Narcissism and Social-Media How social-media use can impact perceived stress on Facebook academic motivation

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ABSTRACT

The aim of this study is to investigate the level of association between grandiose narcissism and Facebook related behaviours, as well as, to test the moderating role of active Facebook usage in the relationship between grandiose narcissism and Facebook perceived stress. The cross-sectional data was collected from 130 Facebook users (N = 130; 79.2% female; 20.8% male; SD = 10.60) including demographic data, the level of self-disclosure, FOMO, Facebook addiction, the intensity of Facebook usage, Facebook perceived stress and the way of usage (active or passive). Findings revealed an association between grandiose narcissism and self-disclosure. The results imply that even if Facebook is currently the most popular platform, narcissists might prefer other apps due to their less sophisticated and easier to manage interfaces. Therefore, some individuals suffering from narcissism put less effort in the awareness and engaging process with their target for obtaining the needed gratifications and validation. Limits and future directions are discussed.

Keywords: *grandiose narcissism, Facebook related behavior, stress*

1. INTRODUCTION

Clinical and subclinical narcissism

Narcissistic personality disorder is a cluster B personality disorder marked by a pervasive pattern of admiration needs, lack of empathy for others, feelings of grandeur (in one's own fantasies or real behavior), beginning in young adulthood (American Psychiatric Association, 2013). Subclinical narcissism is a personality trait that healthy people possess at various levels and numerous studies

highlight the validity of narcissism as a normal personality trait. Therefore, like clinical narcissists, subclinical narcissists have an inflated perspective on themselves, they believe they are special and unique, and expect special treatment from others while they believe they owe little or nothing in return (Bergman, Farrington, Davenport & Bergman, 2011). Studies suggest that narcissism is not a unitary construct and that there are two types of narcissism:

grandiose and vulnerable (Zajenkowski, Witowska, Maciantowicz & Malesza, 2016). Grandiosity is characterized by domination, aggression, self-confidence, arrogance, very high self-esteem, exploitation of others, feelings of justice or justification and a strong need to be admired by others (Malesza & Poland, 2020). Individuals who have a higher score for grandiosity tend to support positive illusions about themselves and simultaneously repress information that is not consistent with the unrealistic image they have formed. They dream of superiority, perfection and omnipotence (Zajenkowski, Maciantowicz, Szymaniak & Urban, 2018).

Morf and Rhodewalt's (2001) model of dynamic self-regulation suggests that social interactions are the main way in which narcissists actively pursue and maintain these exaggerated aspects of themselves. They try to manipulate their social environment to create opportunities to receive positive feedback from others and at the same time seek to present themselves in a way that propagates their supposed uniqueness (Hawk, van den Eijnden, van Lissa & ter Bogt, 2019). Narcissists participate in this dynamic "self-construction" through relationships to constantly assert their narcissistic self-esteem. It has been suggested that this process is due, at least in part, to the dispositional impulsivity of narcissists (Buffardi & Campbell, 2008). This is a particularly useful lens through which social-media and communication behaviors can be seen because their needs for attention, self-promotion, validation, and positive feedback are met by a wide audience (Hawk et al., 2019).

The Use and Gratification theory underlines the that the obtained satisfactions may differ from the ones sought, and the resulting difference may predict the level of satisfaction / dissatisfaction that individuals experience after using a certain media. Palmgreen and Rayburn (1979) argue that when an environment provides or exceeds the expectations initially sought, this leads to recurrent use of the environment and ultimately to predictable consumption habits. This analysis explains the development of media habits and the role of the media in the daily life of each audience member (Quan-Haase & Young, 2010).

The ego theory presented by Winnicott distinguishes between the "true self" and the "false self." Selective re-posting can create the desired image so people can appear in a positive light. Through this, they create a less vulnerable image of themselves compared to how they really are (Turel & Gil-Or, 2019).

Social-Media

Social-media is a group of internet-based applications that have been built on the technological foundation of Web 2.0 and allows the creation and exchange of user-generated content (Leung, 2013). The "social-media" term is actually an umbrella term that includes forums, e-mail, blogs, microblogs, vlogs, but social networks and messaging

platforms are most used by teenagers (Marino, Gini, Angelini, Vinea & Spada, 2020).

