**Chapter 3:**

**Dark triad on Facebook**

**The prevalence of Facebook**

Facebook is one of the most popular social networks, with more than 1.56 billion users logging on daily (Facebook, 2019; Akhter et al., 2022). Facebook is a platform that enables users to share information, form new relationships, and maintain their existing relationships. Because of these functions, Facebook can considerably affect people’s social lives and has caught the attention of researchers worldwide. Facebook is not about just signing in. Facebook allows its users to perform a variety of functions. They can passively view content, such as others’ photos, videos, posts, or statuses, or create their own content and directly interact with others by posting photos, videos, and opinions, sending messages, chatting, and commenting on the posts of others (Akhter et al., 2022).

Facebook has been the dominant social media for years, and most studies on social network sites have focused on Facebook. Nevertheless, the trend is changing, which can especially be seen among teenagers. As a social networking platform, Instagram is becoming more popular among Millennials and Generation Z. Despite the increasing popularity of Instagram, most previous studies have focused on addiction to other social networking sites, i.e., Facebook. In fact, despite findings that Instagram can result in problematic use or addiction, only a few studies have explored the paradoxical impact that Instagram, as a social networking platform, has on its users. While there are similarities between social networking sites, each has unique features with different motives for use and sources of gratification for users. Instagram’s features allow users to edit and upload photos and videos, receive likes and comments, follow other profiles, and be followed by others. Recently, Instagram added a new feature enabling users to broadcast live streams. In addition, restriction on photo downloads is another triggering factor for using Instagram. All such features drive Instagram users to spend excessive time on the platform. (Nikbin et al., 2022).

There are also potential draws to both Facebook and Instagram that attract the attention of malevolent personalities. Facebook allows its users to create their profiles, upload their photos and videos, and send messages (both private and public). It has a broad reach, as comments or posts can reach thousands of people, primarily through the “liking” and “sharing” mechanisms. These mechanisms allow cyberbullies to efficiently distribute offensive or unwanted information about their victims. Instagram, like Facebook, also makes it easy to set up new, anonymous profiles for cyberbullying purposes. The speed and size of the distribution mechanism allow hostile comments or humiliating images to go viral within hours (Kircaburun et al., 2019). Naturally, considering the nature of this book, the negative aspects of Facebook and Instagram are discussed. This chapter focuses mainly on Facebook, the platform that has received the most scholarly attention but also touches on dark triad behavior on other social networking sites, including Instagram.

**Theories for the use of Facebook and other platforms**

Nadkarni and Hofmann (2012) consider the motives for using Facebook as being rooted in two social needs: the need for belonging and the need for self-presentation. The need to belong denotes the intrinsic drive to associate with others and gain social acceptance, while the need for self-presentation refers to the constant process of impression management. The motives for using Instagram are self-expression and social interaction, making it easier for individuals to present authentic and ideal selves. Snapchat is used to communicate with the immediate environment regarding its structure (Kircaburun, Demetrovics & Tosuntaş, 2019). According to Asghar et al. (2021), the rapid evolution of social media networks like Facebook, Twitter, and YouTube has allowed users to communicate information by interacting with the community. However, there is a dark aspect to these social networks, as there is always a possibility that users might misuse the power that mechanisms like status updates, images, text, and public profiles afford them in terms of expressing themselves.

Geary, March, and Grieve (2021) advanced the Uses and Gratifications Theory as a conceptual framework for explaining dark triad activity on Facebook and other social network sites. This theory posits that individuals actively choose and use traditional media and that this choice is based on how the use of media gratifies their needs. Uses and Gratifications Theory has also been applied to social media use, where social media users actively consume and create content to gratify their individual needs. Various gratifications are obtained from the use of social media. For example, people who use Facebook may gratify self-worth and integrity needs, information-seeking needs, and friendship and connection needs. Using Pinterest as a primarily visual medium may gratify entertainment and virtual exploration needs, and using YouTube may gratify needs for entertainment, interaction, information seeking, and escape. The use of social media may even generate new needs, such as promoting the need to stay constantly connected (e.g., the fear of missing out). Compared to Facebook, Twitter, Snapchat, YouTube, Google+, and WhatsApp, users of Instagram are more likely to use the platform to create and present themselves as more popular than in reality. Instagram seems strongly related to motives likely to underpin inauthenticity in self-presentation. The uses and gratifications framework would suggest that the features of Instagram allow these self-presentation needs to be met.

