



Anonymity and Cyberbullying on Social Media

Research into the influence of anonymity and the types of negative messages on the self-esteem and body appreciation of cyberbullying victims.

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Abstract

This study aimed to investigate how different negative comments (personality vs. physical appearance comments) from anonymous or non-anonymous profiles affect people's self-esteem and body appreciation. It was expected that the negative messages received from non-anonymous profiles would be perceived as more negative than those received by anonymous profiles. In addition, it was expected that the type of negative messages received (personality vs. physical appearance) would affect self-esteem and body appreciation differently. To investigate this, we conducted an experiment with a 2 (anonymous vs. non-anonymous profiles) x 2 (negative messages about the personality vs. negative messages about the physical appearance) factorial design with performance self-esteem, social self-esteem, appearance self-esteem, and body appreciation as dependent variables and social presence as mediating variable. A total of 145 participants took part in the study. They were exposed to negative messages about their physical appearance or personality from anonymous or non-anonymous profiles, depending on which of the four study conditions they were assigned. The results did not confirm our hypotheses. However, an interaction effect was found between anonymity and type of negative messages (personality vs. physical appearance) on performance self-esteem. This interaction resulted in lower performance self-esteem when the negative messages were related to physical appearance compared to personality when the sender was anonymous. Finally, we found that social presence did directly affect performance self-esteem, social self-esteem, appearance self-esteem, and body appreciation. This means that the more real the sender is perceived, the higher the influence on self-esteem and body appreciation would be, independently of anonymity.

Keywords: cyberbullying, anonymity, state self-esteem, performance self-esteem, social self-esteem, appearance self-esteem, body appreciation, social presence.

Anonymity and Cyberbullying on Social Media

In recent years, more and more of our interpersonal communication has taken place online. Some of the consequences of this switch have been positive, as now everyone from all over the world may communicate with one another independently from time and place. However, the exponential widespread internet access and social media usage have raised serious concerns in our society, especially among the young population (Lowry et al., 2016; Slonje et al., 2013; Statista, 2022a).

One of these concerns is that online communication may lead to disinhibited behavior. The consequences derived from the disinhibition can be positive (benign disinhibition); for example, people who experience mental health issues can find support in online blogs and may be willing to share their experiences with others online more easily than in a face-to-face setting (Lowry et al., 2016; Smit et al., 2021). However, online disinhibition may also have negative consequences (which is known as toxic disinhibition). Toxic disinhibition is described as a negative type of social interaction characterized by insulting, swearing, or using hostile, harsh, rude, and offensive language (Suler, 2004). In other words, when people communicate through electronic means, they feel more free to perform “not socially accepted behaviors” or negative behaviors that they would rather not perform while communicating offline (Huang et al., 2020, Suler, 2004). Moreover, Toxic disinhibition is considered one of the main causes of cyberbullying.

One of the elements that has been identified as the main trigger of online disinhibited behavior is anonymity (Suler, 2004). Anonymity is defined as the capacity to be unknown or unidentifiable to others while sharing the same social environment, meaning that a person that is interacting online is unidentifiable to other online users (Lapidot-Lefler & Barak, 2012; Suler, 2004; Wallace, 1999). Therefore, anonymity

provides the opportunity to dissociate or separate people's real-life identity from the actions that they are carrying out online, making them feel less vulnerable about self-disclosing or acting out. This is known as disinhibition (Suler, 2004). Indeed, several studies have shown that anonymity is one of the triggers for online disinhibition and, therefore, a facilitator of online toxic disinhibition such as cyberbullying (e.g., Bargh & McKenna, 2004; Bargh, McKenna, & Fitzsimons, 2002; Joinson, 1998, 2001, 2007; McKenna & Seidman, 2005; Spears et al., 2007; Suler, 2004; Tanis & Postmes, 2007).

Social media platforms have blurred the lines between the online and the offline world, making online communication an extension of the offline (Pabian & Vandebosch, 2021). This lack of barriers between offline and online communication has offered a new way for bullies to continue their toxic disinhibited online behavior, making their attacks more intense and dangerous for the victim (Huang et al., 2020, Pabian & Vandebosch, 2021, Willard, 2007). For these reasons, cyberbullying has been recognized as a global public health concern, due to the adverse mental health consequences for the victims (Brochado, Soares, & Fraga, 2017; Huang et al., 2019; Huang et al., 2020). The victims that experience cyberbullying have also been associated with lower levels of self-esteem (Beaty, & Alexeyev, 2008; Cénat, Hébert, Blais, Lavoie, Guerrier, & Derivois, 2014; Patchin, & Hinduja, 2010b; Wild et al., 2004), as well as body image (the self-perception of one's body) (Frisén et al., 2014), or body appreciation (the positive attitudes towards one's body) (Tylka, 2011).

Though anonymity may affect cyberbullying behavior, little research has investigated if the perception of negative messages by the receivers of cyberbullying messages is different when a sender is anonymous or not-anonymous. Wang (2020) found that comments received by anonymous accounts were perceived as less credible by the receivers of the message than comments received by non-anonymous accounts.

Therefore, it would be expected that negative comments received by an anonymous account would be perceived as less credible by the receiver. Therefore, the receiver will be less negatively affected by its comments than those posted from non-anonymous accounts (with a real name and a human-like image).

Moreover, the type of negative comments may also affect how a message affects a receiver. The study of Ouvrein, Hallam, De Backer, and Vandebosch (2021) differentiates two types of perceived negative comments: personality and appearance comments. The study reported that participants were more negatively affected by negative comments that addressed the personality traits of the receivers (how they act and behave) compared to the comments that addressed their physical appearance (e.g., how they look, their body posture, their age, their way of dressing). However, this study was conducted exclusively on celebrities and not on regular social media users (Ouvrein, Hallam, De Backer, & Vandebosch, 2021). It is therefore important to find out if these results would also reproduce on average social media users.

This study aims to get a better understanding of how toxic disinhibited behavior is perceived by its victims. By doing so, we hope to contribute to educational programs that will make social media users aware of the toxic disinhibited behavior that is occurring online. More specifically, to help victims of toxic disinhibited processing their experience and help them to understand how they may be affected by the negative messages that they received and how their perceptions vary depending on the anonymity of the sender (anonymous vs. non-anonymous) and the content of the messages that they receive (personality traits vs. physical appearance).

Regarding the scientific relevance, this study contributes to three gaps in the academic literature in disinhibited behavior. First, this study will compare whether anonymous or non-anonymous profiles have a bigger negative influence on the victims

of toxic disinhibited behaviors. Secondly, this study will test whether negative comments about physical appearance or negative comments about personality traits) have the biggest negative influence on the victims of toxic disinhibited behaviors. Third, based on the type of profile (anonymous vs. non-anonymous) and type of negative comment (physical appearance vs. personality traits) received, we will identify the parts of the self-esteem that have been affected as a result of the comments and profiles used. This will help mental health professionals to better understand the areas of self-esteem that mostly affect the victims, which will lead to more suitable therapies. Therefore, the goal of this study is to find an answer to the following question:

RQ: To what extent are the negative comments that refer to the physical appearance vs. personality traits posted through anonymous profiles vs. non-anonymous profiles impact a receiver's self-esteem and body appreciation?

Theoretical Framework

Social Network Sites: Instagram

Social media is a computer-mediated communication technology that allows people to create connections between people within the same platforms and generate user-generated content (Lewis, 2010). Within social media, we can differentiate different types of platforms, such as microblogging sites (e.g., Twitter), wikis, forums, blogs, and social network sites (e.g., Facebook and Instagram) (Osatuyi, 2013).

However, for this research, we will focus on social network sites (SNSs), which are online services that allow users to create a private, semi-private or public profile on the platform (Boyd & Ellison, 2007). Social network sites also allow users to connect

with others within the platform and even see and share their contacts list (Boyd & Ellison, 2007).

For this research, the social media platform used was Instagram. Instagram is an image-based SNS (social network site) that has experienced exponential growth during the past years, becoming one of the most popular SNS worldwide, with one billion active users per month (Statista, 2022a; Statista, 2022b). In addition, Instagram is characterized as a platform that allows its users to boost their image by using filters as a beauty booster, which helps the users to portray their ideal selves (Chua & Chang, 2016).

The excessive importance of the image on Instagram, together with the capacity to manage and boost the image that one wants to show on this platform, may lead to negative outcomes such as lower levels of self-esteem and psychological well-being (Lup et al., 2015; Vogel et al., 2014; Wang et al., 2017; Sherlock & Wagstaff, 2018). One of the main reasons why Instagram users may have lower self-esteem is social comparison, which is understood as the individual's inner drive to obtain a personal self-evaluation (Festinger, 1954). More specifically, due to the upward social comparison or the tendency to compare and evaluate ourselves to others that are considered "better" or "superior" or, in other words, people that are seen as an "aspiration" or as a model to follow (Chen et al. 2016; Wheeler, 1966). This upward social comparison is boosted by the fact that people can select and alter their images to portray their ideal self (e.g., filters), creating impossible standards or unreachable aspirations that negatively affect the users' mental health (Chen et al., 2016). For example, the Instagram trend of "fitspiration," whose goal is to serve as an inspiration to be fit and healthy, actually causes the contrary effect. This trend is characterized by excessive exposure to thin and ideal bodies, which can negatively affect the body image

perception of its consumers (Tiggemann & Zaccardo, 2018) by lowering their appearance self-esteem and leading to body dissatisfaction.

