Cyberpsychology, Behavior and Social Networking*, 14(5), 309-314. doi: 10.1089/cyber.2010.0120
- Harper, B., & Tiggemann, M. (2008). The effect of thin ideal media images on women's selfobjectification, mood, and body image. *Sex Roles*, *58*, 649-657. doi: 10.1007/S11199-007-9379-X
- Hayes, A. F. (2017). *Introduction to mediation, moderation, and conditional process analysis:*A regression-based approach. New York, NY: Guilford.
- Hendrickse, J., Arpan, L. M., Clayton, R. B., & Ridgway, J. L. (2017). Instagram and college women's body image: Investigating the roles of appearance-related comparisons and intrasexual competition. *Computers in Human Behavior*, 74, 92-100. doi: 10.1016/j.chb.2017.04.027
- Hilbert, A., Pike, K. M., Goldschmidt, A. B., Wilfley, D. E., Fairburn, C. G., Dohm, F. A., Walsh, B. T., & Weissman, R. S. (2014). Risk factors across the eating disorders. *Psychiatry Research*, 220(1-2), 500-506. doi: 10.1016/j.psychres.2014.05.054
- Holland, G., & Tiggemann, M. (2016). A systematic review of the impact of the use of social networking sites on body image and disordered eating outcomes. *Body Image*, 17, 100-110. doi: 10.1016/j.bodyim.2016.02.008
- Interactive Advertising Bureau. (2020). *Estudio anual de redes sociales 2020* [2020 Annual Social Media Study]. https://iabspain.es/presentacion-estudio-redes-sociales-2020/
- Izydorczyk, B., & Sitnik-Warchulska, K. (2018). Sociocultural appearance standards and risk factors for eating disorders in adolescents and women of various ages. *Frontiers in Psychology*, 9. doi: 10.3389/fpsyg.2018.00429
- Jin, S. V., Ryu, E., & Muqaddam, A. (2019). Romance 2.0 on Instagram! "What type of girlfriend would you date?". Evolutionary Psychology: An International Journal of Evolutionary Approaches to Psychology and Behavior, 17(1), 1474704919826845. doi: 10.1177/1474704919826845
- Kohler, M. T., Turner, I. N., & Webster, G. D. (2021). Social comparison and state—trait dynamics: Viewing image-conscious Instagram accounts affects college students' mood and anxiety. *Psychology of Popular Media*, 10(3), 340-349. doi: 10.1037/ppm0000310
- Krawczyk, R., & Thompson, J. K. (2015). The effects of advertisements that sexually objectify women on state body dissatisfaction and judgments of women: The moderating roles of gender and internalization. *Body Image*, *15*, 109-119. doi: 10.1016/j.bodyim.2015.08.001
- Lee, H. R., Lee, H. E., Choi, J., Kim, J. H., & Han, H. L. (2014). Social media use, body image, and psychological well-being: A cross-cultural comparison of Korea and the United

- States. *Journal of Health Communication*, *19*(12), 1343-1358. doi: 10.1080/10810730.2014.904022
- Lewallen, J., & Behm-Morawitz, E. (2016). Pinterest or thinterest? Social comparison and body image on social media. *Social Media* + *Society*. doi: 10.1177/2056305116640559
- Mabe, A. G., Forney, K. J., & Keel, P. K. (2014). Do you "like" my photo? Facebook use maintains eating disorder risk. *International Journal of Eating Disorders*, *47*(5), 516-523. doi: 10.1002/eat.22254
- Mason, T. B., Lavender, J. M., Wonderlich, S. A., Crosby, R. D., Engel, S. G., Mitchell, J. E., Crow, S. J., Le Grange, D., & Peterson, C. B. (2018). Examining a momentary mediation model of appearance-related stress, anxiety, and eating disorder behaviors in adult anorexia nervosa. *Eating and Weight Disorders*, 23(5), 637-644. doi: 10.1007/s40519-017-0404-y
- Mehdizadeh, S. (2010). Self-presentation 2.0: Narcissism and self-esteem on Facebook. *Cyberpsychology, Behavior and Social Networking*, *13*(4), 357-64. doi: 10.1089/cyber.2009.0257
- Meier, E. P., & Gray, J. (2014). Facebook photo activity associated with body image disturbance in adolescent girls. *Cyberpsychology, Behavior and Social Networking,* 17(4), 199-206. doi: 10.1089/cyber.2013.0305