According to Geary et al. (2021), individual differences play a crucial role in the Uses and Gratifications Theory because gratifications sought will vary depending on an individual’s personality. In line with this, there is evidence that gratifications around self-presentation on Facebook arise from individual differences in grandiose and vulnerable narcissism. Grandiose narcissism is characterized by overconfidence and exhibitionism. It is posited to be driven by self-enhancement strategies, where one may employ extreme displays of charisma, boldness, and extroversion to fulfill their needs for attention and admiration from others. Vulnerable narcissism is described as a more subordinate and defensive form of narcissism, where grandiosity is motivated by feelings of inadequacy, negative affect, and incompetence. Authentic self-presentation on Facebook is associated with higher levels of grandiose narcissism, with individuals high in vulnerable narcissism (combined with low self-esteem) less likely to present themselves authentically online. As vulnerable narcissism is more associated with stress related to fear of social rejection than grandiose narcissism, individuals high in vulnerable narcissism may guard their social media privacy by employing inauthentic self-presentation as a protective strategy. Further, individuals high in grandiose narcissism may engage in authentic self-presentation online as they believe their true self is to be admired.

Further, given the associations between trait Machiavellianism and strategic online self-presentation, it is reasonable to expect trait Machiavellianism will be associated with more inauthenticity on Instagram. Finally, based on the characteristics of psychopathy, there is reason to expect primary psychopathy (i.e., calculation and deceit) and secondary psychopathy (i.e., impulsivity) to predict inauthentic and authentic self-presentation on Instagram, respectively (Geary et al., 2021).

**Dark triad on Facebook**

Garcia and Sikström (2014) focused on Facebook updates and contended that the dark triad traits might be expressed in status updates because people are usually internally motivated to use Facebook to increase social capital (i.e., benefits from interaction with others) and fulfill social-grooming needs, such as gossip, and monitoring members of the social group. Garcia and Sikström (2014) suggested that when people interact with others on Facebook using status updates, they may use language related to malevolent traits in the dark triad and neurotic behavior. The statuses of individuals scoring high in these traits seem “odd” and “negative.” In these cases, people reading status updates might experience the adverse effects of social networking.

Garcia and Sikström’s (2014) study showed that the semantic content of Facebook updates predicted psychopathy and narcissism. People with high levels of these traits had more negatively valued words in their updates and more “odd” semantic representations than those with low levels. Their findings also showed that narcissism was also related to the number of Facebook friends, while Machiavellianism was negatively correlated with the time spent on Facebook.

According to Nikbin et al. (2022), individuals high in narcissism might be prone to excessive use of social media due to high engagement with activities such as selfie-editing and deceptive self-promotion behaviors. Machiavellianism has also been linked to addiction to social media. Because of their fear of social rejection, individuals high in Machiavellianism heavily use social media networking in problematic ways for deceptive self-promotion and interpersonal manipulation. Individuals high in psychopathy engage in problematic online behaviors as a maladaptive coping strategy and for sensation seeking. Thus, individuals high in the dark triad traits of narcissism, Machiavellianism, and psychopathy are more vulnerable to problematic Instagram use.

Withers et al. (2017) explained the relationship between the dark triad and the level of acceptance of violations of moral behavior as outlined in the Facebook Community Standards. They analyzed the levels at which users accepted Facebook Community Standards violations as a predictor of subjects’ liability to engage in such behaviors themselves. This is because subjects are likely reluctant to disclose their own violations. They focused on three deviant activities: nudity, hate speech, and graphic and violent content. According to Withers et al. (2017), individuals exhibiting high narcissism find nudity acceptable on Social Networking Sites because it allows them to express their self-love and receive admiration while also being a channel for them to be critical of and devalue others. In addition, this need to devalue others may extend beyond nudity, and they may contribute to social networking sites through verbal comments and postings.