Toxic Disinhibited Behavior: Cyberbullying

Before talking about cyberbullying, the concept of traditional bullying should be defined. Bullying is an aggressive and intentional act or behavior that can be performed by individuals or a group continuously and over time against a vulnerable person (the victim)(Olweus, 1994). Cyberbullying differs from traditional bullying in several ways: First, the action is performed on the internet through electronic means (Pabian & Vandebosch, 2021); Second, bullies can perform that behavior anonymously, without directly facing the victim (Pabian & Vandebosch, 2021; Slonje et al., 2013); Third, they are less restricted in time and space, which means that a behavior that is performed offline can continue online (Pabian & Vandebosch, 2021). Lastly, the bully can reach a larger audience. In addition, online content can be easily shared and stored, which means that the victim will be capable of seeing it even years after the cyberbullying attack occurred (Dooley et al., 2009; Pabian & Vandebosch, 2021).

Some of the negative consequences of being a victim of cyberbullying are related to the cognition system, such as lack of concentration or low self-esteem, emotional damage such as anxiety and depression, and engaging in negative behaviors such as excessive alcohol and tobacco consumption, drug consumption or not going to class. In some cases, cyberbullying victims may have suicidal thoughts or even commit suicide (Patchin and Hinduja 2010a, b; Rose & Tynes, 2015; Cassidy et al., 2013). However, the long-term effects of cyberbullying have not yet been identified, as it is a new phenomenon that needs further investigation (Pabian & Vandebosch, 2021).

One of the most highlighted consequences of cyberbullying is the negative effects it has on victims' self-esteem (Beaty & Alexeyev, 2008; Cénat, Hébert, Blais, Lavoie, Guerrier, & Derivois, 2014; Patchin & Hinduja, 2010b; Wild et al., 2004). The study by Frisé et al. (2014) showed the relationship between lower levels of self-esteem and cyberbullying victims compared to individuals that were not victims of cyberbullying. In addition, cyberbullying that is related to the physical appearance of the victim has been associated with lower levels of appearance-esteem, which leads to higher levels of body dissatisfaction or, in other words, lower levels of body appreciation (Olenik-Shemesh & Heiman, 2017).

In the following sections, we will further explain the different levels of self-esteem and the concept of body appreciation, as well as the link of body appreciation between appearance self-esteem and body image.

Self-Esteem and Body Appreciation

According to Rosenberg, self-esteem is defined as an individual's positive or negative self-perception (Rosenberg, 1965b). Leary and Downs (1995) define self-esteem as the self-perception of the degree of social acceptance or rejection that an individual would have in a social group. Although these two definitions do not address self-esteem in the same way, they have in common that they perceive self-esteem as a self-perception that an individual has towards themselves, and external factors may have influenced that.

Based on the scale created by Heatherton and Polivy (1991), who understand self-esteem as a concept that can temporarily fluctuate (Crocker & Major, 1989; Gergen, 1971; Markus & Kunda, 1986; Rosenberg, 1986; Wells, 1988), self-esteem is divided into three categories. Firstly, performance self-esteem is defined as the self-

perception of being worthy, meaning being intelligent and capable. This concept of self-esteem is related to intellectual and academic skills and the person's capabilities to perform tasks with a certain level of agency, confidence, and efficacy (Heatherton & Wyland, 2003). Secondly, social self-esteem is defined as the self-perception that someone has about how others respect, value, and perceive them. Social self-esteem is related to social anxiety and self-consciousness (Heatherton & Wyland, 2003). Thirdly, appearance self-esteem refers to self-esteem related to the perception of the physical body. This concept also addresses "athletic skills, physical attractiveness, body image, as well as physical stigmas and feelings about race and ethnicity" (Heatherton & Wyland, 2003, p. 224).

Closely related to appearance self-esteem are the concepts of body image and body appreciation, which are necessary to explain to gather a better understanding of this self-esteem category. Body image has been defined as individuals' self-perception toward their own bodies. However, this concept has been traditionally linked and measured from a negative perspective (Cash, 2012). Body appreciation, or positive body image, is a concept that focuses on one's self-perception, self-acceptance, and self-respect towards one's body. Therefore, body appreciation is closely related to appearance esteem, body surveillance, body shame, and psychological well-being (Avalos, Tylka, & Wood-Barcalow, 2005).

Moreover, body appreciation is a concept that measures the body's self-perception from a positive perspective. This positive measurement includes different components compared to those used while assessing body image, normally from a negative perspective. Some of the novel components that the body appreciation measurement includes are positive opinions toward their own body, body acceptance, and respect towards one's body (Tylka, 2011). Therefore, body appreciation is used as a

complementary measurement to appearance self-esteem to have a better and more complete understanding of the manipulations' effects on participants.

Online Disinhibition and Online Anonymity

According to Suler (2004), people in computer-mediated settings are more willing to say things online than they would face-to-face. This type of behavior has been defined as the online disinhibition effect.

Traditionally, disinhibition referred to the lack of control to withhold unwanted or socially inappropriate behaviors or comments (Cahn-Weiner & Johnson, 2011). Disinhibition is also seen as a “pattern of antisocial, impulsive, norm-violating, sensation seeking, and externalizing tendencies and problems” (Bogg & Finn, 2010, p.144).

On the other hand, the online disinhibition effect has been described as a mental state by which individuals feel more loose and relaxed and are more willing to engage in online behaviors that they may not engage in face-to-face environments (Cheung et al., 2020). This type of behavior can have both positive and negative consequences.

On the one hand, the effect of this behavior can be positive, which is known as the benign disinhibition effect. Individuals experiencing benign disinhibition may self-disclose or share more personal or sensitive information by following their inner willingness to better understand their feelings while trying to solve their inner personal problems (Cheung et al., 2020). This positive effect stimulated by online environments allows people to bring the best part of themselves by showing support, kindness, and generosity (Suler, 2004).

On the other hand, the online disinhibition effect can lead to negative behaviors, which is known as the toxic disinhibition effect. This type of negative disinhibition is

characterized by inappropriate language use, such as insults, harsh and rude language, and cyberbullying, is known as one of the most popular consequences of this online toxic disinhibition (Suler, 2004). As previously stated, cyberbullying is understood as an intentional and aggressive act performed online and over time against a vulnerable person (victim) (Pabian & Vandebosch, 2021).

One of the most influential triggers responsible for the online disinhibition effect (both benign and toxic) is anonymity. Anonymity can be described as the capacity to be unknown to others (Suler, 2004). However, different online levels of anonymity can be found depending on the degree of personal details people want to disclose to maintain their unidentifiable profile. For example, people can decide to keep their real name and remain anonymous as long as other personal details remain hidden or unknown (Lapidot-Lefler & Barak, 2012). Morio and Buchholz (2009) have defined three levels of anonymity known as visual anonymity, disassociation between real life and online identities, and lack of identifiability.

Visual anonymity refers to the degree that individuals can be visually “invisible” to the rest of the users that are interacting with them. This type of anonymity can be guaranteed in almost all types of online communication. Dissociative anonymity refers to the name that an individual uses to interact online. If a person is interacting with other users while using a pseudonym or another name that differs from their real name, in that case, the person is communicating under a dissociative identity or dissociative anonymity. Finally, an individual can also hide under anonymous profiles who lack identifiability. This means that an individual’s online identity cannot be tracked back to the real identity of its user, which makes the person that performs this type of anonymity completely invisible (Winkler & Zeadally, 2015).

Online anonymity has been recognized as a facilitator of deindividuation, especially for computer-mediated communication (Zimbardo, 1969; Perfumi et al., 2019). Traditionally, deindividualization has been defined as the loss of the self-perception of one's behavior (Zimbardo, 1969). This loss of self-perception triggered by anonymity and the lack of the possibility of being identified lower the pressure to act according to the established social norms (Latané, 1981), or in other words, the disinhibition effect. More specifically, deindividuation leads to more antisocial behavior (Mann et al., 1982), known as the toxic disinhibition effect.

Anonymity from the Receiver's Point of View

As previously stated, the sender's anonymity has been recognized as one of the main triggers that may lead to toxic disinhibition, such as cyberbullying.

However, another phenomenon occurs regarding anonymity from the receiver's point of view. Based on the study by Dennis (1996), the comments made from anonymous profiles are perceived as less trustworthy, which leads to a lower impact and influence on the receiver's personal opinions (McLeod, 2000; Sassenberg & Postmes, 2002). In line with this, the study by Wang (2020) shows that the comments posted through anonymous profiles are also perceived as less credible. In addition, if the valence of the message posted by an anonymous profile is negative, the receiver would perceive the sender as less credible than if the valence of the message was positive (Wang, 2020). Furthermore, it is also reported that compared to anonymous profiles, identifiable profiles have a more significant influence on one's feelings and attitudes (Tanis & Postmen, 2007).