- McLean, S. A., Wertheim, E. H., Masters, J., & Paxton, S. J. (2017). A pilot evaluation of a social media literacy intervention to reduce risk factors for eating disorders. *International Journal of Eating Disorders*, *50*(7), 847-851. doi: 10.1002/eat.22708
- Morán-Pallero, N., & Felipe-Castaño, E. (2021). Self-concept in social networks and its relation to the affect in adolescents. *Behavioral Psychology/Psicología Conductual*, 29(3), 611-625. doi: 10.51668/bp.8321306s
- Moreno, F. J., Brito, N. B., Robayna, B. P., Fariña, Y. R., & Flores, C.D. (2019). Prevalencia de trastornos de la conducta alimentaria (TCA) en España: Necesidad de revisión [Prevalence of eating disorders (ED) in Spain: Need for revision]. *Revista Española de Nutrición Humana y Dietética*, 23(1), 130-131. doi: 10.14306/renhyd
- Moreno Encinas, A., Moraleda Merino, J., Graell-Berna, M., Villa-Asensi, J. R., Álvarez, T., Lacruz-Gascón, T., & Sepúlveda García, A. R. (2021). An internalizing and externalizing model to explain the psychopathology onset of the eating disorders at adolescence. Behavioral Psychology/Psicología Conductual, 29(1), 51-72. doi: 10.51668/bp.8321103s
- Murray, S. B., & Touyz, S. W. (2012). Masculinity, femininity and male body image: A recipe for future research. *International Journal of Men's Health, 11*(3), 227-239. doi: 10.3149/jmh.1103.227
- Myers, T. A., & Crowther, J. H. (2009). Social comparison as a predictor of body dissatisfaction: A meta-analytic review. *Journal of Abnormal Psychology, 118*(4), 683-698. doi: 10.1037/a0016763
- Perpiñá-Galvañ, J., Richart-Martínez, M., Cabañero-Martínez, M. J., & Martínez-Durá, I. (2011). Validez de contenido de versión corta de la subescala del Cuestionario State-Trait Anxiety Inventory (STAI) [Content validity of the short version of the subscale of the State-Trait Anxiety Inventory Questionnaire (STAI)]. Revista Latino-Americana de Enfermagem, 19 (4), 882-887. doi: 10.1590/S0104-11692011000400005
- Polivy, J., & Herman, C. P. (2002). Causes of eating disorders. *Annual Review of Psychology*, *53*, 187-213. doi: 10.1146/annurev.psych.53.100901.135103
- Posavac, H. D., Posavac, S. S., & Posavac, E. J. (1998). Exposure to media images of female attractiveness and concern with body weight among young women. *Sex Roles*, *38*(3-4), 187-201. doi: 10.1023/A:1018729015490
- Ridgeway, R. T., & Tylka, T. L. (2005). College men's perceptions of ideal body composition and shape. *Psychology of Men & Masculinity, 6*(3), 209-220. doi: 10.1037/1524-9220.6.3.209

- Rothstein, L. A., Sbrocco, T., & Carter, M. M. (2017). Factor analysis of EDI-3 eating disorder risk subscales among African American women. *Journal of Black Psychology*, *43*(8), 767-777. doi: 10.1177/0095798417708506
- Rounsefell, K., Gibson, S., McLean, S., Blair, M., Molenaar, A., Brennan, L., Truby, H., & McCaffrey, T. A. (2020). Social media, body image and food choices in healthy young adults: A mixed methods systematic review. *Nutrition y Dietetics*, *77*(1), 19-40. doi: 10.1111/1747-0080.12581
- Sampasa-Kanyinga, H., Chaput, J. P., & Hamilton, H. A. (2016). Use of social networking sites and perception and intentions regarding body weight among adolescents. *Obesity Science y Practice*, 2(1), 32-39. doi: 10.1002/osp4.26
- Saunders, J. F., & Eaton, A. A. (2018). Snaps, selfies, and shares: How three popular social media platforms contribute to the sociocultural model of disordered eating among young women. *Cyberpsychology, Behavior, and Social Networking*, *21*(6), 343-354. doi: 10.1089/cyber.2017.0713
- Seekis, V., Bradley, G. L., & Duffy, A. L. (2020). Appearance-related social networking sites and body image in young women: Testing an objectification-social comparison model. *Psychology of Women Quarterly*, *44*(3), 377-392. doi: 10.1177/0361684320920826
- Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). Experimental and quasi-experimental designs for generalized causal inference. Belmont, CA: Wadsworth Cengage Learning.