Withers et al. (2017) further contended that Machiavellians have been shown to use aggressive interactions to dominate and exploit other users and argued that hate speech and propaganda also are used for this type of domination and oppression. Psychopathic behavior is manipulative, sensation-seeking, and exhibits a lack of empathy and remorse. Using hate speech and posting highly violent or graphic images or graphic descriptions of violent events causes viewers aversion, disgust, and other unpleasant reactions. In theory, those who post these images or engage in hate speech do so to manipulate others or because they take sadistic pleasure in these acts.

Withers et al. (2017) found that in a sample of 155 social networking sites, users from diverse backgrounds and ages contradicted the expectation that narcissism was negatively correlated to nudity, hate speech, and violent graphic content. As expected, Machiavellianism was positively correlated to all three deviant behaviors. Also, in support of the expectation, psychopathy was positively correlated with nudity and hate speech behaviors. However, quite interestingly, psychopathy and violent graphic content had a negative correlation and contradicted the expectation (Withers et al., 2017).

Geary, March, and Grieve (2021) examined how grandiose narcissism, vulnerable narcissism, primary psychopathy, secondary psychopathy, and Machiavellianism predict authentic self-presentation on Instagram. Surveying 542 Australian Instagram users, they found that higher levels of vulnerable narcissism and Machiavellianism predicted lesser degrees of congruence between the true self and the projected self on Instagram (i.e., inauthenticity). However, grandiose narcissism, primary psychopathy, and secondary psychopathy were not significant predictors of authentic self-presentation on Instagram. They concluded that inauthentic self-presentation on Instagram might be best attributed to fragile ego and low self-worth (i.e., vulnerable narcissism) and strategic, tactical, and measured manipulation (i.e., Machiavellianism).

Nitschinsk, Tobin, and Vanman (2022) examined 322 participants in the USA, Canada, United Kingdom, and Australia for dark triad traits and online self-presentation styles and beliefs. Their findings showed that both Machiavellianism and psychopathy were associated with adaptable (the extent to which someone is versatile in their self-presentation online) and inauthentic self-presentation. Machiavellianism was additionally associated with beliefs that online environments allow for freedom in self-presentation (the extent to which someone believes that online environments make it easier to express oneself). Finally, those high in narcissism presented an authentic self online and believed that online environments are not beneficial to self-presentation. They conclude that those with dark dispositional tendencies use – or do not use – the affordances of online environments for self-presentation, depending on their goals.

The above arguments and findings show that narcissists favor Facebook as a preferred channel for attaining their personality needs. The following section elaborates on the relationship between narcissism and Facebook use (or other social media sites) and the specific relationship between Machiavellianism, Psychopathy, and Facebook use.

**Narcissists and Facebook**

Unsurprisingly, considerable media attention has been paid to narcissism and social networking. Online communities have been indicated as a fertile ground for narcissists to self-regulate for several reasons. First, this online setting allows users to establish and maintain hundreds of superficial relationships (i.e., virtual friends) and engage in emotionally detached communication (i.e., wall posts and comments). While these sites can serve a communicative purpose among friends, colleagues, and family, other registered users can initiate requests to be friends, which means that an individual’s social network can snowball rapidly beyond a user’s immediate work and life contexts. Second, social networking sites are highly controlled environments that allow owners complete power over self-presentation. Users can carefully curate the image they present using text-based features such as “About Me,” “Notes,” and “Status Updates” and can select attractive self-promoting photographs. This virtual arena allows narcissists to pursue an infinite number of trivial “friendships” and affords them endless opportunities for self-promotion (Mehdizadeh, 2010).