Therefore, the negative comments from non-anonymous profiles can lead to lower self-esteem and body appreciation as the profiles are perceived as more identifiable and, therefore, can have a greater influence on the receivers' self-perception.

These findings lead to the first hypothesis of the study:

H1: Social self-esteem, performance self-esteem, appearance self-esteem, and body appreciation would be lower after receiving a negative message from a non-anonymous compared to an anonymous profile, independently of the type of negative comment received.

Types of Negative Messages: Personality vs. Physical Appearance

Cyberbullying has been categorized in many ways, from the type of attack, medium, social role, behavior, communication mode, motive, and targets (Scheithauer et al., 2021). One of the most popular cyberbullying categorizations that have inspired future categorizations is the one developed by Willard (2007). According to Willard (2007), one of the most popular categories of cyberbullying is the one defined as “flaming”. Flaming is described as the use of informal negative messages online, which include insults, swearing, harsh and rude language (Willard, 2007).

Cassidy et al. (2009) and Mishna et al. (2010) showed that one of the most repeated cyberbullying messages was related to the victims' appearance and body characteristics. The reported effects of negative appearance messages are associated with mental health issues such as lower self-esteem, body dissatisfaction, confidence, depression, and even in extreme cases, suicidal thoughts (Cassidy et al., 2009; Mishna et al., 2010; Olenik-Shemesh & Heiman, 2017). Some studies claimed that women are more affected by negative appearance messages than men (Berne, Frisé, & Kling,

2014). However, the study by Gültzow et al. (2020) showed that in recent years, men experience similar effects as women regarding the influence of appearance. Therefore, it is expected that negative messages about appearance would similarly influence men's and women's self-esteem and body appreciation. In addition, as the negative comments about physical appearance have been associated with lower appearance self-esteem and with higher levels of body dissatisfaction (Olenik-Shemesh & Heiman, 2017), it can be expected that these two variables would be more sensitive to negative comments about physical appearance, and therefore being more affected by them, compared to performance self-esteem and social self-esteem.

Ouvrein, Hallam, De Backer, & Vandebosch (2021) found that celebrities mostly received negative comments on their physical appearance and personality. Nevertheless, barely any research focuses on the identification and effects on the receiver of negative comments related to personality.

Therefore, it is expected that negative comments about personality may be mostly related to social and performance self-esteem, while, as previously stated, comments about physical appearance would mostly affect appearance self-esteem and body appreciation. Therefore, the following hypotheses are formulated:

H2a. Social self-esteem and performance self-esteem would be lower after receiving a negative comment about personality compared to a negative comment about physical appearance.

H2b: Appearance self-esteem and body appreciation would be lower after receiving a negative comment about physical appearance compared to negative comments about personality.

Social Presence

Finally, we pose that social presence will mediate the relationship between the type of anonymity, self-esteem, and body image. Social presence has been originally defined as “the degree of salience of the other person in the communication and the consequent salience of the interpersonal relationships” (Short, Williams, and Christie, 1976, p. 65). Gunawardena and Zittle (1997) have defined social presence as the self-perception that someone has of interacting with a real person through computer-mediated communication.

Traditionally, computer-mediated communication has been associated with low levels of social presence, while face-to-face interactions were associated with high levels of social presence (Miranda & Saunders, 2003; Gefen & Straub, 2004).

However, some factors may contribute to the rise of social presence in computer-mediated communication, such as the inclusion of more human-like cues, which was proven to be positively related to higher social presence and emotional involvement during the interaction (Xu & Lombard, 2017). For example, Newberry (2001) showed that displaying a human-like profile image is an easy way to enhance online social presence. In line with this, Johnson & Knobloch-Westerwick (2017) reported that visual content enhances the creation of an impression or the idea that we create of someone, which boosts social presence. Therefore, introducing vivid cues such as real names and profile images would lead to higher levels of social presence (Feng, Li, & Li, 2016).

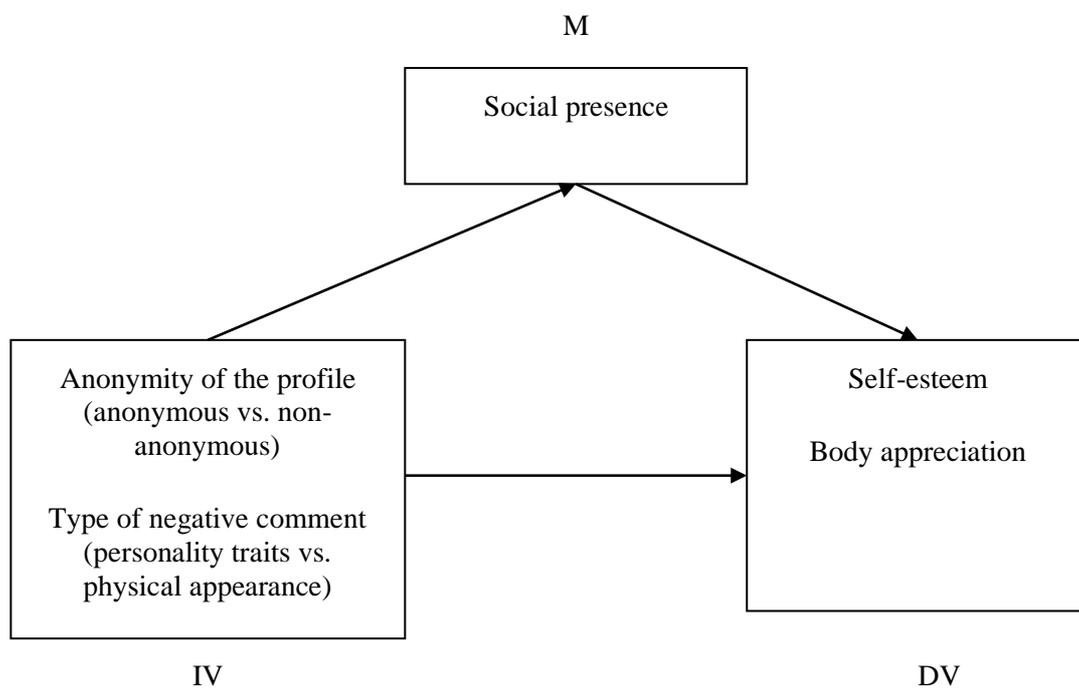
Based on these findings, it could be expected that the social presence would be higher when the sender is identifiable (non-anonymous) than when the sender is anonymous, as the non-anonymous profiles contain more vivid and human-like cues than anonymous profiles. Moreover, the rise of social presence would make the senders

of the non-anonymous profiles be perceived as more “real” and credible, which would lead to a higher influence of the negative messages on the receivers. Therefore, the more affected the receivers are, the lower their self-esteem and body appreciation would be. This leads to our third hypothesis:

H3: The relationship between the type of anonymous profile (anonymous vs. non-anonymous), self-esteem (social, performance, and appearance self-esteem), and body appreciation is mediated by social presence.

Figure 1

Conceptual model.



Methodology

Design

In this 2 x 2 factorial design study, the independent variables were the anonymity of the message sender (anonymous vs. non-anonymous) and the types of comments that were written (negative personality messages vs. negative physical appearance messages). The dependent variables were body appreciation (Avalos, Tylka, & Wood-Barcalow, 2005), social self-esteem, performance self-esteem and appearance self-esteem (Heatherton & Polivy, 1991). The mediating variable was social presence (Weidlich, Kreijns, Rajagopal, & Bastiaens, 2018).

Table 1

Experimental design table: 2 x 2 factorial design.

		Type of Anonymity	
		Anonymous	Non-anonymous
Type of negative comments	Physical appearance comment	Self-esteem & body appreciation	Self-esteem & body appreciation
	Personality comment	Self-esteem & body appreciation	Self-esteem & body appreciation

Participants

189 Instagram users over the age of 18 were asked to fill in an online questionnaire. After excluding 35 participants who did not continue with the second survey, 6 participants who failed to answer the attention check question (“What is the valence of the comment?”) correctly and 3 participants that wanted to delete their data from the study, the final sample consisted of 145 individuals (38 participants for anonymous profile and negative personality comment, 37 participants for anonymous profile and negative physical appearance comment, 34 participants for non-anonymous

profile and negative personality comments and 36 participants for non-anonymous profile and negative physical appearance comments). The participants were 28.3% males, 71.0 % females and 0.7% non-binary. The mean age of the participants was 23.40. 45.5% of the participants were from the Netherlands, 32.4% from Spain, 2.1% from Ireland, 1.4% from Greece, Italy, Romania, South Korea and Sweden respectively, and 0.7% per each of the following countries: Brazil, China, Croatia, Finland, Germany, Indonesia, Iran, Latvia, Liberia, Malaysia, Mexico, Peru, Poland, Portugal, Slovakia, Thailand, Turkey, Venezuela and Vietnam. The participants' highest level of education was 9.7% high school, 46.2% bachelor and 44.1% master.