With nearly 2.5 billion monthly active users, starting in the fourth quarter of 2019, Facebook has become the largest social network in the world. In the last reported quarter, the company said that 2.9 billion people used at least one of the company's core products (Facebook, WhatsApp, Instagram or Messenger) every month (Statista, 2020). Facebook allows users to interact directly with others through messages, chat, and comment on others' photos and status. Facebook does not, in fact, require interactive communication. Instead, users can passively observe other people's information (for example, by consuming content, such as photos and status). Although Facebook is still the most popular social network among teenagers, it is increasingly facing competition from other fast-growing social networks, such as Instagram; recent numbers show that 52% of American teens and 60% of Flemish teens report using Instagram (Frison & Eggermont, 2017).

In order to better understand the consequences of social-media addiction, we must also point out the potential causes. Studies show that a combination of social, psychological and biological factors, as well as the content found on social networks stimulates addiction (Sheldon, Rauchnabel & Honeycutt, 2019). The biological perspective argues that biological or neurochemical changes may occur when a person engage in addictive behavior. For example, there may be a combination of genes that make a person prone to developing addictive behaviors (Beard, 2005). Another possibility refers to an insufficient amount of neurotransmitters, namely serotonin and dopamine. While serotonin is responsible for maintaining mood balance (Sheldon et al., 2019) dopamine is related to a person's reward system (Ayano, 2016). In fact, when someone appreciates a post on Instagram, it is a very similar experience to taking a pill in terms of brain reactions (Sheldon et al., 2019). Therefore, involvement in the excessive use of the Internet can change physiological conditions and can help the body maintain homeostasis or create a feeling of euphoria (Beard, 2005).

Using social networks is a universal option, so many individuals can take advantage of their benefits. However, the rewarding nature of such use, and especially the variability in the rewards program (e.g. appreciations), can lead to repeated, difficult-to-control use of social networks (Turel & Serenko, 2020). Users' behavior on social-media platforms can be associated with the compulsive and difficult to eliminate behavior of pigeons in Skinner's experiments. When they were rewarded in a sporadic program; through implicit learning, they gradually move from affective and cognitive responses to triggers to automatic reactive signals and states of "crave" (Turel & Serenko, 2020).

One of the major motivations for using networks in general involves escaping from everyday life. In this case, a

teenager who feels depressed could turn to social-media to manage to alleviate depressive symptoms by trying to connect with others online. Alternatively, they may connect to social-media as a form of escape, which can numb emotional pain (Coyne, Rogers, Zurcher, Stockdale & Booth, 2020).

Narcissism and Social-Media

Social networks are ideal environments to achieve narcissistic goals, given the ability to control self-presentation on such platforms (Boursier, Gioia & Griffiths, 2020).

First of all, social networks offer greater control over self-presentation compared to face-to-face interactions, making them a useful place for developing strategic interpersonal behaviors, many of which are used by narcissists to build and maintain a positive self-image (Casale & Banchi, 2020). Control over the profile can be performed by selecting attractive photos or by writing descriptions that promote the self online (Buffardi & Campbell, 2008).

Second of all, the use of social networks allows people to advertise their success in front of a wide audience, while obtaining highly visible rewards and recognition through positive appreciations and comments from other social-media users (Casale & Banchi, 2020). Moreover, given the increasing use of social networks on mobile devices, they are accessible anywhere and anytime. This implies that narcissists can manage and promote themselves in the online environment and get frequent feedback on their efforts (Casale & Banchi, 2020).

Last but not least, narcissists work well in the context of superficial relationships (Buffardi & Campbell, 2008). They initiate many superficial relationships in a short time and use them to adjust their self-esteem and especially to strengthen the self they want (Brailovskaia & Bierhoff, 2016). In the early stages of relationship formation, they are interested, confident and fun. However, as their relationships progress, narcissists show less warmth and care for relationship partners (DeWall, Buffardi, Bonser & Campbell, 2011). They prefer "loose ties" connections with people who make an evaluative contribution, but not engage in an emotional closeness, and that is what social networks can provide. Research has supported this, showing that narcissism is associated with the number of "friends" but not with the number of people known in real life (Gentile, Twenge, Freeman & Campbell, 2012).