On Facebook, users typically select a profile picture to display on their profile page. Below the profile picture, the “View Photos” link indicates the number of photos in which the user has been “tagged” (identified) by themselves or others identified by oneself or others. The “Friends” box displays the user’s total number of “friends” added on Facebook. There is also a “wall” on the profile page where friends can post short messages. Users can also post messages or “status updates” on their walls as frequently as they would like. Among the various features, the profile picture has been posited as the essential means for self-presentation because it represents the individual on the online platform and appears in search results and alongside every online interaction, like wall posts. Moreover, photos can be constructed and refined to conceal flaws. As is to be expected, college and adolescent social network site users were found to choose profile pictures they perceive to appear more physically attractive (Kim & Kim, 2019; Ong et al., 2011).

Such activities regarding positive self-presentation are more evident on anonymous sites, such as Facebook, where users can make public “identity statements” that they may not normally do offline. These statements can take both explicit (i.e., autobiographic descriptions) and implicit (i.e., photos) forms and enable people to publicly display their hoped-for possible selves. Narcissism, especially, is linked to prominent aspects of self-presentation, such as the frequency of status updates or the amount of self-promoting content displayed. Social network sites provide narcissists with both an audience and a stage for highly controlled self-presentation (Mehdizadeh, 2010; Kapidzic, 2013).

Because of the abovementioned features of social network sites, they are favorable for manifesting narcissistic behavior. This is because they offer individuals an environment where they can present a curated construct of themselves to an audience (Kapidzic, 2013). Research indicates that individuals with high narcissism have a highly inflated, positive self-concept and are concerned with their physical appearance. The above contention is reflected in the online profiles of narcissists. Research on the relationship between narcissism and social network sites indicates a significant link between higher levels of narcissism and more attractive appearance in profile pictures, higher ratings of the profile owner’s attractiveness, and content that persuades the viewer of the account holder’s positive traits (Kapidzic, 2013).

Indeed, the above contentions regarding narcissists on Facebook received support from several empirical studies. Buffardi and Campbell (2008) analyzed the Facebook profiles and personality traits of more than 130 college students. They found that narcissism is measurable in the number of friends and wall posts posted between friends. However, narcissism was not related to the length of an individual’s self-description on the site. As for written content, narcissism is positively (but only marginally) related to self-promoting information about the self and negatively related to entertaining quotes. Similarly, regarding image content, narcissism is positively associated with main photograph attractiveness, self-promotion, and sexual provocativeness. Regarding the overall impression of the social networking site, strangers rated narcissistic individuals as more agentic (but not more communal) and more narcissistic.

Furthermore, the strangers’ impressions of narcissism and agency uniquely predicted site owners’ narcissism. Narcissistic impressions related to the Facebook page content features associated with narcissistic personality scores but also to three additional features: the quantity of information listed about the self, self-promoting pictures, and provocative pictures. Finally, the study revealed that the impression of narcissism is based primarily on the number of social interactions and the extent to which the Web page owner is self-promoting and attractive in their main photo.

Buffardi and Campbell (2008) concluded that narcissism on social networking sites is very similar to its expression in other social domains. Narcissism is related to a higher number of social relationships, self-promoting presentation, and the perception of having many agentic characteristics. Only two differences between narcissism in the “real world” and online communities were found. The narcissists’ quotes were judged to be less entertaining than those of non-narcissists. In addition, the narcissists were judged to be more attractive based on their photos than the non-narcissists.

In a sample of 294 American undergraduate college students, Carpenter (2012) examined two socially disruptive narcissism elements that would predict a particular pattern of Facebook behaviors. Grandiose exhibitionism was predicted to be related to Facebook behaviors that afforded extensive self-presentation to as large an audience as possible via status updates, photos, and attaining large numbers of friends. Entitlement/exhibitionism was predicted to be related to anti-social behaviors such as retaliating against negative comments about oneself, reading others’ status updates to see if they are talking about oneself, and seeking more social support than one provides. In some cases, self-esteem was negatively related to these narcissistic Facebook behaviors. Carpenter’s findings also revealed that these individuals are more likely to accept friend requests from strangers, tag themselves more often, update their newsfeeds more frequently, respond more aggressively to derogatory comments about them and change their profile pictures more often.

