RESEARCH

Selfie phenomenon among a sample of Egyptian university students: rate and psychiatric correlates

Reem El Sayed Mohamed Hashem[†], Ghada A. M. Hassan[†], Mona Mahmoud El-Sheikh[†], Hadeer Hassan[*] and Lobna Abu-Bakr Ismail Azzam

Abstract

Background: The selfie phenomenon is an emanating one, specifically affecting adolescents and young adults. It emerges as a reflection of a wide spectrum of neuropsychiatric disorders. Based on this, the current study aimed to assess the rate of the selfie phenomenon among Egyptian university students and its sociodemographic and psychiatric correlates. During the study procedure, we enrolled 200 undergraduate Egyptian university students from two different faculties and were assessed using the Selfie Behavioral Scale, Structured Clinical Interview for DSM-IV-TR Axis I Disorders, Structured Clinical Interview for DSM-IV-TR Axis II Disorders, and Global Assessment of Functioning Scale.

Results: 49.5% of the students being assessed had borderline selfitis with a higher rate among females. We found a highly significant association between the selfie phenomenon and depression, anxiety, obsessive-compulsive disorder, eating disorders, and other psychiatric disorders and personality disorders, and we also found that selfies had a significant negative association with the level of functioning among students.

Conclusions: Results concur with previous existing literature regarding the magnitude of the selfie phenomenon and its relationship with different psychiatric disorders and personality disorders.

Keywords: Selfie phenomenon, University students, Depression, Anxiety, Body dysmorphic, Obsessive compulsive, Narcissistic, Histrionic, Egypt

Background

Behavioral addictions are addictions to activities or processes such as gambling, eating, tanning, sexuality, and shopping. These types of addiction may be more common in more youthful age group [1].

The primary paper on technological forms of addiction was released in 1995, and there has been a marked increment in research into Internet addictive behavior, online video game addiction, mobile phone addiction, social media addiction, and so on [2]. New technologically related mental well-being disorders, such as nomophobia (no mobile phone phobia) [3], technoference (constant intrusions of technology into everyday life) [4], and cyberchondria (feeling ill with the same symptoms after looking for the symptoms of illnesses) [5], were introduced.

Photo sharing on social network sites and advancements in mobile technologies become ubiquitous which aids dramatically in the development of a novel phenomenon in the form of sharing selfies on social network sites. In 2013 selfie was given the title of *Word of the Year* due to its sudden spreading among social media users and was given a definition by Oxford Dictionaries

[†]Reem El Sayed Mohamed Hashem, Ghada AM Hassan, and Mona Mahmoud El-Sheikh contributed equally to this work and are considered co-first authors in this study.

[*]Correspondence: info@oipasu.edu.eg; Hadeerhassan@outlook.com

Okasha Institute of Psychiatry, Ain Shams University Hospitals (ElDemerdash), 10 Hamed Street, El Abbassia, Cairo 11657, Egypt

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[6] in 2013 of a photograph that one has taken of one-self, typically with a smartphone or webcam and shared through social network sites. Since the onset of Instagram's first selfie hashtag, #selfie, emerged in the year 2011, Jang et al. [7] mentioned that selfies have become the most popular photos posted on Instagram.

A survey that was performed in 2019 on The *Mobile Technology and Home Broadband* by the Pew Research Center detailed that 96% in the age range between 18 and 29 years in the USA had a smartphone. Some researchers estimated that 98% of the candidates (aged 18 to 24) took selfies, and 69% tended to share selfies 3 to 20 times day by day as stated by Katz and Crocker [8] in 2015, and in 2016, Dutta et al. [9] reported that the prevalence of *addiction to selfie-taking* was 13% among adolescents in Mumbai.

In the beginning of 2021, there were 4.2 billion more active social media users [10], in agreement with the work done. In 2018, Mascheroni and Ólafsson [11] mentioned that high proportions of adolescents aged from 13 to 14 years (79%) and 15 to 17 years (84%) had active social media profiles reflecting that social media is necessary for adolescents' social interactions and leisure activities that were mentioned and elaborated earlier by Bryant & Bryant [12] in 2005 and also by Musetti et al. [13] in 2020; the highly visual nature of the interactions conferred by online platforms is the key feature why adolescents favored these platforms.

In several studies, it has been found the presence of gender-related differences in selfie practices which shows a higher involvement in selfie-taking, selfie-posting, and selfie-editing by girls in comparison with boys. In 2019, it was clarified by Masha et al. [14] that girls are frequent users of social networking sites and they also post more pictures of themselves as compared to males.