Narcissism and online self-disclosure. Self-disclosure has been defined as sharing personal information about oneself to others and represents a precondition for the development of interpersonal relationships (Krämer & Schäwel, 2020). Online self-disclosure, such as posting opinions, photos or videos, and communicating with other users can manifest through social networking. They have the needed features to meet basic psychological needs. The more the need is satisfied in the activity, the stronger the

internal motivation to repeat the activity is (Liu, Ding, Wang, Zhen & Xu, 2016).

Social networks offer excellent platforms for narcissistic self-regulation because they allow almost complete control over self-presentation and give users the opportunity to create a large audience of people from where they can form superficial relationships (Ong et al., 2011). Individuals tend to self-present in an ideal manner because they have greater control over the information they reveal and thus allow users to engage in strategic self-presentation (Wang & Stefanone, 2013). Online users can submit desired information to be found about themselves (through features such as: About me, and Status updates) and can select attractive photos in order to self-promote. This type of virtual arena allows narcissists to pursue an infinite number of superficial friendships and allows them to brag about the positive agent traits they possess (Mehdizadeh, 2010).

A great part of communication through social-media is asynchronous, compared to the offline environment where communication takes place in real time. As a result, the information presented can be controlled more due to the longer time to reflect, edit and revise what is said. Thus, online communication could be characterized as deliberate and calculated, rather than inadvertent. People are able to present their "best self" (Schlosser, 2020). In a study by Marshall, Lefringhausen and Ferenczi (2015), they observed that the use of Facebook for narcissists was limited to actions aimed at seeking attention and validation. This explained their greater likelihood of updating their profile with information about their achievements, their diet and their exercise routine.

A unique feature of many social networking sites is that public feedback is available, visibly published and quantified, such as in the form of likes and comments on Facebook. As a result, feedback can determine people to present themselves in a way that increases their chances of receiving positive feedback (Schlosser, 2020). As expected, narcissists have more "friends on Facebook, more posts and have profile pictures that are appreciated by others as being more physically attractive. Researchers speculate that narcissists may have selected more attractive photos to assert their exaggerated beliefs about their attractiveness and positive self-image (Ong et al., 2011).

According to the results of the studies presented above, the first hypothesis of this study is the following:

H1: *There is a relationship between narcissism and self-disclosure on Facebook.*

Narcissism, FOMO and Social-Media. Fear of missing out (FOMO) is a fairly new concept and has been defined as a pervasive pressure that others may have satisfying experiences from which an individual is absent. FOMO is characterized by the desire to remain permanently connected with what others do (Alt, 2015). Such a desire leads to the need to repeatedly check social networks.

The self-determination theory argues that failure to meet psychological needs can increase people's sensitivity to the fear of missing out which in turn can lead people to social-media, as these platforms can provide individuals an effective self-regulation tool (Beyens, Frison & Eggermont, 2016). One study examined potential predictors of social-media involvement, especially involving unsatisfied psychological needs. The results indicated that individuals who showed less satisfaction with basic psychological needs for competence (effectiveness), autonomy (meaningful / important choices) and relationship (connection with others) reported higher levels of FOMO (Alt, 2015).

In their study, Błachnio and Przepiórka (2018) showed that high levels of FOMO and narcissism are predictors of intrusive behaviors on Facebook, while a low level of FOMO and high levels of narcissism was related to life satisfaction. The study revealed that higher levels of FOMO is a positive predictor of Facebook intrusion. The results of the study conducted by Beyens et al. (2016) indicate that the adolescents need to belong and to be popular were associated with an increased FOMO which, in turn, was associated with increased use of Facebook, so not receiving feedback from colleagues affects the well-being of adolescents.

According to the results of the studies presented above, the first hypothesis of this study is the following:

H2: *There is a relationship between narcissism and fear of missing out (FOMO) on Facebook.*

Narcissism, Facebook intensity use and addiction.

Intense or excessive use of social platforms is a complex phenomenon and has been conceptualized in various ways such as: Internet addiction, video-games addiction, spending many hours a day using social networks, feeling dependent on digital platforms, the use of digital platforms so much that it interfere with various aspects of daily life and the use of social networks in various locations (Hatchel, Negri & Subrahmanyam, 2018).