Regarding the participant's Instagram usage, on average, the participants had 1103 followers. 40.7 % of the participants spent approximately between 0 to 1 hour a day on Instagram, 34.5 % between 1 to 2 hours, 19.3% between 2 to 3 hours, 4.8% between 4 to 5 hours and 0.7% more than 5 hours. Lastly, 62.8% of the participants had a private Instagram account while 37.2% had a public Instagram account.

Procedure and manipulations

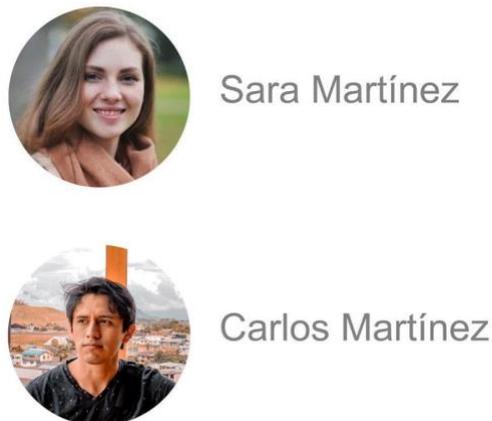
The manipulation of the study was based on the negative assessments and the type of profile of the message's senders. Participants were asked to provide access to their Instagram account to retrieve one photo of themselves two days before the actual study. They were also informed that someone else was going to comment on their picture. The negative feedback was either feedback on the physical appearance or feedback regarding the personality of the participant. Moreover, feedback was provided either by a non-anonymous or anonymous account. Nevertheless, all the feedback received was fake and all messages and accounts were crafted beforehand.

The type of anonymity was manipulated by the anonymity of the sender of the

message applying two types of anonymity: visual anonymity (non-human profile image) and dissociative anonymity (non-real name). In the non-anonymous condition, the message was accompanied by a human-like profile image and a human-like name of the “supposed” sender which was either male or female based on the gender of the participant. In the anonymous condition, the message was accompanied by a non-human-like image (visual anonymity), in this case, the image of a landscape followed by a non-human-like name (dissociative anonymity) were displayed.

Figure 2

Non-anonymous Instagram profiles.



Note. Profile pictures retrieved from Pexels. profile image of the woman (Piacquadio, 2017). Profile picture of the man (Rivadeneira Molina, 2021).

Figure 3

Anonymous Instagram profile.



Note. Profile picture of the landscape retrieved from Pexels (Lum3n, 2016).

The type of message was manipulated based on the content of the message. The message could contain negative features about the personality of the participant or could contain negative features about the physical appearance of the participant. There were four possible messages per condition (i.e., four negative messages about the physical appearance and four of these messages on the personality of the receiver). Participants randomly received one of these messages. Below are listed the eight potential comments that the participants could have received depending the condition that they were assigned to (see Table 2 and 3).

The messages crafted for the different conditions (physical appearance vs. personality) were informal, in order to simulate a more natural language. Contractions, questions and exclamation marks, and ellipsis were also used to boost more informal messages. In addition, it was decided to use the pronoun “you” as it could be used for males and females participants as well as it was a more direct and engaging way to refer to the participants.

Table 2

Negative comments about physical appearance

You look quite old in this picture, for sure older than your actual age. It is clear that you don't take proper care of yourself, you look pretty terrible...

You look rather unhealthy... I think that you should eat better and maybe go to the gym??

This picture is awful... And why did you even decide to upload this picture on your Instagram profile in the first place!?!? I don't think that that outfit fits your body type. It's really terrible.

I would definitely swipe left on Tinder on this. I don't think that you are attractive at all.

Table 3*Negative comments about personality*

You look pretty stupid and unhappy. I don't think I would be able to have an intelligent conversation with you. I would never approach you.... And I think that you will always be alone.

You don't look friendly at all. If you were in a bar I would not approach you. You look quite arrogant and superficial ... Not really agreeable.

I think that you are not really a social person. I think you are quite introverted and most likely have a few friends.

You look like the typical artificial person that tries to show on social media that your life is amazing but in reality you are probably quite insecure and unhappy.

On the other hand, and based on the study of Newberry (2001), the social presence was controlled through the image and the name that were displayed in the conditions. It was believed that by using a human-like image together with a real name (i.e., Sara Martínez or Carlos Martínez) the social presence was going to be higher than while using a non-human-like name (i.e., Afs23456) and a non-human-like image (image of a landscape).

Experimental setup

The data was collected through an online survey created on Qualtrics and was distributed by using convenience sampling. The participants were approached in two different ways. One way to gather the data was through the “Tilburg University Participant Pool”, a website which connects researchers with participants that are interested in participating in scientific research. Another way was through snowball sampling through a request to fill out the online questionnaire that was posted on Instagram.

Participants participated in a survey twice. In the first survey, participants were first informed about the goal and setup of the paper and were asked to provide informed

consent. Participants were also informed of their right to withdraw from the study at any time they wish. Next, participants filled in some demographic variables and answered questions about their Instagram use.

The participants were also asked to provide their Instagram account name and email address. The Instagram account name was used to access the participant's Instagram account to retrieve one image where the participant was clearly visible. We subsequently used that image in the second part of the study to make participants believe that other participants assessed their pictures and provided feedback on their picture. Finally, participants provided their email address, so we could inform participants of the second part of the study and link the two surveys to each other. Instagram images, Instagram account names, and email addresses were removed from the data after the study to ensure anonymity of the participants.

Two days after completion of the first survey, the participants received an email informing them that they could access the second survey. After a welcoming message, the participants were informed that someone had assessed their Instagram picture. The image that was retrieved from their Instagram account was displayed followed by the assessment provided with the name and image of the author of the assessment. In reality, of course, this feedback was fictitious, and no other participants saw the actual profile picture. The type of assessment and profile that was displayed on the survey was randomly assigned to each participant based on one of the four study conditions 1) A negative message by a non-anonymous sender about the participant's personality 2) A negative message by a non-anonymous sender about the participant's appearance 3) A negative message by an anonymous sender about the participant's personality 4) A negative message by an anonymous sender about the participant's appearance). Next, the participants needed to answer to the state self-esteem scale (SSES) (Heatherton &

Polivy, 1991) and the five statements with the highest factor loadings in the original study for the body appreciation scale (BAS) (Avalos, Tylka, & Wood-Barcalow, 2005). In addition the social presence of the manipulation was measured through the social presence scale (Weidlich, Kreijns, Rajagopal, & Bastiaens, 2018) to assess if it acts as a mediator in the study.

Once participants finished the survey's questions, a disclosure and disclaimer message was displayed to inform the participants about the aim of the study. It was acknowledged that the negative comments that they received were not real and that no one actually gave negative comments on their picture. It was also acknowledged that no one saw the pictures that they had provided. In addition, we provided contact information for professional help provided by Tilburg in case participants felt negatively affected by the comments received. Then, at the end of this section, there were two checkboxes: one of them allowed the participants to withdraw from the experiment and directly delete their data, and the other checkbox was to give permission to record the data till the conclusion of the study.

Operationalization

Self-esteem

Rosenberg (1965a) had developed one of the most popular scales to measure the self-esteem of an individual, the known Rosenberg self-esteem scale (RSES). However, it was not found suitable for this study, as it measures the global self-esteem of the participants instead of how the self-esteem is affected in the moment that something occurs, in other words, this scale is based on an enduring and no short-term fluctuant concept. Therefore, it was decided to use the state self-esteem state scale developed by Heatherton and Polivy (1991), which understands self-esteem as a concept that can

temporarily fluctuate (Crocker & Major, 1989; Gergen, 1971; Markus & Kunda, 1986; Rosenberg, 1986; Wells, 1988) instead of remaining stable across time (Rosenberg, 1965a). For this reason, the state self-esteem scale, a modified twenty items scale based on Janis-Field feelings of inadequacy scale (Janis & Field 1959) was found more suitable for the study, as it captures the self-esteem of the participants in the moment (short term changes), instead of evaluating the global self-esteem of the participants which would not allow us to capture the changes that may occur during the manipulations of the study.

Therefore, in the study, the participants were asked to assess the degree that they agreed with each of the statements that were present on the state self-esteem scale (Heatherton & Polivy, 1991). Self-esteem was measured with twenty items on a 5-point Likert scale (1= Not at all, 5= Extremely). The state self-esteem scale, simultaneously, consisted of three separate dimensions which were: performance self-esteem (items 1,4,5,9,14,18,19) (e.g., I feel confident about my abilities), social self-esteem (items 2,8,10,13,15,17,20) (e.g., I am worried about whether I am regarded as a success or failure) and appearance self-esteem (items 3,6,7,11,12,16) (e.g., I feel satisfied with the way my body looks right now). It should be noted that items 2,4,5,7,8,10,13,15,16,17,18,19, and 20 of the self-esteem scale needed to be recoded to perform the analysis. Overall, the self-esteem scale had good reliability $\alpha = .903$, as well as each of the subcategories that formed the self-esteem scale: performance self-esteem $\alpha = .809$, social self-esteem $\alpha = .791$ and appearance self-esteem $\alpha = .868$. All the state self-esteem scale questions could be found in Appendix A and B.