According to the findings of Feltman and Szymanski [15] in 2018, social network sites appear to promote mounting amounts of digital visual content, transforming contemporary everyday life to a "more photographic" life, and this was also mentioned earlier by d'Aloia and Parisi [16] in 2016 and was replicated by Fox and Vendemia [17] in the same year in which editing, filtering, posting, sharing, tagging, and commenting have become natural daily behaviors. In this regard, starting with Katz and Crocker [8] in 2015 passing through Sung et al. [18] and Fox and Vendemia [17] in 2016 followed by Diefenbach and Christoforakos [19] in 2017 and then Balakrishnan and Griffiths [20] in 2018 and ended with McLean et al. [21] in 2019, all agreed that two of the most popular activities carried out on SNSs are selfie-taking and selfie-sharing, and their use might be defined as a "way of being" that is what Griffiths and Kuss found to be the best explanation in 2017 [22].

Upon looking to understand how the phenomenon of behavioral addiction has overlapping factors through the biopsychosocial model, here are the following: (1) biological (reward/executive function model relies on a theory that alterations in the mesolimbic system and medial frontal cortex perpetuate the initiation of the addictive cycle, by looking to the elaboration of addiction results from vulnerabilities and malfunctions in the decision-making process and cellular memory); (2) psychological (emotional, behavioral, and cognitive factors), this was better explained in 2012 by Essig [23] who asserts that behavioral addict is both trying to avoid something (e.g., negative effect) and is self-deluded into the belief that his or her addictive behavior (for instance; Internet use, online gaming) will fulfill all his\her interpersonal needs. Essig [23] also references the feelings of shame that often inflicts so many individuals struggling with behavioral addictions; upon reaching the behavioral approach of explaining behavioral addiction, this can be understood in terms of impulsivity and compulsivity construct which is a hallmark of several psychiatric conditions and is observed mostly in obsessive-compulsive disorder (OCD). In 2006, Grant et al. [24] discussed other conditions with compulsive features including obsessive-compulsive and related disorders, eating disorders, substance dependence, and together with several impulse control disorders and behavioral addictions, such as compulsive Internet use and the urge for taking a perfect selfie as one of the behavioral addiction-related phenomenon; and (3) sociocultural (by the influences of family, friends, and broader culture). Going back to 2005, Donovan and Marlatt [25] hand in hand with Griffiths highlighted that this model has been widely approved in the chemical addiction field, as well as the developing field of behavioral addictions.

In 2014, it was mentioned that the selfie phenomenon is classed, by the American Psychiatric Association (APA), as a novel mental disorder and characterized as (the obsessive-compulsive need to take self-photos and post them on social network sites as a means to make up for the lack of self-esteem and to fill an intimacy gap) [26], and it was also classified into three levels according to the frequency of taking self-photos and posting on social network sites into borderline selfitis (taking photos of one's self at least 3 times a day but not posting them on social media), acute selfitis (taking photos of one's self at least 3 times a day and posting each of the photos on social media), and chronic selfitis (an uncontrollable urge to take photos of one's self around the clock and sharing the photos on social media more than 6 times a day).

Selfie addiction has been connected to various psychiatric illnesses, for example, in 2016 Kaur and Vig [27] found that selfie addiction was associated with low

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self-esteem, loneliness, and depression. In the same year, Sunitha et al. [28] concluded similar findings depending on their review of selfie-taking. Moreover, in 2017, a study by Kela et al. [29] examined the more medical effects of excessive selfie-taking. A survey of 250 Indian students aged 18–25 years (56% females) uncovered that 30% reported lower back ache, 15% complained of stress, 20%, complained of cervical spondylitis, 25% complained of headache, and 10% complained of "selfie elbow" (a tendonitis condition).

The work done by Baiocco et al. [30] in 2017 on the frequency and the degree of addiction to selfies found that it may be linked to some personality traits. In 2015, a study done by Fox et al. [31] identified a relationship between narcissistic and psychopathic personalities and the tendency for sharing a large number of selfies online. In 2016, Choi et al. [32] studied the association between the five main personality traits and taking selfies in the upholding of social life on and off. He also showed that agreeableness and openness traits are correlated to only looking at others' selfies and that agreeableness and extraversion traits are correlated to interacting with others' selfies on social media. Two years after this work, another research done by Sorokowski et al. [33] in 2018 concluded a significant relationship between sharing selfies and narcissism among men.

Due to the absence of data about this topic in Egypt up to this current date, no study has focused on evaluating the rate of the selfie phenomenon and its impact on functionality, and the relationship between the selfie phenomenon and different psychiatric and personality disorders was not explored; therefore, this research was conducted aiming to find the rates and correlates of selfie phenomenon on different personality related and psychiatric variables in a sample of Egyptian university students.

Methods
Participants
Undergraduate students with age between 18 and 25 years of both genders at Ain Shams University (ASU), Cairo, Egypt, were recruited from two different colleges: one practical faculty (the faculty of medicine was selected) and one theoretical college (the faculty of literary arts) were chosen to detect the impact of the field of study on the selfie phenomenon.

We selected a convenience sample, the sample size was calculated using the EpiInfo® version 7.0 (EPI info 7) program, setting the type-1 error (α) at 0.05, and the power (1-ß) at 0.80 and assuming a 15% prevalence of selfie phenomenon in the university students [34]. With a margin of error 5% and at 95% confidence level, a sample size of 200 students will be needed according to the Community Department in Ain Shams University, 100 students from

medical school as representatives of practical colleges, and 100 students from the faculty of arts as a representative of theoretical colleges.