Excessive use of Facebook can cause psychological addiction. Narcissistic people are at increased risk for this form of addiction, which is encouraged by experiences during Facebook use and the intensity of Facebook use (Brailovskaia, Ströse, Schillack & Margraf, 2020). Other studies suggest that narcissism is even encouraged by such social platforms, probably due to their rapidly growing number and features that supports users to post status updates, photos, and comment on other users' posts and photos (Rosen, Whaling, Rab, Carrier & Cheever, 2013). A recent meta-analysis of 62 studies (2010-2016) revealed that there is a positive correlation between narcissism and time spent on social-media, the number of friends on social-media (e.g. Facebook), and followers (e.g. Twitter or Instagram) and the frequency of posting status updates

(Facebook), tweets (Twitter), and selfies (Grieve, March & Watkinson, 2020).

The researchers examined a variety of measures related to how narcissism manifests itself on social networks. Thus, narcissistic tendencies were associated with increased activity on social-media, meaning more hours spent on social networks, a higher frequency of status updates, a higher frequency of appreciation and commenting on other people's posts and a higher number of "friends" and followers (Singh, Farley & Donahue, 2018).

The more friends a user has, the more likely someone is to write a positive or supportive comment on a status update, appreciate uploaded photos, and praise individual accomplishments. From a perspective of self-image failure, narcissists could intentionally amplify attention-seeking behaviors in the absence of external validation (Hawk, ter Bogt, van den Eijnden & Nelemans, 2015). In the longitudinal study presented by Hawk et al. (2019) narcissistic adolescents applied attention-seeking behaviors on social networks as a way to recover from social rejection in the offline environment.

According to the results of the studies presented above, the first hypothesis of this study is the following:

H3: *There is a relationship between narcissism, Facebook intensity use and Facebook addiction.*

Narcissism and perceived Facebook stress. Stress is defined as a stressor which triggers a reaction in a person's brain. Depending on the availability of resources, different physiological reactions can occur in the body, such as fight-or-flight (Sheldon et al., 2019).

Social stress can be exemplified by feelings of suffering due to disconnection or rejection by others. People with narcissistic tendencies are particularly concerned with the perceptions of others about their own social status, so they get pleasure from top-down comparisons and tend to experience negative affect from bottom-up social comparisons (Kauten, Barry & Leachman, 2013). The study of Cheng, Tracy and Miller (2013) argued that narcissists have a higher neuroendocrine reactivity when faced with daily negative emotions. These individuals showed a significant increase in cortisol and alpha-amylase production as they reported having negative emotions on the days these biomarkers were evaluated. In the study by Edelstein, Yim and Quas (2020) the effects of stress were moderate by gender and by narcissism scores. Specifically, among male participants, higher narcissism scores predicted higher cortisol reactivity and higher increases in stress-related adverse effects.

In the short term, social platforms allow its users the ease by an immersion in an attractive online world, where they can temporarily forget their responsibilities and tasks and receive a lot of supportive feedback, which they do not receive offline. However, excessive long-term use of Facebook can cause significant social stress. The people in

this case often tend to neglect their offline requirements, which favors interpersonal conflicts with family, friends and colleagues (Brailovskaia, Margraf, Schillack & Köllner, 2019). Al-Gamal et al. (2016) found an association between high levels of stress and internet addiction in a sample of students. Another study suggested that social-media addicts tend to pay less attention and choose emotion-oriented strategies in stressful situations (Błachnio, Przepiorka & Czuczwar, 2017). Casale and Banchi (2020) conducted a systematic review, and the results showed that narcissism could be involved in the problematic use of social networks, but may not have constant effects.

For some people this platform can increase life satisfaction and perceived social support, for others, it can be a trigger for stress, anxiety, depression and a potentiator of substance use or alcohol (Olivia, Gherardi-Donato, Bermúdez & Facundo, 2018).

Active Facebook use and narcissism. Active Facebook use refers to activities that facilitate the interaction between the user and other friends on Facebook. These activities can take place either in a public or private setting. Active private use includes activities such as Facebook messaging, while active public use refers to activities such as updating status or sharing photos (Frison & Eggermont, 2016).

The results of the study by Brailovskaia and Margraf (2019) illustrated a significant positive correlation between active Facebook use and subjective happiness and

narcissism. In addition, the active Facebook use significantly mediated the positive relationship between narcissism and happiness. This finding helps to understand why narcissistic people who usually seek attention and admiration to increase their self-esteem are often involved in the intense and active use of Facebook platform.