- Sherlock, M., & Wagstaff, D. L. (2019). Exploring the relationship between frequency of Instagram use, exposure to idealized images, and psychological well-being in women. *Psychology of Popular Media Culture, 8*(4), 482-490. doi: 10.1037/ppm0000182
- Spielberger, C. D., Gorsuch, R. L., Lushene, R., Vagg, P. R., & Jacobs, G. A. (1983). *Manual for the State-Trait Anxiety Inventory*. Palo Alto, CA: Consulting Psychologists Press.
- Stice, E., & Desjardins, C. D. (2018). Interactions between risk factors in the prediction of onset of eating disorders: Exploratory hypothesis generating analyses. *Behaviour Research and Therapy*, 105, 52-62. doi: 10.1016/j.brat.2018.03.005
- Stice, E., Spangler, D., & Agras, W. S. (2001). Exposure to media portrayed thin-ideal images adversely affect longitudinal experiment. *Journal of Social and Clinical Psychology, 20*, 270-288. doi: 10.1521/jscp.20.3.270.22309.
- Striegel-Moore, R. H., & Bulik, C. M. (2007). Risk factors for eating disorders. *American Psychologist*, *62*(3), 181-198. doi: 10.1037/0003-066X.62.3.181
- Suls, J., & Wheeler, L. (2013). *Handbook of social comparison: Theory and research*. New York, NY: Springer.
- Tiggemann, M., Martins, Y., & Kirkbride, A. (2007). Oh to be lean and muscular: Body image ideals in gay and heterosexual men. *Psychology of Men & Masculinity, 8*(1), 15-24. doi: 10.1037/1524-9220.8.1.15
- Tiggemann, M., & Zaccardo, M. (2015). "Exercise to be fit, not skinny": The effect of fitspiration imagery on women's body image. *Body Image*, *15*, 61-7. doi: 10.1016/j.bodyim.2015.06.003
- Turner, P. G., & Lefevre, C. E. (2017). Instagram use is linked to increased symptoms of orthorexia nervosa. *Eating and Weight Disorders*, 22(2), 277-284. doi: 10.1007/s40519-017-0364-2
- Vogel, E. A., Rose, J. P., Roberts, L. R., & Eckles, K. (2014). Social comparison, social media, and self-esteem. *Psychology of Popular Media Culture, 3,* 206. doi: 10.1037/ppm0000047
- Watson, A., Murnen, S. K., & College, K. (2019). Gender differences in responses to thin, athletic, and hyper-muscular idealized bodies. *Body Image, 30*, 1-9. doi: 10.1016/j.bodyim.2019.03.010

- Word Health Organization. (2020). Body mass index BMI. https://www.euro.who.int/en/health-topics/disease-prevention/nutrition/a-healthy-lifestyle/body-mass-index-bmi
- Yu, U. J., & Jung, J. (2018). Effects of self-discrepancy and self-schema on young women's body image and self-esteem after media image exposure. *Family and Consumer Sciences Research Journal 47(2)*, 142-160. doi: 10.1111/fcsr.12284
- Zendle, D., & Bowden-Jones, H. (2019). Is excessive use of social media an addiction? *BMJ Clinical Research Edition*, 365, 21-71. doi: 10.1136/bmj.l2171

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