Body appreciation

In order to capture the self-image perception of the participants, the participants were asked about the degree that they agreed with each of the statements that were present on the body appreciation scale (Avalos, Tylka, & Wood-Barcalow, 2005). The body appreciation scale was originally shaped by 13 items, however, only the 5 items with the highest factor loadings in the original study were chosen to measure the body appreciation of the participants. The scale was measured on a 5-point Likert scale (1= Never, 5= Always) (Avalos, Tylka, & Wood-Barcalow, 2005). Overall, the scale reported good reliability $\alpha = .950$. Below are listed all the items that form the body appreciation scale (See Table 4) (see Appendix A and B).

Table 4

Body appreciation scale statements (Avalos, Tylka, & Wood-Barcalow, 2005).

I feel good about my body.
On the whole, I am satisfied with my body.
I take a positive attitude towards my body.
My feelings towards my body are positive, for the most part.
Despite its imperfections, I still like my body.

Social presence

The social presence of the interaction was measured through the social presence scale by Weidlich, Kreijns, Rajagopal, & Bastiaens (2018). This scale, based on the Rasch Measurement Model (Rasch, 1960) measures how real the participants perceive the person that assessed their Instagram picture.

Five items from the 16 original were selected and adapted in order to measure the social presence of the manipulations. Social presence was measured through a 5-point Likert scale instead of the original 7-point Likert scale, to mirror the other scales in the survey. Overall, the scale reported good reliability $\alpha = .893$. Below are listed all the items that shape the social presence scale (See table 5) (see Appendix B):

Table 5

Social presence scale statements (Weidlich, Kreijns, Rajagopal, & Bastiaens, 2018).

It felt as if I received the assessment from a “real” person and not from an abstract anonymous person...

It felt as if I was in the same room with the person that wrote the assessment of my Instagram picture ...

The person that assessed my Instagram picture felt so “real” that I almost believed that we were not virtual at all...

It felt as if the person that assessed my Instagram picture was a “real” physical person...

It felt as if I was in the same room as the person that assessed my Instagram picture...

Results

In order to test H1, H2a and H2b, a factorial MANOVA analysis was conducted. The anonymity of the profile (anonymous vs. non-anonymous profile) and the type of negative message received (negative message about the personality vs. negative message about the physical appearance) were entered as independent variables (IV), while body appreciation and self-esteem, together with performance self-esteem, social self-esteem and appearance self-esteem were entered as dependent variables (DV). Table 6 shows the descriptive statistics of all conditions (See Table 6).

Table 6*MANOVA descriptive statistics*

	Anonymous vs. non-anonymous profiles	Negative message: personality vs. physical appearance	Mean	Std. Deviation	N
Performance self-esteem	Anonymous profile	Personality	28.605	3.530	38
		Physical appearance	25.568	4.758	37
	Non-anonymous profile	Personality	26.912	4.757	34
		Physical appearance	27.083	4.513	36
Social self-esteem	Anonymous profile	Personality	24.684	5.152	38
		Physical appearance	23.892	5.152	37
	Non-anonymous profile	Personality	24.441	4.419	34
		Physical appearance	23.972	5.464	36
Appearance self-esteem	Anonymous profile	Personality	21.658	4.640	38
		Physical appearance	20.270	4.488	37
	Non-anonymous profile	Personality	20.647	4.904	34
		Physical appearance	20.694	4.979	36
Self-esteem	Anonymous profile	Personality	74.947	11.162	38
		Physical appearance	69.730	11.920	37
	Non-anonymous profile	Personality	72.000	12.035	34
		Physical appearance	71.750	12.907	36
Body appreciation	Anonymous profile	Personality	18.158	4.716	38
		Physical appearance	17.135	4.263	37
	Non-anonymous profile	Personality	17.000	4.924	34
		Physical appearance	17.667	4.434	36

Hypothesis 1 (H1) posed that there was no effect of anonymity on social self-esteem $F(1,141) = .009, p = .923, \text{partial } \eta^2 < .001$, after receiving a negative message from a non-anonymous compared to an anonymous profile independently of the type of the negative comment received. There was no effect on performance self-esteem $F(1,141) = .015, p = .904, \text{partial } \eta^2 < .001$, after receiving a negative message from a non-anonymous compared to an anonymous profile independently of the type of the negative comment received. There was no effect on appearance self-esteem $F(1,141) = .138, p = .711, \text{partial } \eta^2 = .001$ after receiving a negative message from a non-anonymous compared to an anonymous profile independently of the type of the negative comment received. There was no effect on body appreciation $F(1,141) = .169, p = .682, \text{partial } \eta^2 = .001$ after receiving a negative message from a non-anonymous compared to an anonymous profile independently of the type of the negative comment received. Therefore, it can be concluded that hypothesis 1 (H1) was not supported.

Hypothesis 2a (H2a) posed through that there was no effect on social self-esteem $F(1,141) = .559, p = .456, \text{partial } \eta^2 = .004$ depending on the type of comment that the participant has received (negative comment about physical appearance vs. negative comment about personality). There was no effect on performance self-esteem $F(1,141) = 3.831, p = .052, \text{partial } \eta^2 = .026$ depending on the type of comment that the participant has received (negative comment about physical appearance vs. negative comment about personality).

Hypothesis 2b (H2b) posed that there was no effect on appearance self-esteem $F(1,141) = .720, p = .398, \text{partial } \eta^2 = .005$ depending on the type of comment that the participant has received (negative comment about physical appearance vs. negative comment about personality). There was no effect on body appreciation $F(1,141) = .055, p = .816, \text{partial } \eta^2 < .001$, depending on the type of comment that the participant has

received (negative comment about physical appearance vs. negative comment about personality).

In order to test the last hypothesis (H3), a mediation analysis was performed using Hayes Process Macro Model 4 in order to assess the mediating role of social presence in the relationship between the type of profile that posted the negative message (anonymous vs. non-anonymous profile) and the dependent variables of self-esteem (performance self-esteem, social self-esteem, appearance self-esteem) and body appreciation. The results revealed that the effect of type of profile (anonymous vs. non-anonymous) on performance self-esteem ($\beta = -.107, t = -.142, p = .887$), social self-esteem ($\beta = -.093, t = -.113, p = .912$) and appearance self-esteem ($\beta = -.302, t = -.383, p = 0.702$) were not significant (Mean self-esteem ($\beta = -.502, t = -.250, p = .803$)). The effect of type of profile (anonymous vs. non-anonymous) and body appreciation was not significant as well ($\beta = -.311, t = -.408, p = .684$).

The indirect effect of the type of profile that posted the negative message (anonymous vs. non-anonymous profile) via social presence on performance self-esteem ($\beta = -.002, \text{BCa CI} [-.452, .396]$), social self-esteem ($\beta = -.002, \text{BCa CI} [-.543, .571]$) and appearance self-esteem ($\beta = -.002, \text{BCa CI} [-.422, .451]$) were not significant. The indirect effect of the type of profile that posted the negative message (anonymous vs. non-anonymous profile) on body appreciation through the mediating variable (social presence) was not significant as well ($\beta = -.001, \text{BCa CI} [-.329, .358]$).

These findings showed that the relationship between the independent variables (anonymous vs. non-anonymous profiles) and the dependent variables (self-esteem (performance self-esteem, social self-esteem, appearance self-esteem) and body appreciation) is not mediated by the hypothesized mediating variable social presence, meaning that Hypothesis 3 is not supported.

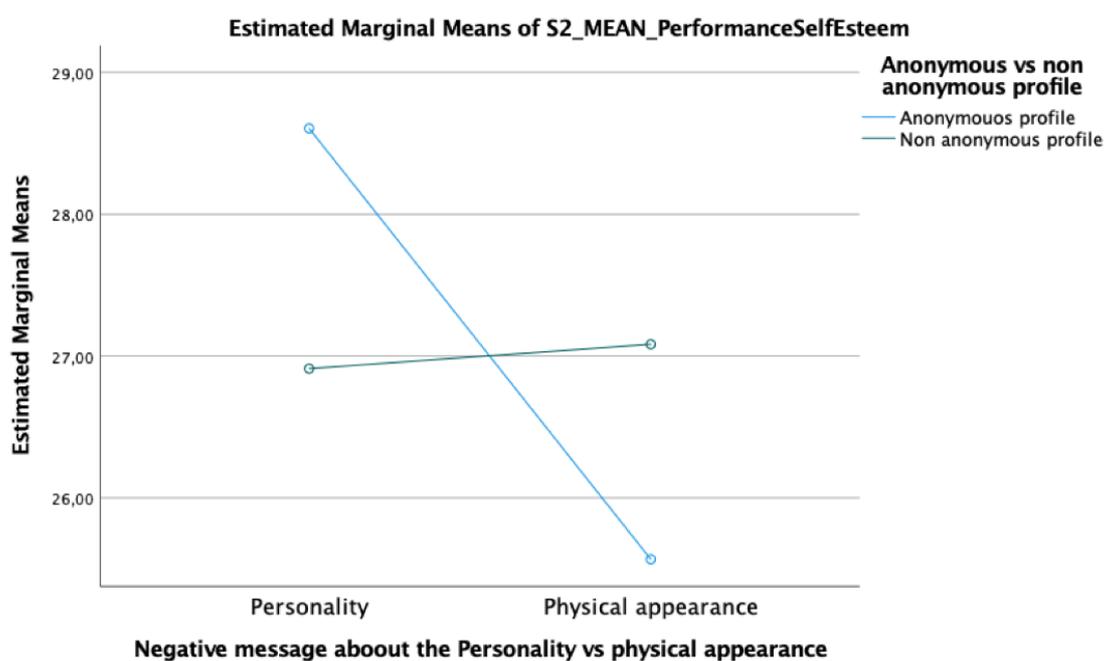
Nevertheless, a significant relationship between the mediation variable social presence and the dependent variables performance self-esteem ($\beta = -.222, t = -3.277, p = .013$), social self-esteem ($\beta = -.292, t = -3.900, p = .001$), appearance self-esteem ($\beta = -.220, t = -3.067, p = .003$) and body appreciation ($\beta = -.165, t = -2.362, p = .020$) was found when anonymity was not present as an independent variable.