The study by Ryan and Xenos (2011) argued that Facebook users tend to be more extroverted and narcissistic. Facebook is particularly appealing to narcissistic people because it specifically satisfies the narcissistic person's need to engage in superficial and self-promoting behaviors. Among studies of the relationship between the use of social networks and narcissism, most indicate a positive correlation between narcissism and time spent on these platforms. Behaviors such as self-promotion through status updates, self-descriptions, and photo posts are more common for users with higher levels of narcissism (Panek, Nardis & Konrath, 2013). Narcissists are skillful in manipulating their own profile and posts to meet their goals of grandeur and validation. They, usually, show lower levels of empathy for others, which may manifest as a disinterest in other people's posts, so viewing other people's posts on Facebook does not help a narcissist achieve any goal (Stiff, 2019).

According to the results of the studies presented above, the fourth hypothesis of this study is the following (Figure 1.):

H4: *Active Facebook use moderates the relationship between narcissism and perceived Facebook stress.*

Figure 1. Representation of the moderation model

2. METHODOLOGY

Participants and setting

Convenience sampling method was used for the study as the participants consist of 130 (N = 130) Romanian individuals aged between 17 and 65 years old, of which 79.2% women (n = 103) and 20.8% men (n = 27) that completed a survey online through Google Forms. 118 participants come from

urban areas (90.8%) and 12 participants come from rural areas (9.2%). The questionnaire informed the participants about the purpose of the study and they were assured that the data is used only for research purposes, and it will remain confidential. At the same time, the participants were

assured that they could withdraw from the study at any time they wished to.

Instruments

Grandiose narcissism was measured using the Narcissistic Grandiosity Scale (Crowe, Carter, Campbell & Miller, 2016). This is a short instrument based on 16 adjectives (e.g., "Perfect", "Dominant", "Heroic") measured using a 7-point Likert scale (1 = "strongly disagree" to 7 = "strongly agree"). A potential strength of this tool is that it tries to capture a unique, homogeneous trait associated with narcissism, measuring grandiosity without simultaneously assessing other dimensions of narcissism, such as exploitability. The internal consistency represented by Cronbach's α is very good ($\alpha = .94$) for the research design.

Self-disclosure on Facebook was measured using Self-disclosure on Facebook Scale (Zhang, 2017). The scale consists of 8 affirmative items and contains four subscales, namely: amount of disclosures / privacy (e.g., "I often talk about myself on Facebook."), sincerity (e.g., "I am always honest in my Facebook disclosures.") and intention of disclosure (e.g., "When I make a disclosure on Facebook I am always aware of what I am disclosing."). Items were scored on a 5-point Likert scale (1 = "strong disagreement" to 5 = "strong agreement"). The internal consistency is adequate ($\alpha = .77$) for the research design.

Fear of missing out (FOMO) was measured using the Fear of Missing Out Scale (Przybylski, Murayama, DeHaan & Gladwell, 2013). The scale consists of 10 statements (e.g., "I worry when I find out that my friends are having fun without me.", "I become anxious when I don't know what my friends are doing.") and are scored using a 5-point Likert scale (1 = "completely untrue" to 5 = "extremely true"). The internal consistency represented by Cronbach's α is satisfactory ($\alpha = .81$) for the research design.

Facebook intensity was measured using the Multidimensional Facebook Intensity Scale (Orosz, Tóth-Király & Bóthe, 2016). The scale consists of 13 items and contains 4 dimensions: persistence (e.g., "If I could only use one site on the internet, it would be Facebook."), boredom (e.g., "Viewing posts on Facebook helps me not be bored."), overwork (e.g., "I spent time on Facebook at the expense of my obligations.") and self-expression (e.g., "My Facebook profile is largely detailed."). Items were scored on a 5-point Likert scale (1 = "total disagreement" to 5 = "total agreement"). The internal consistency represented by Cronbach's α is satisfactory ($\alpha = .91$) for the research design.