All students in the campus of the study dates were asked to enroll and were invited to complete a traditional paper-and-pencil survey, including their sociodemographic data and questionnaires regarding their selfie behavior and a structured clinical interview of a group of psychiatric and personality disorders was performed. The collection of data took place between July 2020 and March 2021.

Data were collected in an anonymous manner (i.e., no names, identification numbers, or any other personal identifiers were requested except for the phone number) to ensure that the students feel safe to share their information freely, but they were taking a code number. All participants were asked to sign an informed consent explaining the purpose of the study, stating their approval to participate in the study, and ensuring the confidentiality of their information. Those who scored highly upon screening for selfie behavior were contacted via a phone call, and a second interview was set forth after finishing their lectures in the outpatient clinic at ASUIP institute to complete SCID-I and SCI-DII assessment.

The study was approved by the team of Ain-Shams University research and ethical committee and the scientific committee of the neuropsychiatric department. At the same time, all data were stored on a password-protected computer in a locked office of the research team and access was strictly limited to the study investigator.

Procedures
All students in the selected faculties who gave approved consent to participate were assessed by the research team according to the following steps:

Demographics
Sociodemographic data was done through a sheet designed by the research team including age, sex, faculty, and academic year.

The Selfie Behavioral Scale (SBS) (Arabic version)　In 2018, Balakrishnan and Griffiths [20] developed a validated tool for the assessment of selfie behavior. They divided the scale into 6 items: the first one being environmental enhancement followed by social competition, attention-seeking, mood modification, self-confidence, and the last one was social conformity. The first 2 zones of environmental enhancement and social competition each of which consists of 4 items, and the last 4 zones of attention-seeking, mood modification, self-confidence, and subjective conformity each consists of 3 items. The total scale consists of twenty items. Response to each

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item by participants was scored on a five point Likert scale (1–strongly disagree; 2–disagree; 3–neither agree nor disagree; 4–agree; and 5–strongly agree). The total scores ranged from 20 to 100. The behavior was categorized into 4 categories normal, borderline, acute, and chronic selfitis with scores ranging from 20–40, 40–60, 60–80, and 80–100, respectively. An Arabic version of the scale was used in the current study as it was translated and validated by our study,

The translation was conducted in two stages. In the first stage, the scale was translated into Arabic. In the second stage, it was tested among university studies to assess the reliability and internal consistency of the Arabic version.

The initial translation into Arabic was performed independently by two bilingual native speakers from Egypt, both are official translation centers. They were assisted by the researcher if they had any questions about the scale's content. The two translators combined the translations into a consensus version based on the original scale.

The common translated/adapted version was then back-translated into English by two bilingual different official translators.

The scale was applied in a pilot study of 30 students in Arabic and then applied to the same group after 1 week, and it shows similar results. None of the students reported difficulty in understanding or interpreting the questions. The Arabic version of the scale shows excellent reliability. The scale also showed good internal consistency considering all 6 items (Cronbach's alpha = 0.94). Whenever one item was excluded, alpha values did not reveal changes in scale homogeneity. No other instrument was used for construct validity analysis due to the absence of Arabic questionnaires assessing the selfie phenomenon.

The Structured Clinical Interview for DSM-IV-TR Axis I Disorders (SCID-I)   In 1997, First et al. [35] designed a diagnostic exam used to determine DSM-IV-TR Axis I Disorder after 6 years of his work. Missery et al. [36] introduced the Arabic version of SCID-I which is a diagnostic exam used to define DSM-IV-TR Axis I Disorder. It is composed of separate modules, which correlate to categories of diagnoses. Most sections initiate with a leading question that allows the interviewer to *skip* the subsequent questions if not met. All diagnosed symptoms are coded as present, subthreshold, or absent. The interview is designed to be performed by a clinician or trained mental health professional. It is divided into 7 diagnostic modules: psychotic, mood, anxiety, somatoform, substance abuse, eating, and adjustment disorders.

In this research, we used the Arabic version that was translated and used in previous Egyptian studies [36].

The Structured Clinical Interview for DSM-IV-TR Axis II Disorders (SCID-II)   In 2003, Hatata et al. [37] translated this instrument into Arabic, but it was first designed by First et al. [35] in 1997. SCID-II is a semi-structured interview that was developed to categorically and/or dimensionally determine the DSM-IV personality disorders. It could be used in both clinical as well as research settings. Items are organized by personality disorder. A 119-item yes/or no screening questionnaire is available to reduce interview time by identifying personality disorders that are unlikely to be present. Each criterion is scored as (1) absent or false, (2) sub-threshold, (3) threshold or true, or (?) inadequate information. Specific guidelines for a score of three (threshold) are provided. The average administration time is just less than 1 h for the SCID-II interview. In the current research, we used the Arabic version that was translated and used in a previous Egyptian study by Hatata et al. [37].