Additional analyses

Additionally, an interaction between anonymity of the profile and the type of negative comment received for the dependent variable performance self-esteem was found, $F(1,141) = 4.803, p = .030, \text{partial } \eta^2 = .033$ (see Figure 4).

Figure 4

Interaction between the independent variables type of profile (anonymous vs. non-anonymous profile), type of negative message (personality vs. physical appearance) and the dependent variable performance self-esteem.



Post-hoc comparisons showed that for the non-anonymous profiles, there was no difference in performance self-esteem between negative comments on appearance vs. personality, $M_{diff} = 0.17, p = .871$. For the anonymous profiles though, there was a significant difference in performance self-esteem between negative comments on appearance vs. personality, $M_{diff} = 3.08, p = .003$. This interaction showed that there was no difference between the non-anonymous profiles while receiving a negative comment about the personality or the physical appearance, however, for the anonymous profiles, there is a difference between the messages received, showing that the performance self-esteem of the participants is lower when the messages addressed negative comments about the physical appearance of the participants. (See Table 7)

Table 7

Pairwise comparison table comparing the anonymity of the profile towards the type of message received based on the dependent variable performance self-esteem.

Anonymous vs non-anonymous profile	Personality vs. physical appearance (I)	Personality vs. physical appearance (J)	M Diff (I-J)	Sig. ^b
Anonymous	Personality	Physical appearance	3.038*	.003
Non-anonymous	Personality	Physical appearance	-.172	.871

Discussion

This study aimed to investigate whether the type of anonymity (anonymous vs. non-anonymous profiles) and the type of negative comments received (personality vs. physical appearance) affect people's self-esteem and body appreciation. Four

hypotheses were formulated, and an experiment was conducted to test the posed hypotheses (H1, H2a, H2b, and H3). Next, the four posed hypotheses will be discussed separately based on the findings of this research.

The first hypothesis (H1) posed that participant's social self-esteem, performance self-esteem, appearance self-esteem, and body appreciation would be lower when the feedback was from non-anonymous profiles compared to anonymous profiles, independently of the type of negative comment (personality vs. physical appearance). However, the results were not significant. A possible explanation may be that the participants still perceive the senders as somehow anonymous as they may feel that the non-anonymous sender is not real. This may be the case because the participants cannot search the profile of the sender of the message, which cannot give them more information about the sender and, therefore, lead to lower levels of social presence.

The second hypothesis (H2a) posed that social self-esteem and performance self-esteem would be lower after receiving a negative comment about personality compared to a negative comment about physical appearance. However, this hypothesis was also not supported. This may be the case because the messages the people received were based on just one image. Therefore, they may directly associate the personality comment with their appearance. It can also be that the comments are not perceived as binary (personality vs. physical appearance) and are perceived as a mix.

The third hypothesis (H2b) expected that appearance self-esteem and body appreciation would be lower after receiving negative comments about physical appearance compared to negative comments about personality. However, this hypothesis was also not supported.

As explained in hypothesis H2a, this may be explained because the comments are not perceived as binary (personality vs. physical appearance) and are perceived as a

mix. In addition, we may not have found the effect because the personality comments were also associated with physical appearance, and therefore it cannot be a different effect.

Lastly, the fourth hypothesis (H3) expected that the relationship between the type of anonymous profile (anonymous vs. non-anonymous), self-esteem (social, performance, and appearance self-esteem), and body appreciation was mediated by social presence. However, this hypothesis was also not supported. As explained before, it could be because the participants perceived the senders of the message as not real in both conditions (for anonymous and non-anonymous profiles). It looks like the human-like images and the human-like names were not perceived as a social presence booster, but they were perceived in the same way as the non-human-like names and images.

Although the tested hypotheses' results were not significant, we found two interesting significant results. First, we found an interaction effect between the performance self-esteem, the anonymity of the profile (anonymous vs. non-anonymous profile), and the type of message (personality vs. physical appearance). More specifically, for non-anonymous profiles, there was no difference between the negative messages about personality and the negative messages about physical appearance.

However, we detected a difference in the negative messages received from anonymous profiles, which resulted in lower performance self-esteem when the negative messages were about physical appearance compared to personality. This may be explained because the negative comments that the participants received are based on an Instagram image that they have uploaded to their account. In addition, the fact that they are receiving negative comments about their physical appearance from a picture that they decided to upload to their Instagram profile may make them feel bad about the

choice that they have made and, therefore, negatively affect their performance self-esteem.

Regarding the anonymity of the sender, this relationship may have occurred because the participants may feel less affected by the comments from non-anonymous profiles as they can attribute the comments of the sender back to them (e.g., how the sender dare to say that about my physical appearance when he or she doesn't look good at all?). An alternative explanation could be that participants may have perceived the senders from non-anonymous profiles as unreal, as the messages can be perceived too negatively to come from non-anonymous profiles (with a real name and human-like image). This may be the case because the toxic disinhibited behaviors are normally associated with anonymous profiles, which may feel freer to perform those negative behaviors.

Second, a relationship was found between the mediating variable (social presence) and the study's dependent variables (performance self-esteem, social self-esteem, appearance self-esteem, and body appreciation). This relationship showed that the participants that scored higher on social presence had lower scores on the dependent variables, meaning that people who perceived the sender of the negative message as real were more negatively affected by the negative message than people who perceived the sender of the messages as less real. These results show that the participants were affected by the degree of realness that they perceived of the sender, independently of the anonymity of the profile from which they received the negative comment. In other words, social presence is important, but the sender's anonymity does not affect social presence. Therefore, there must be other factors that affect social presence.

Regarding the posed research question, the analyses did not find a significant difference among any of the conditions, which means that the anonymity of the profile

(anonymous vs. non-anonymous) and the type of negative messages (physical appearance vs. personality) had similar effects on the different levels of self-esteem (performance self-esteem, social self-esteem, and appearance self-esteem) and body appreciation.

The following section will address the practical and theoretical implications of these findings.

Implications

This research was one of the first studies to examine the effects of self-esteem and body appreciation based on the receiver's perceived anonymity of the sender's profile (anonymous vs. non-anonymous profiles) and type of message (personality vs. physical appearance). The results of the formulated hypotheses did not find any significant results. However, a significant relationship was found between social presence and the dependent variables (social, performance and appearance, self-esteem, and body appreciation) when the anonymity of the profile was not taken into account. This suggests that future research should consider social presence while studying cyberbullying to identify and understand which factors may raise the social presence of the sender and, consequently, have a more significant influence on the mental health and well-being of cyberbullying victims. This is important to the extent that if mental health practitioners can identify the elements that may influence the victims of cyberbullying, they may be capable of developing more suitable therapies for the victims. In addition, if the victims can identify and are aware of these elements, they may be more prepared and have more tools to deal with cyberbullying.

Limitations and Suggestions for Future Research

This research, however, is subject to several limitations. Firstly, due to the time limitation, the study findings were based on one comment that happened at one point in time. Cyberbullying, though, is characterized by repeated negative acts that are happening over time. However, this was not possible to do through an experiment and may be more suitable to investigate this phenomenon by asking cyberbullying victims how they have perceived the comments based on the conditions presented.

Secondly, there may be a language barrier that decreases the perception of the realness of the interaction. This may be the case because the messages perceived in another language different from our mother tongue may have lower effects on our dependent variables as the message is not perceived as effective as it would be in their mother tongue.

For future research, it would be suggested to perform a triangulation method by adding a semi-structured interview with open-ended questions to gather better insight into the perceptions of the participants and how they feel about the experiment. These interviews would also help us to determine what may cause the sender to be perceived as more real. Additionally, control questions could be included to assess each part of the study manipulations to assure that it was properly detected, as well as attention control questions to assure that the participants are paying attention to what they are responding to.