Facebook intensity was also measured with the Facebook Intensity Scale (Ellison, Steinfield & Lampe, 2007). The first two items provide self-reported data on the number of "friends" on Facebook and the time spent on

Facebook during a week (e.g., "Approximately how many friends do you have on Facebook?"). For these two questions the participants had to choose from predetermined intervals. The following 6 items are in the form of statements and provide details on the degree of emotional involvement and integration of the Facebook application in daily life activities (e.g., "I am proud to tell people that they can find me on Facebook", "Facebook has become part of my daily routine"). Items were scored on a 5-point Likert scale (1 = "total disagreement" to 5 = "total agreement"). The internal consistency represented by Cronbach's α is satisfactory ($\alpha = .82$) for the research design.

Facebook addiction was measured using the Facebook Addiction scale (Andreassen, Torsheim, Brunborg & Pallesen, 2020) which includes 6 interrogation items, each being part of a dimension. The 6 dimensions are: stimulation (e.g., "Spent time thinking about Facebook or planning to use Facebook?"), tolerance (e.g., "Feeling a desire to use Facebook more and more?"), mood swings (e.g., "Used Facebook to forget about personal issues?"), relapse (e.g., "Unsuccessfully tried to reduce time spent on Facebook?"), withdrawal (e.g., "Become anxious or worried about being banned from using Facebook?") and conflict (e.g., "Did you use Facebook so much that it had a negative impact on your work / studies?"). Items were scored on a 5-point Likert scale (1 = "very rare" to 5 = "very often"). The internal consistency represented by Cronbach's α is satisfactory ($\alpha = .85$) for the research design.

The use of the Facebook, implicitly active and passive use, was measured using the Passive and Active Facebook Use Measure scale (Gerson, Plagnol & Corr, 2017). This scale consists of 13 items and consist of 3 dimensions: active social use (e.g., "Posting comments [on statuses, wall posts, pictures]"), active non-social use (e.g., "Creating events or sending RSVPs (Répondez S'il Vous Plait) for events") and passive use (e.g., "Looking at my friends' profiles"). Items were scored on a 5-point Likert scale (1 = "never" to 5 = "very common"). The internal consistency represented by Cronbach's α is acceptable ($\alpha = .82$).

Facebook perceived stress was measured using the Facebook Perceived Stress Scale (Beyens et al., 2016). This scale consists of 4 items in the form of statements and includes 2 dimensions: stress associated with lack of belonging (e.g., "Not being invited to an event on Facebook.") And stress associated with lack of popularity (e.g., "Receiving only a few appreciations or receiving no appreciation for a post, photo or video that I posted on my timeline."). Items were scored on a 5-point Likert scale (1 = "not at all stressful" to 5 = "extremely stressful"). The internal consistency represented by Cronbach's α is acceptable ($\alpha = .76$).

3. RESULTS

Descriptive statistics

Table 1. *Descriptive statistics*

	1	2	3	4	5	6	7
1. Grandiose narcissism							
2. Self-disclosure	.30***						
3. FOMO	.17	.22*					
4. Multi. Intensity	.06	.42***	.39***				
5. Emotional Intensity	.06	.43***	.30***	.73***			
6. Facebook Addiction	.14	.31***	.44***	.74***	.70***		
7. Perceived stress	.03	.37***	.55***	.45***	.43***	.46***	

* $p < .05$, *** $p < .001$. Multi. Intensity = Multidimensional Facebook Intensity

Two programs were used for statistical analysis of the data. The SPSS program (IMB, 2017) was used for scoring each used instrument, and Jamovi 1.1.9 (The Jamovi Project, 2019) was used for correlational analysis (Table 1) and moderation analysis (Table 3).

Descriptive analysis includes the mean and standard deviation for each variable of this study, as follows: narcissism ($M = 56.75$, $SD = 18.09$), FOMO ($M = 25.45$, $SD = 7.19$), self-disclosure ($M = 18.01$, $SD = 5.65$), multidimensionality of Facebook use ($M = 31.42$, $SD = 10.98$), intensity of Facebook use ($M = 15.64$, $SD = 5.82$), Facebook addiction ($M = 11.53$, $SD = 4.76$), Facebook perceived stress ($M = 7.66$, $SD = 3.12$).

According to the correlational analysis (Table 1) that was performed through the Pearson correlational analysis, the only significant correlation (.30) is between grandiose narcissism and self-disclosure.