Global Assessment of Functioning (GAF)   A numeric scale (1–100) was first designed and introduced by Hall et al. to be used by mental health clinicians and physicians to grade the social, occupational, and psychological functioning of adults in a subjective manner and assess if the patient's psychiatric symptoms affect his life. The score is given as a range and is presented in DSM-IV-TR.

Statistical analysis

Descriptive statistics for the total sample were performed. Quantitative and qualitative measurements were summarized as mean $\pm$ standard deviation and *n* (%), respectively. We performed comparisons of continuous and categorical variables by using chi-square and *T* test, and Spearman correlation coefficients were used to evaluate the association among the different variables. The statistical analyses were performed using the Statistical Package for Social Sciences (SPSS) version 22 for Windows. A *p* value less than 0.05 was considered statistically significant

Results

The study included a total number of 200 undergraduate students, and those who refused to complete the questionnaire or refused to come to the second interview were excluded and replaced by others to complete the

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predetermined sample number, so statistically, no drop-out as we reached the whole sample size number.

In the current study, 41% were males and 59% were females, and the distribution of different universities and academic years is shown in Table 1.

Of the students in the literature group, 23% (*n*=23) were positive for *mood disorder* and 17% of them were diagnosed with major depressive disorder (MDD) that was higher in comparison with the students in the medical group, 17% (*n*=17) only were positive out of which 11% (*n*=11) were diagnosed with major depressive disorder (MDD). However, there was no significant difference found between both groups with a *p* value of 0.289.

Anxiety disorders were positive in 44% (*n*=44) of the literature group, out of which 25% (*n*=25) were diagnosed with panic disorder, 15% (*n*=15) with a generalized anxiety disorder (GAD), and 14% (*n*=14) with social phobia that was also higher than that of the medical group as the results showed that 31% (*n*=31) of the medical students were found to be positive out of which 18% (*n*=18) were diagnosed with panic disorder, 16% (*n*=16) with a generalized anxiety disorder (GAD), and 11% (*n*=11) with social phobia. Yet, there was no significant difference found between both groups with a *p* value of 0.058

None of the students was diagnosed with *schizophrenia* nor *substance use disorder* or *hypochondriasis* in both groups.

A significant difference was found between both groups, where 12% (*n*=12) of the literature group more diagnosed as having OCD, 8% (*n*=8) with *posttraumatic stress disorder* (PTSD), 12% (*n*=12) were diagnosed with *eating disorder*, and **9%(n=9) were diagnosed with body dysmorphic disorders** with a *p* value of 0.016, 0.052, 0.006, and 0.030, respectively, as shown in Table 2.

Regarding personality disorders, the results showed a significant difference between both groups as the literature group tends to belong to be diagnosed with cluster

B personality as 47% (*n*=47) of the literature group were diagnosed with cluster B personality disorder, 27% (*n*=27) diagnosed with narcissistic, 14% (*n*=14) with histrionic personality disorder, 6% (*n*=6) diagnosed with borderline personality disorder with a *p* value of 0.007, <0.001, and 0.05, respectively. Also, 11% of the literature group were diagnosed as obsessive-compulsive personality which was significantly higher than the medical group of 3% (*n*=3) with a *p* value of 0.027 as shown in Table 3.

The prevalence of SELFIE among the college of literature group using SBS showed a significantly higher percentage where 1% had normal selfie behavior (score ranging from 20 to 40), 42% were borderline (score ranging from 41 to 60), 41% had acute (score ranging from 61 to 80), and 16% have chronic (score ranging from 81 to 100) on the other hand medical college group showed that 14% had normal selfie behavior, 57% had borderline, 26% had acute, and 3% had chronic selfie behavior, pointing to the fact that the prevalence of selfie phenomenon was higher in the literature group as illustrated in Table 4. The current study results also showed that there was a significant relation between age and the selfie phenomenon.

There was a highly significant association between having a chronic and acute selfie behavior and having positive results on SCID-I & II. Our results showed that the higher the selfie behavioral score, the more likely diagnosis of a mood disorder, anxiety disorder, eating disorder, obsessive-compulsive disorder, and body dysmorphic disorder as detailed in Table 5.

Also, there was a highly statistically significant association between chronic selfie behavior and cluster B personality disorder shown in Table 6.