Conclusions

To conclude, the purpose of the study was to investigate how the type of anonymity (anonymous vs. non-anonymous profiles) and the type of negative comments received (personality vs. physical appearance) affect people's self-esteem and body appreciation. It was expected that the negative messages received from non-

anonymous profiles would be perceived as more negative than those received by anonymous profiles. In addition, it was expected that the type of negative message received (personality vs. physical appearance) would differently affect the different levels related to self-esteem and body appreciation. However, the results of the tested hypothesis were not significant. Additionally, it was found that perceived social presence was important to determine the effects on self-esteem and body appreciation, independently of the anonymity of the profile. This means that the more real the sender was perceived, the higher the influence on the different levels of self-esteem and body appreciation.

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Appendix A

Questionnaire: Stage 1

Informed consent

You have been invited to participate in a research study about how people form impressions of others based on the images that people upload to their Instagram profiles. Please read this consent form thoroughly and ask any questions you may have before agreeing to participate in the study.

Task and Duration:

This study is divided into two stages. In the first stage, I will ask you a few simple questions. Then, I will also ask you to share some information about your Instagram account and usage. The goal of the research is to discover how people perceive others and form opinions based on their Instagram accounts. For this reason, I would ask for your permission to access and retrieve one image from your Instagram profile in order to use it for the study. The image that would be retrieved would be an image that is posted in your Instagram profile and that you appear on. Then, with the image that I have retrieved from your Instagram account, I will ask another participant to assess the image by providing a small description of his or her first impression of you based on the image. It should be noted that your Instagram account name would not be disclosed to any of the participants in the survey and that the image that I have retrieved from your account as well as your user name, would be deleted right after the study.

In the second stage, you will receive the assessment that the other participant has made about you based on the retrieved image from your Instagram profile. After receiving the assessment, I will ask you some questions about the feedback received.

Between the first and the second survey would be a separation of a couple of days, however, the whole study is not expected to take more than 20 minutes.

Your participation in this study would help the scientific community to get a better understanding of the use of social media platforms. It would help to understand how people evaluate others based on social media profiles and how people react to the perceptions that other people create about their social media profiles.

Risks and Benefits of Being in the Study:

You will receive feedback based on the image that we have retrieved from your Instagram profile once you gave us permission to do so. However, you should be aware that we don't have any control over the assessments of the participants, therefore, the feedback provided may not always be positive. For this reason, if you feel that you do not want to participate or continue with the study, you are free to leave the study at any moment. You just need to close your browser and you will be excused from further participating in the study. Please, contact me through email to let me know that you don't want to continue with the research.

Voluntary Participation:

Your participation in this study is fully voluntary and, if you decide to participate, you are free to withdraw at any time without any consequences.

Anonymous responses:

Data collection, storage, analysis, and sharing with others uses your anonymous responses collected during this study which can never be traced back to you. The anonymous data will be stored during the duration of the study.

Contact:

If you have any questions or suggestions regarding this study, please, contact me.

Researcher's name: Clara Martinez Soler.

Researcher's e-mail: c.martinezsoler@tilburguniversity.edu

Statement of Consent:

I have read and fully understand the above information. By clicking the button below, I consent to participate in this study.

- A. I give permission, and I want to continue with this study.
- B. I don't give permission and I want to withdraw from this study (*If this is the answer, this is the end of the study*).

Demographic questions

1. *To continue with the experiment it is required that you have a social media account created on Instagram. Do you have an Instagram account? (Select one option).*

- A. Yes.
- B. No (*If the answer is "no", this is the end of the study*).

2. *What is your age? (Open question).*

3. *What is your gender? (Select one option).*

- A. Female.
- B. Male.

- C. Non-binary.
- D. I prefer not to say it.
- E. Other: (*specify*).

4. *Where are you from? (Open question).*

Please, specify your country of origin (*Example: The Netherlands*).

5. *What is your highest level of education that you are currently enrolled in?*

(Select one option).

- A. High School.
- B. Bachelor's Degree.
- C. Master's Degree.
- D. Ph.D. or higher.
- E. Trade School.
- F. Prefer not to say.
- G. Other: (*specify*).

State self-esteem questionnaire - Stage 1 (Heatherton & Polivy, 1991) (Likert scale).

Answer the following questions based on how you are feeling right now.

1. *I feel confident about my abilities*

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

2. I am worried about whether I am regarded as a success or failure.

1 2 3 4 5
Not At All A Little Bit Somewhat Very Much Extremely

3. I feel satisfied with the way my body looks right now.

1 2 3 4 5
Not At All A Little Bit Somewhat Very Much Extremely

4. I feel frustrated or rattled about my performance.

1 2 3 4 5
Not At All A Little Bit Somewhat Very Much Extremely

5. I feel that I am having trouble understanding things that I read.

1 2 3 4 5
Not At All A Little Bit Somewhat Very Much Extremely

6. I feel that others respect and admire me.

1 2 3 4 5
Not At All A Little Bit Somewhat Very Much Extremely

7. I am dissatisfied with my weight.

1 2 3 4 5
Not At All A Little Bit Somewhat Very Much Extremely

8. I feel self-conscious.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

9. I feel as smart as others.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

10. I feel displeased with myself.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

11. I feel good about myself.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

12. I am pleased with my appearance right now.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

13. I am worried about what other people think of me.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

14. I feel confident that I understand things.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

15. I feel inferior to others at this moment.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

16. I feel unattractive.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

17. I feel concerned about the impression I am making.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

18. I feel that I have less scholastic ability right now than others.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

19. I feel like I'm not doing well.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

20. I am worried about looking foolish.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

Performance Self-esteem items: 1,4,5,9,14,18,19.

Social Self-esteem items 2,8,10,13,15,17,20.

Appearance Self-esteem items: 3,6,7,11,12,16.

Body appreciation questionnaire (BAS) - Stage 1 (Avalos, Tylka & Wood-Barcalow, 2005) (Likert scale).

1. I feel good about my body.

1	2	3	4	5
Never	Seldom	Sometimes	Often	Always

2. On the whole, I am satisfied with my body.

1	2	3	4	5
Never	Seldom	Sometimes	Often	Always

3. I take a positive attitude towards my body.

1	2	3	4	5
Never	Seldom	Sometimes	Often	Always

4. *My feelings towards my body are positive, for the most part.*

1	2	3	4	5
Never	Seldom	Sometimes	Often	Always

5. *Despite its imperfections, I still like my body.*

1	2	3	4	5
Never	Seldom	Sometimes	Often	Always

Social media

You are almost there!

1. *How much time do you spend on Instagram during the day? (Select one option).*

- . 0-1 hour.
- A. 1-2 hours.
- B. 2-3 hours.
- C. 4-5 hours.
- D. More than 5 hours.

2. *How many followers do you have on Instagram? (Open question).*

Specify the total number of followers

3. *What is your Instagram account name? (Open question).*

Specify the name of the Instagram profile

4. Is your Instagram account private or public? (Select one option)

A. It is a private profile.

B. It is a public profile.

5. For the experiment it is required one image that you have uploaded in your Instagram profile and that you appear on it. In order to retrieve the image from your profile two conditions should be met:(Open question).

5.1. If your Instagram profile is private you should accept the Instagram friendship request of the Instagram account that was created for the experiment:

@tilburguniversity_socialmr

5.2. You should give your permission to access and retrieve one image from your Instagram profile to use it in the experiment. *(Select one option).*

A. I give permission to retrieve one of the images that I uploaded in my Instagram profile for the study.

B. I don't give permission to retrieve one of the images that I uploaded in my Instagram profile for the study *(If this is the answer, this is the end of the study).*

6. Lastly, you should provide your email address in order to receive the second part of the survey. By providing your email address you give your permission to the researcher to send you an email with the second survey.

Congratulations! You have completed the first stage of the study! In a couple of days you will receive an email with the instructions to participate in the second stage of the study.

Default message in case the participants decide to withdraw from the experiment: We are sorry to hear that you don't want to continue with the survey. It would be really helpful if you could give us a bit of feedback about what makes you withdraw from the study. (Open question).

If you want to know what was the goal of the study, please, e-mail the researcher: c.martinezsoler@tilburguniversity.edu

Appendix B

Questionnaire: Stage 2

Welcome to the second stage of the study!

1. As told in the first stage of the study, another participant was asked to comment on his or her first impression of you based on the picture that was retrieved from your Instagram account. On the next two pages, you can see the image that was retrieved from your Instagram profile, followed by the feedback provided by a participant in the study. Please read the feedback received carefully before going to the next page.
2. The image that was retrieved from the Instagram profile of the participant was displayed.
3. The comment and the profile of the person that commented on the picture was displayed.

The profile and the comment depending on the condition that the person was assigned to was shown to the participant. There are 4 possible different comments that the person can potentially receive per condition (4 negative comments about the personality vs. 4 negative comments about the physical appearance) and from 2 potential accounts (anonymous vs. non-anonymous profile).