Hypotheses testing

To verify the first hypothesis (H1), Pearson correlation analysis was applied to see if there was a significant

relationship between grandiose narcissism ($M = 56.75$, $SD = 18.09$) and self-disclosure on Facebook ($M = 18.01$, $SD = 5.65$). A statistically significant positive correlation was obtained between the two variables $r = .30$, $r^2 = .09$, $p < .001$. The confidence interval limits (95%) are between .14 and .45.

Self-disclosure consists of three dimensions: self-disclosure related to quantity ($M = 6.51$, $SD = 2.76$), sincerity ($M = 5.42$, $SD = 2.39$) and intention ($M = 6.08$, $SD = 2.47$). A statistically significant positive correlation was found between narcissism and self-disclosure related to quantity and sincerity $r = .30$, $r^2 = .09$, $p < .001$. However, no correlation was found between narcissism and self-disclosure related to intention, $r = .06$, $r^2 = .00$, $p > .05$.

To verify the second hypothesis (H2), Pearson correlation analysis was applied to see if there is a significant relationship between grandiose narcissism ($M = 56.75$, $SD = 18.09$) and FOMO ($M = 25.45$, $SD = 7.19$). No statistically significant correlation was found between the two variables $r = .17$, $r^2 = .03$, $p > .05$.

Table 2. *Correlation between grandiose narcissism and self-disclosure dimensions*

	1	2	3	4	5
1. Grandiose narcissism					
2. Self-disclosure	.30***				
3. Self-disclosure quantity	.30***	.69***			
4. Self-disclosure sincerity	.30***	.77***	.24**		
5. Self-disclosure intention	.06	.77***	.23**	.53***	

** $p < .01$, *** $p < .001$

To verify the third hypothesis (H3), the Pearson correlation analysis was applied to see if there is a significant relationship between grandiose narcissism ($M = 56.75$, $SD = 18.09$), the intensity of Facebook use ($M = 31.42$, $SD = 10.98$), the intensity of Facebook based on an emotional attachment to the platform ($M = 15.64$, $SD = 5.82$) and

Facebook addiction ($M = 11.53$, $SD = 4.76$). This hypothesis was not supported because no significant correlation was found neither between narcissism and intensity use $r = .06$, $r^2 = .00$, $p > .05$, nor between narcissism and Facebook addiction $r = .14$, $r^2 = .02$, $p > .05$. Using the Medmod module within the Jamovi 1.1.9 program (The Jamovi Project, 2019),

the moderation analysis (H4) was performed to verify whether the use of social networks is a moderator in the relationship between grandiose narcissism and perceived Facebook stress. After performing this statistical analysis

(Table 3), it was found that active Facebook use does not moderate the relationship between grandiose narcissism and perceived stress on Facebook ($\beta = .00$; $Z = .05$, $p > .05$; CI95%: .00 - .00).

Table 3. *Moderation analysis*

	Estimates	SE	Z	p	95% Confidence Interval	
					Lower	Upper
Grandiose narcissism	-.01	.01	-.46	.65	-.03	.02
Active usage	.19	.05	3.82	<.001	.09	.28
Narcissism*Active usage	.00	.00	.05	.96	-.00	.00

4. DISCUSSION

The aim of this study was to analyze how individuals with high levels of narcissism manifest on Facebook and to examine if active Facebook use moderates the relationship between grandiose narcissism and perceived Facebook stress on this platform. The results supported only one hypothesis (H1) of the four listed above. More specifically, grandiose narcissism correlates with two dimensions of the self-disclosure scale, that is, quantity and sincerity, but did not correlate with the intentionality of self-disclosure.

These results are consistent with the academic literature. Narcissism is negatively associated with long-term interpersonal relationships, instead they use social relationships as a means of self-regulation of their self-esteem (Wang & Stefanone, 2013). Self-disclosure in the online environment, through the Facebook application, is much more convenient for narcissists to get the validation they need because the gratification obtained fast and is quantifiable. Moreover, they have access to a wide audience, the information provided is asynchronous and have increased control on the information presented (Schlosser, 2020). These results were also confirmed by the study of Grieve, March and Watkinson (2020) in which grandiose narcissism predicted a high congruence between the real self and that presented on Facebook, while for vulnerable narcissism there was a large discrepancy between the real self and the one presented online. The fact that there was no relationship between narcissism and the intent to disclose can be explained by the fact that they try to capture others attention by disclosing a lot of information, but do not realize the personal nature of some of it. This phenomenon is also called the "privacy paradox", which illustrates the idea that although people express concerns about the confidentiality of personal data requested on various social networks, the actions and behaviors they initiate seem to contradict the reported concerns (Barth, Jong, Junger, Hartel & Roppelt, 2019). A future area of research would be the analysis of narcissists' perceptions about personal data disclosed on social-media and especially, the intention and awareness of their disclosures.