In the current study, we reported a statistically significant negative correlation between individual subscales of the Selfie Behavioral Scale and its total score on the one hand and the GAF score scale, i.e., a higher score on the

Table 1 Descriptive data of the sample

% Sex		N	%				
Male		82	41.00				
Female		118	59.00				
Total		200	100.00				
		College				*T*test	
		Literature		Medicine		T	Pvalue
Age	Range	18–24		18–23		−1.212	0.227
	Mean ±SD	19.940 ± 1.669		20.200 ± 1.348			
Chi-square		N	%	N	%	X^2	Pvalue
Sex	Male	35	35.00	47	47.00	2.976	0.084
	Female	65	65.00	53	53.00		
	Total	100	100	100	100		

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Table 2 Descriptive data for all psychiatric disorders using SCID-I

		College				Total		Chi-square	
		Literature		Medicine					
		N	%	N	%	N	%	X^2	P value
Mood disorders	Negative	77	77.00	83	83.00	160	80.00	1.125	0.289
	Positive	23	23.00	17	17.00	40	20.00		
MDD	Negative	83	83.00	89	89.00	172	86.00	1.495	0.221
	Positive	17	17.00	11	11.00	28	14.00		
Melanocholic dep	Negative	100	100.00	100	100.00	200	100.00	X	X
Dythymic	Negative	95	95.00	94	94.00	189	94.50	0.096	0.756
	Positive	5	5.00	6	6.00	11	5.50		
Manic	Negative	98	98.00	99	99.00	197	98.50	0.338	0.561
	Positive	2	2.00	1	1.00	3	1.50		
Hypomanic	Negative	100	100.00	100	100.00	200	100.00	x	X
Anxiety disorders	Negative	56	56.00	69	69.00	125	62.50	3.605	0.058
	Positive	44	44.00	31	31.00	75	37.50		
Panic	Negative	75	75.00	82	82.00	157	78.50	1.452	0.228
	Positive	25	25.00	18	18.00	43	21.50		
Agoraphobia	Negative	95	95.00	97	97.00	192	96.00	0.521	0.470
	Positive	5	5.00	3	3.00	8	4.00		
Social phobia	Negative	86	86.00	89	89.00	175	87.50	0.411	0.521
	Positive	14	14.00	11	11.00	25	12.50		
GAD	Negative	85	85.00	84	84.00	169	84.50	0.038	0.845
	Positive	15	15.00	16	16.00	31	15.50		
OCD	Negative	88	88.00	97	97.00	185	92.50	5.838	0.016*
	Positive	12	12.00	3	3.00	15	7.50		
PTSD	Negative	92	92.00	98	98.00	190	95.00	3.789	0.052*
	Positive	8	8.00	2	2.00	10	5.00		
Schizoph	Negative	100	100.00	100	100.00	200	100.00	x	X
Eating disorders	Negative	88	88.00	98	98.00	186	93.00	7.680	0.006*
	Positive	12	12.00	2	2.00	14	7.00		
AN	Negative	94	94.00	98	98.00	192	96.00	2.083	0.149
	Positive	6	6.00	2	2.00	8	4.00		
BN	Negative	94	94.00	100	100.00	194	97.00	6.186	0.013*
	Positive	6	6.00	0	0.00	6	3.00		
Subst abuse	Negative	100	100.00	100	100.00	200	100.00	x	X
Somatization	Negative	93	93.00	96	96.00	189	94.50	0.866	0.352
	Positive	7	7.00	4	4.00	11	5.50		
Hypochondriasis	Negative	100	100.00	100	100.00	200	100.00	x	X
Bodydysmorphic	Negative	91	91.00	98	98.00	189	94.50	4.714	0.030*
	Positive	9	9.00	2	2.00	11	5.50		

*significant result

Selfie Behavioral Scale was associated with less functioning, detailed in Table 7.

Discussion

This study is considered to be one of the first studies to investigate the search for the problem of the selfie phenomenon in Egypt. The past years have witnessed a staggering increase in empirical studies into the effects of social media use (SMU) on adolescents' mental health worldwide [38–40]. One specific behavior of interest is the "selfie," an act of taking and posting digital photos of oneself online [41]. Due to the significant rise in the use of social networking, behaviors related to social media, particularly selfie behavior, were found

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Table 3 Descriptive data for all personality disorders using SCID-II

		College				Total		Chi-square	
		Literature		Medicine					
		N	%	*N*	%	*N*	%	X^2	*P* value
Schizoid	Negative	100	100.00	100	100.00	200	100.00	X	X
Schizotypal	Negative	99	99.00	100	100.00	199	99.50	1.005	0.316
	Positive	1	1.00	0	0.00	1	0.50		
Paranoid	Negative	99	99.00	100	100.00	199	99.50	1.005	0.316
	Positive	1	1.00	0	0.00	1	0.50		
Cluster*A*	Negative	98	98.00	100	100.00	198	99.00	2.020	0.155
	Positive	2	2.00	0	0.00	2	1.00		
Histerionic p	Negative	86	86.00	99	99.00	185	92.50	12.180	<0.001*
	Positive	14	14.00	1	1.00	15	7.50		
Antisocial	Negative	100	100.00	100	100.00	200	100.00	X	X
Borderline	Negative	94	94.00	99	99.00	193	96.50	3.701	0.054*
	Positive	6	6.00	1	1.00	7	3.50		
Narcissistic	Negative	73	73.00	88	88.00	161	80.50	7.167	0.007*
	Positive	27	27.00	12	12.00	39	19.50		
Cluster B	Negative	53	53.00	86	86.00	139	69.50	25.687	<0.001*
	Positive	47	47.00	14	14.00	61	30.50		
Avoidant p	Negative	97	97.00	94	94.00	191	95.50	1.047	0.306
	Positive	3	3.00	6	6.00	9	4.50		
Dependent p	Negative	99	99.00	99	99.00	198	99.00	0.000	1.000
	Positive	1	1.00	1	1.00	2	1.00		
OC p	Negative	89	89.00	97	97.00	186	93.00	4.916	0.027*
	Positive	11	11.00	3	3.00	14	7.00		
Cluster C	Negative	85	85.00	90	90.00	175	87.50	1.143	0.285
	Positive	15	15.00	10	10.00	25	12.50		