Control question

1. *How do you perceive the valence of this comment? (Select one option).*

- A. Positive
- B. Negative.

Social presence scale - (Weidlich, Kreijns, Rajagopal, & Bastiaens., 2018) (Likert scale).

How did you feel towards the other person when you received the assessment on your Instagram picture? Answer the following questions:

1. *It felt as if I received the assessment from a “real” person and not from an abstract anonymous person...*

1	2	3	4	5
Totally disagree	Somewhat disagree	Neither disagree or agree	Somewhat agree	Totally agree

2. *It felt as if I was in the same room with the person that wrote the assessment of my Instagram picture ...*

1	2	3	4	5
Totally disagree	Somewhat disagree	Neither disagree or agree	Somewhat agree	Totally agree

3. *The person that assessed my Instagram picture felt so “real” that I almost believed that we were not virtual at all...*

1	2	3	4	5
Totally disagree	Somewhat disagree	Neither disagree or agree	Somewhat agree	Totally agree

4. It felt as if the person that assessed my Instagram picture was a “real” physical person...

1	2	3	4	5
Totally disagree	Somewhat disagree	Neither disagree or agree	Somewhat agree	Totally agree

5. It felt as if I was in the same room as the person that assessed my Instagram picture...

1	2	3	4	5
Totally disagree	Somewhat disagree	Neither disagree or agree	Somewhat agree	Totally agree

State self-esteem questionnaire - Stage 2 (Heatherton & Polivy, 1991) (Likert scale).

Answer the following questions based on how you are feeling right now.

1. I feel confident about my abilities

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

2. I am worried about whether I am regarded as a success or failure.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

3. I feel satisfied with the way my body looks right now.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

4. I feel frustrated or rattled about my performance.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

5. I feel that I am having trouble understanding things that I read.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

6. I feel that others respect and admire me.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

7. I am dissatisfied with my weight.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

8. I feel self-conscious.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

9. I feel as smart as others.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

10. I feel displeased with myself.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

11. I feel good about myself.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

12. I am pleased with my appearance right now.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

13. I am worried about what other people think of me.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

14. I feel confident that I understand things.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

15. I feel inferior to others at this moment.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

16. I feel unattractive.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

17. I feel concerned about the impression I am making.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

18. I feel that I have less scholastic ability right now than others.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

19. I feel like I'm not doing well.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

20. I am worried about looking foolish.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

Performance Self-esteem items: 1,4,5,9,14,18,19.

Social Self-esteem items 2,8,10,13,15,17,20.

Appearance Self-esteem items: 3,6,7,11,12,16.

Body appreciation questionnaire (BAS) - Stage 2 (Avalos, Tylka & Wood-Barcalow, 2005) (Likert scale).

1. *I feel good about my body.*

1	2	3	4	5
Never	Seldom	Sometimes	Often	Always

2. *On the whole, I am satisfied with my body.*

1	2	3	4	5
Never	Seldom	Sometimes	Often	Always

3. *I take a positive attitude towards my body.*

1	2	3	4	5
Never	Seldom	Sometimes	Often	Always

4. *My feelings towards my body are positive, for the most part.*

1	2	3	4	5
Never	Seldom	Sometimes	Often	Always

5. *Despite its imperfections, I still like my body.*

1	2	3	4	5
Never	Seldom	Sometimes	Often	Always

Disclaimer and disclosure

THE COMMENTS THAT YOU HAVE JUST RECEIVED ARE NOT REAL!
You have been part of a social experiment about how the negative comments received on a social media platform can affect the state self-esteem of the receiver based on the anonymity of the social media account (anonymous profile vs. non-anonymous profile) and the type of negative comment received by the victim (messages about the personality traits or the physical appearance of the person).

Therefore, the feedback received during the study was not real and was not written by any other participant that had taken part of the study and was not given based on any other criteria. We also didn't distribute your image to any other participant, and therefore, your identity remains anonymous throughout the study.

If you no longer want to take part in this study, below there is a checkbox to withdraw from the experiment. In addition, if you have experienced any kind of distress or you were emotionally affected in any way by this study, it is advisable to contact the study advisor or a professional. Below you will find the contact details of the professionals of Tilburg University together with the researcher, just in case you want to contact any of them.

Lastly, if you have experienced something similar or you know someone that may be experiencing something similar, please, report this type of behavior and try to help the victim.

Researcher contact - Clara Martínez Soler:

c.martinezsoler@tilburguniversity.edu

Study advisor:

<https://www.tilburguniversity.edu/students/tutoring/education-coordinators>

University psychologist:

<https://www.tilburguniversity.edu/students/tutoring/psychologist>

(Select one option)

- A. I want to maintain my results in the study.
- B. I want to delete my results from the study.

Congratulations, you have just completed the study.

Appendix C

Comments displayed in the second questionnaire

During the second stage of the study, different types of negative comments were randomly assigned to each participant based on the experimental condition that they were assigned to. Depending on the experimental condition that was assigned, the participants can receive negative comments about their physical appearance or about their personality. The comments that the participants can potentially receive are below (See Table C1 and C2)

Table C1

Negative comments about physical appearance

You look quite old in this picture, for sure older than your actual age. It is clear that you don't take proper care of yourself, you look pretty terrible...

You look rather unhealthy... I think that you should eat better and maybe go to the gym??

This picture is awful... And why did you even decide to upload this picture on your Instagram profile in the first place!?!? I don't think that that outfit fits your body type. It's really terrible.

I would definitely swipe left on Tinder on this. I don't think that you are attractive at all.

Table C2

Negative comments about personality

You look pretty stupid and unhappy. I don't think I would be able to have an intelligent conversation with you. I would never approach you.... And I think that you will always be alone.

You don't look friendly at all. If you were in a bar I would not approach you. You look quite arrogant and superficial ... Not really agreeable.

I think that you are not really a social person. I think you are quite introverted and most likely have a few friends.

You look like the typical artificial person that tries to show on social media that your life is amazing but in reality you are probably quite insecure and unhappy.

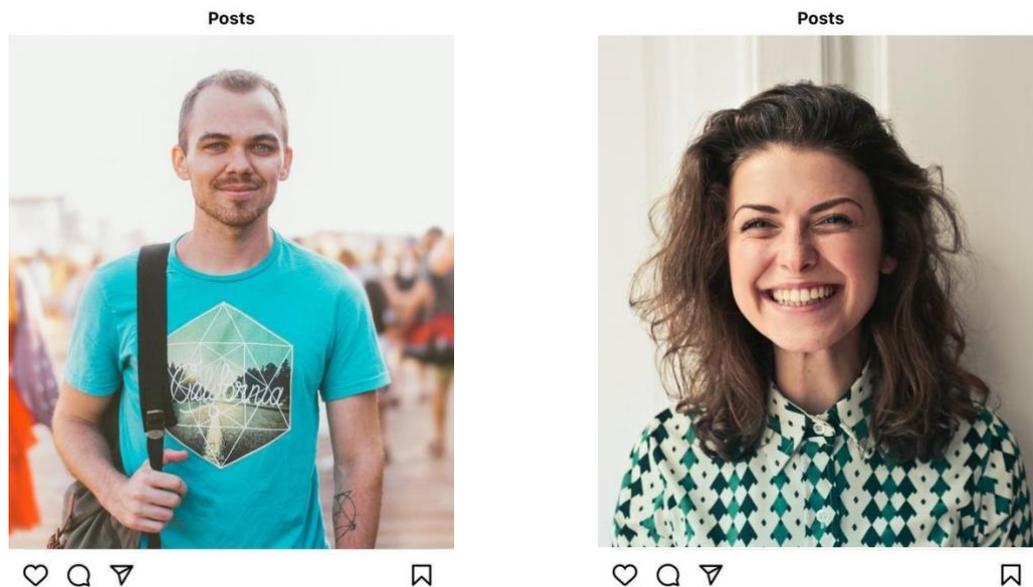
Appendix D

Images and profiles displayed in the second questionnaire

During the second stage of the survey, each participant would be randomly assigned to one of the four experimental conditions. Therefore, each participant would be exposed to a different set of comments (explained in Appendix B) and profiles (anonymous vs. non-anonymous profile) depending on the condition that was assigned to each participant. In addition the image that was retrieved from his or her Instagram profile would be also shown in order to make it more believable. Below are shown the anonymous and non-anonymous profiles together with a simulation of what the participants would have seen during the second stage of the survey.

Figure 1

Simulation of how the participants would see the picture that was retrieved from the Instagram profile of the participants. Picture retrieved from Pexels.



Note. Images retrieved from Pexels. Image of the men (Selover, 2017). Image of the woman (Piacquadio, 2018).

Figure 2

Non-anonymous Instagram profile.



Sara Martínez



Carlos Martínez

Note. Profile pictures retrieved from Pexels. profile image of the woman (Piacquadio, 2017). Profile image of the man (Rivadeneira Molina, 2021).

Figure 3

Anonymous Instagram profile.



Afs23456

Note. Profile picture of the landscape retrieved from Pexels (Lum3n, 2016).