Contrary to the results in the literature, no significant relationships were found between grandiose narcissism, FOMO (H2), Facebook addiction and the intensity of

Facebook use (H3). One explanation for this would be the fact that the platform to which respondents were asked to report to, namely Facebook, is not one that causes fear of missing out, intense use, and addiction. Facebook has about 2.5 billion active monthly users (Statista, 2020) which means that this platform is used worldwide, but probably for purposes other than those proposed in this study. Entertainment is one of the elements that people associate Facebook with, and this is understandable considering the partnerships with the entertainment industry such as films and music. Facebook is also a frequently used platform for expressing political opinions (Kim & Kim, 2019). Taking into consideration that narcissists can use other platforms to get validation, Instagram's interface focuses only on image content, and thus Instagram acts as a virtual photo album for users. Instead, Facebook allows uploading content based on images, but also based on text (Sheldon & Bryant, 2016). Thus, narcissists may be more inclined to use applications with an interface that allows them to have greater visibility among users. Facebook having many additional features is therefore used for several reasons, and narcissists may find it more difficult to be the center of attention to and interact with their target audience as well. In a study conducted by Shane-Simpson and colleagues (2018), they analyzed the reasons why students use Instagram, Facebook or Twitter. People who preferred Instagram, identified the available visual content as the main reason for their preference, while students who preferred Facebook was due to the opportunities to get in touch with people they knew from offline media. As narcissists do not invest their energy in creating and maintaining interpersonal relationships, it is understandable that they could turn to other platforms that enhance their chances of self-promotion and self-presenting.

The last hypothesis of this study was not confirmed. Active use is not a moderator in the relationship between grandiose narcissism and Facebook perceived stress (H4). There was no correlation between grandiose narcissism and Facebook perceived stress. The explanation could be that narcissists, although they use the Facebook application, do not engage in behaviors that amplify their stress. We can assume that they choose other applications with other

facilities and potential benefits for them. The Use and Gratification theory states the fact that if an environment meets or exceeds the expectations initially sought, consumption behavior will be recurrent (Quan-Haase & Young, 2010), which means that narcissists can find other networks of socialization that meets their needs for validation and gratification with a lower energy cost and greater benefits than Facebook platform. Moreover, studies results on Facebook usage type have often had mixed results.

A methodological problem that could contribute to these mixed findings is that the use of Facebook has often been studied in general terms (e.g. general use), with no emphasis on specific factors related to the digital context that may influence the results. Conceptualizations of Facebook use were also different depending on the study. A future direction of research could be to focus on longitudinal studies that can measure the type of Facebook usage (active, passive), the features used (messaging, video content, text, photo), the degree of satisfaction with the gratifications obtained and the tendency to change the platform depending on the benefits obtained and also, taking into consideration the external context (development of another platform).

Limitations

The research design was cross-sectional, so no conclusions can be drawn about causality and the consistency of the answers over time cannot be checked.

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The sample was limited, a larger number of respondents would have allowed a more accurate statistical analysis of the data.

The study used a convenience sample. The age gap between the participants were large (17 years old - 65 years old) which means that the results cannot be generalized to the entire population. 79.2% of the respondents were female and only 20.8% male, this preventing the generalization of the results.

Conclusions

The digital era is constantly evolving, and with it more and more social networks are being developed to make interpersonal communication easier. Along with digitalization, there are changes in people's mental and behavioral level, some of them managing to adapt optimally, others using them as ways of maladaptive coping, unfortunately becoming dependent on these platforms (Stockdale & Coyne, 2020). Grandiose narcissists use these platforms to regulate their self-esteem, having more chances to get more validation and attention taking into account the large and constantly growing number of users. In this study, the results were inconsistent with the academic literature, grandiose narcissists not presenting the expected behaviors, so future research is needed to better explain the conditions of narcissistic behaviors in the online environment, Facebook being only one of the most used platforms at the present moment.

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