*significant result

Table 4 Prevalence of the selfie phenomenon using the Selfie Behavioral Scale (SBS) between both groups

SBS	College				Total		Chi-square	
	Literature		Medicine					
	N	%	*N*	%	*N*	%	X^2	*P* value
Normal	1	1.00	14	14.00	15	7.50	25.792	<0.001*
Borderline	42	42.00	57	57.00	99	49.50		
Acute	41	41.00	26	26.00	67	33.50		
Chronic	16	16.00	3	3.00	19	9.50		

*significant result

to be one of the most popular online engagements, particularly among adolescent and emerging adult social media users [41, 42].

Studies reported that SELFIES have become an addiction among college students [43]. The most dynamic development in this phenomenon was its extreme and recent increase in the usage of social media [33, 44]. Both age and gender are likely factors linked with taking selfies

as well as the experience and exposure to social media. Consistent with our results, a clear gender disparity is observed with a larger percentage of younger girls clicking selfies when compared to boys [45–48].

In addition to the previous sociodemographic findings in the current study sample, it was found that there was a significant prevalence of the obsessive-compulsive disorder, post-traumatic stress disorder, eating

Table 5 Relationship between the prevalence of different psychiatric disorders and the prevalence of the selfie phenomenon

| | | SBS | | | | | | | | | | Chi-Square | |
| | | Normal | | Borderline | | Acute | | Chronic | | Total | | | |
		N	%	N	%	N	%	N	%	N	%	X^2	P value
MDD	Negative	15	100.00	83	83.84	61	91.04	13	68.42	172	86.00	9.119	0.028*
	Positive	0	0.00	16	16.16	6	8.96	6	31.58	28	14.00		
Melancholic dep	Negative	15	100.00	99	100.00	67	100.00	19	100.00	200	100.00	-	-
Dythymic	Negative	14	93.33	95	95.96	64	95.52	16	84.21	189	94.50	4.450	0.217
	Positive	1	6.67	4	4.04	3	4.48	3	15.79	11	5.50		
Manic	Negative	15	100.00	97	97.98	66	98.51	19	100.00	197	98.50	0.699	0.873
	Positive	0	0.00	2	2.02	1	1.49	0	0.00	3	1.50		
Hypomanic	Negative	15	100.00	99	100.00	67	100.00	19	100.00	200	100.00	-	-
Mood disorders	Negative	14	93.33	77	77.78	57	85.07	12	63.16	160	80.00	6.419	0.093
	Positive	1	6.67	22	22.22	10	14.93	7	36.84	40	20.00		
Panic	Negative	14	93.33	78	78.79	52	77.61	13	68.42	157	78.50	3.135	0.371
	Positive	1	6.67	21	21.21	15	22.39	6	31.58	43	21.50		
Agoraphobia	Negative	15	100.00	93	93.94	65	97.01	19	100.00	192	96.00	2.691	0.442
	Positive	0	0.00	6	6.06	2	2.99	0	0.00	8	4.00		
Social phobia	Negative	14	93.33	89	89.90	58	86.57	14	73.68	175	87.50	4.357	0.225
	Positive	1	6.67	10	10.10	9	13.43	5	26.32	25	12.50		
GAD	Negative	14	93.33	94	94.95	56	83.58	5	26.32	169	84.50	58.301	<0.001*
	Positive	1	6.67	5	5.05	11	16.42	14	73.68	31	15.50		
Anxiety disorders	Negative	13	86.67	69	69.70	42	62.69	1	5.26	125	62.50	32.485	<0.001*
	Positive	2	13.33	30	30.30	25	37.31	18	94.74	75	37.50		
OCD	Negative	15	100.00	95	95.96	59	88.06	16	84.21	185	92.50	6.710	0.082
	Positive	0	0.00	4	4.04	8	11.94	3	15.79	15	7.50		
AN	Negative	15	100.00	99	100.00	63	94.03	15	78.95	192	96.00	19.815	<0.001*
	Positive	0	0.00	0	0.00	4	5.97	4	21.05	8	4.00		
BN	Negative	15	100.00	99	100.00	66	98.51	14	73.68	194	97.00	39.543	<0.001*
	Positive	0	0.00	0	0.00	1	1.49	5	26.32	6	3.00		
Eating disorders	Negative	15	100.00	99	100.00	62	92.54	10	52.63	186	93.00	56.164	<0.001*
	Positive	0	0.00	0	0.00	5	7.46	9	47.37	14	7.00		
Bodydysmorphic	Negative	15	100.00	97	97.98	61	91.04	16	84.21	189	94.50	8.589	0.035*
	Positive	0	0.00	2	2.02	6	8.96	3	15.79	11	5.50		

*significant result

Table 6 relationship between personality disorders and levels of SELFIE behavior

| | | SBS | | | | | | | | | | Chi-square | |
| | | Normal | | Borderline | | Acute | | Chronic | | Total | | | |
		N	%	N	%	N	%	N	%	N	%	X^2	P value
Histrionic p	Negative	15	100.00	94	94.95	62	92.54	14	73.68	185	92.50	11.769	0.008*
	Positive	0	0.00	5	5.05	5	7.46	5	26.32	15	7.50		
Antisocial	Negative	15	100.00	99	100.00	67	100.00	19	100.00	200	100.00	-	-
Borderline	Negative	15	100.00	96	96.97	66	98.51	16	84.21	193	96.50	9.904	0.019*
	Positive	0	0.00	3	3.03	1	1.49	3	15.79	7	3.50		
Narcissistic	Negative	15	100.00	91	91.92	44	65.67	11	57.89	161	80.50	27.427	<0.001*
	Positive	0	0.00	8	8.08	23	34.33	8	42.11	39	19.50		
Cluster B	Negative	15	100.00	83	83.84	38	56.72	3	15.79	139	69.50	47.207	<0.001*
	Positive	0	0.00	16	16.16	29	43.28	16	84.21	61	30.50		

*significant result

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Table 7 correlation between items of Selfie Behavioral Scale (SBS), total score, Age and general assessment of functioning (GAF)

Correlations	Age		GAF	
	R	P value	R	P value
Environmental enhancement	−0.167	0.018*	−0.359	<0.001*
Social competition	−0.146	0.039*	−0.323	<0.001*
Attention-seeking	−0.057	0.420	−0.270	<0.001*
Mood modification	−0.131	0.065	−0.283	<0.001*
Self-confidence	−0.040	0.572	−0.366	<0.001*
Subjective conformity	0.007	0.924	−0.266	<0.001*
SBS	−0.116	0.102	−0.388	<0.001*

*significant result

disorders, and body dysmorphic disorder regarding SCID-I findings and it was also found that there was a significant prevalence of cluster B personality disorder (histrionic, borderline, and narcissistic) and obsessive-compulsive personality disorder regarding SCID-II findings. These go in line with the association found between higher Selfie Behavioral Scale scores and the above disorders being higher among adolescents who are the target for social media use.

The study results showed that 49.5% of the sample had borderline selfitis and 33% acute selfitis which is consistent with the results showing that selfies are very popular among college-attending young adults [8] and adolescents [42, 49]. Evidence was presented from the fact that 96% of young adults had taken a selfie in the past, and 25% had taken a selfie on the previous day [8].

According to a study done in the USA, 98% of participants (aged 18 to 24) took selfies which is consistent with the age range of our study, 46% had shared SELF-IES within the past day, and 69% tended to share selfies three to 20 times daily [8].

Bhattacharyya [50], Gupta and Pooja [51], Kaur and Vig [27], and Singh and Tripathi [52] believed that excessive selfie-taking could result in some psychological problems on the part of the selfie-taker who has crossed from the borderline and acute stages to the chronic stage in their respective studies. This is supported by the current study results showing that chronic selfitis has a significant association with mood disorders, anxiety disorders, obsessive-compulsive disorder, eating disorders, and personality disorders more than the borderline and acute stages.

Consistent with the current study results, Nagaraju and Chikkegowda [53] found that 35.4% of the sample took >3 selfies/day, similar to a study done by Priya et al. [54] that was 31%. Borderline selfitis was seen in 23.9% of the sample, acute selfitis was seen in 8.4%, and

chronic selfitis was seen in 3.2%. In the current study, we found that 49.5% of our sample exhibited borderline selfitis, 33.5% acute, and 9.5% chronic.

Consistency in the rate of selfie behavior was seen in the current study results and previous studies, as a study in the eastern part of India revealed that none of the students had acute or chronic selfitis. Almost one in every three students had borderline selfitis [55]. Similarly, studies that examined the negative consequences associated with social media use include engaging in social comparison, low self-esteem, and self-objectification [56]. Perhaps one of the most noted risks associated with social media use is depression, which is more common for those who report spending increased time on social networking sites across platforms [57], and we found that 31% of our sample diagnosed with major depressive disorder is having a chronic selfie behavior.

Although some scholars have claimed that the obsessive taking of selfies can be an addiction [27, 29, 58, 59] and that selfitis might be more common among those with a "selfie addiction" [60], little empirical research has been carried out. To date, only a few studies, mainly in Asia, have examined the negative effects of habitual selfie-taking on mental and physical health [61, 62]. These studies have revealed that selfie addiction is most commonly associated with narcissism, self-centered behavior, low self-esteem, loneliness, and depression [62]. Consistent with this study results, studies revealed that it is how one uses social media that gave an idea of whether one suffers or benefits from its use. For example, passive use, such as looking at the content others have shared (like selfies, that is, photographs one takes of oneself) or reading and not interacting with others, has been identified as particularly problematic; this use has been linked to increased anxiety, feelings of envy, and decreased well-being [63–65].

Regarding obsessive-compulsive disorder (OCD) and the excessive selfie behavior, a Malaysian study indicated that selfie might bring negative effects other than positive such as obsessive-compulsive disorder or body dysmorphic disorder and selfie obsession. The more women are exposed to *selfies* and other photos on social media, the more they compare themselves negatively. Researchers concluded that the phenomenon of a selfie is more on involving self-image, self-confidence, and self-esteem of oneself as stated by Tajuddin et al. [66] in 2013.

Introductory cross-sectional studies on the relationship between disordered eating and body image found that adolescent girls who reported greater photo investment (effort in choosing a selfie and monitoring likes/comments) and photo manipulation (digital editing of a selfie) reported greater eating and body image concerns which McLean et al. [21] introduced in 2015. This is particularly

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relevant as eating disorder risk is elevated during adolescence, and they are the most prolific users of photo-based social network sites based on a paper done by Smith and Anderson [67] in 2018. Goldenberg et al. [68] and Gupta [69] also found that body image dissatisfaction is closely linked to depression, eating disorders, and low self-esteem. This goes in line with our results showing that excessive involvement in selfie behavior had a significant relationship with eating disorders and depression as mentioned.

It was found in a significant amount of selfie researches done by Barry et al. [70], Weiser [71], Sorokowski et al. [33, 72], and Halpern et al. [73] that there is a link between narcissism and selfie-sharing behavior on social network sites, as selfie-sharing behavior increased one's narcissism or vice versa. Other selfie studies as mentioned by Qiu et al. [74] in 2015 proposed that selfie content reflected people's personality.

Katz and Crocker in [8] mentioned that selfies allow users novel opportunities to customize their self-presentation by giving picture takers a wide range of ways to portray themselves. Interestingly, in 2016, Halpern et al.'s [73] research has shown that this individualistic form of SNS usage, where users focus on how they want to be seen by others from their perspective, is highly related to narcissism.

Although several studies have burrowed into trait predictors of selfie-related behavior, existing research has largely investigated narcissism, where Choi et al. [75] in 2017 pointed to the idea that other traits relevant to selfies on SNSs remain unexamined.

This study may show the impact of social media and globalization on cultural phenomena and mental health and show how similar human beings are among all cultures that we share the same interests and the same pathology.

The work done in this study includes more than a narcissistic personality disorder. It showed that the diagnosis of borderline and histrionic personality disorders was more likely associated with higher scores on the SBS scale being more significant with chronic selfie behavior. This was supported by the results in the current study that 84.21% of the sample was more likely to have cluster B personality disorder with chronic selfie behavior. This needs to be supported by further studies on the effect of selfies on personality in adolescents and vice versa.

Conclusions

In summary, the study shows that selfie behavior was significant among females (59%), and in the literature group, 16% have chronic behavior, which significantly affects the personality development and increases the likelihood of occurrence of psychiatric disorder. A significant negative correlation between the Selfie Behavioral Scale total score and GAF score scale, i.e., a higher score on selfie is associated with less functioning among college students, is that chronic selfie behavior as categorized by the Selfie Behavioral Scale is associated with more likelihood development of MDD. In the current study, chronic selfie behavior is associated with more anxiety disorders, eating disorders, obsessive-compulsive disorder (OCD), and body dysmorphic disorder. Also, there was more chronic selfie-taking behavior among cluster B personality disorders being more significantly with narcissistic personality disorder (42%).

Clinical implications

It is important for mental health professionals to explore the adolescent's purpose in taking selfies as it opens the door for discussions about self-esteem, body image, healthy relationships, and digital safety. Also, health professionals need to provide screen-free ways to show such individuals how to spend their time.

Limitations

The study sample size was not large enough, and students at 2 different faculties were assessed as a representative of the practical and theoretical colleges. This study was confined to a single governmental university in Cairo, Egypt, and cannot be generalized to other universities in smaller cities or private universities, so further research is still needed in this area.

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Availability of data and materials
The datasets used and analyzed during the current study are available from the corresponding author upon reasonable request.

Declarations

Ethics approval and consent to participate
All subjects enrolled in the study signed an informed consent prior to completing the questionnaire, and the participation was voluntary. All methods were carried out in accordance with relevant guidelines and regulations. The study protocol for data collection was approved by the Ain-Shams University research and ethical committee and the scientific committee of the Neuropsychiatric Department.

Consent for publication
Not applicable.

Competing interests
The authors declare that they have no competing interests.

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