Marshall, Lefringhausen, and Ferenczi (2015) contended that narcissistic individuals tend to be self-aggrandizing, vain, and exhibitionistic. They seek attention and admiration by boasting about their accomplishments and taking particular care of their physical appearance. This suggests that their status updates will more frequently reference their achievements and their diet and exercise routine. Moreover, the choice of these topics may be motivated by using status updates to gain validation for inflated self-views. This is consistent with the positive association of narcissism with frequent status updates, posting more self-promoting content, and seeking to attract admiring friends to one’s Facebook profile.

Marshall et al. (2015) examined 555 Facebook users currently residing in the United States (59% female). Their findings showed that narcissism was positively associated with posting updates about achievements and with using Facebook for validation. Moreover, using Facebook for validation and communication predicted the frequency of updates about achievements over and above the control variables and traits. The association of narcissism with posting updates about achievements was significantly mediated by using Facebook for validation, as is consistent with narcissists’ tendency to boast to gain attention. They also found that narcissism was positively associated with posting about diet/exercise. However, using Facebook for self-expression rather than validation was positively associated with posting updates about diet/exercise over and above the control variables and traits. Self-expression mediated the association of narcissism with updating about diet/exercise, suggesting that narcissists may broadcast their diet and exercise routine to express the personal importance they place on physical appearance (Marshall et al., 2015).

In addition, they found that narcissism rather than self-esteem was associated with receiving a more likes and comments to one’s updates. They revealed that the tendency for narcissists to report receiving more likes and comments was mediated by more frequent updates about their achievements. Thus, narcissists’ publicizing of their achievements was positively reinforced by the attention and validation they crave.

Rosen et al. (2013) found, in a sample of 1143 adult students from the Southern California area, that increased use of Facebook for impression management and more Facebook friends predicted more signs of narcissism. According to Rosen et al. (2013), this corroborates the many studies showing how social media provides a platform for narcissists. In addition, narcissism predicts using Facebook to occupy time, pursue leisure interests, and interact with romantic interests, over and above extroversion, suggesting that narcissists enjoy the exhibitionistic nature of social network sites (Ong et al., 2011).

In a sample of one hundred Facebook users (50 males, 50 females) who were randomly recruited at York University, Mehdizadeh (2010) found a significant relationship between individuals who scored higher on narcissism, the number of times Facebook was checked per day, and the time spent on Facebook per session. The findings also showed significant positive relationships between narcissism and self-promotion in profile pictures, photos, status updates, and the “Notes” section. However, the “About Me” section found no relationship between narcissism and self-promotion.

The findings showed some interesting gender differences. For example, males displayed more self-promotional information in the “About Me” and “Notes” sections than women. Conversely, women displayed more self-promotional profile pictures. Although no research has examined gender differences in types of self-promotional domains, particularly in online settings, this premise supports simple socialization processes. Specifically, gender roles influenced narcissistic females’ tendency to include revealing, flashy, and adorned photos of their physical appearance and trends in narcissistic males to highlight descriptive self-promotion reflecting intelligence or wit in the “About Me” section (Mehdizadeh, 2010).

Ryan and Xenos (2011) found in a sample of 1324 self-selected Australian Internet users that Facebook users are more likely to be extroverted and narcissistic. However, they also have stronger feelings of family loneliness. They concluded that their findings validate previous research and substantiate that Facebook particularly appeals to narcissistic and exhibitionistic people. Facebook specifically gratifies the narcissistic individual’s need to engage in self-promoting and superficial behavior.

Smith, Mendez, and White (2014) developed and examined a model to explain the relationships between narcissism, concerns over privacy, vigilance, and exposure to risk on Facebook. They surveyed a sample of 286 adult users in the United States and found that increased narcissism was associated with increased risk exposure and lower vigilance on Facebook, despite greater concern for privacy and security. They concluded that not posting is inconsistent with narcissistic personalities and narcissists will be more active on Facebook than less narcissistic users.

Aspects that attracted the attention of several researchers are the way narcissists present their profiles and profile photos. Kapidzic (2013) examined what motivations that guide narcissistic individuals in selecting a prominent feature of an online profile, the profile picture. Kapidzic’s (2013) findings showed that Facebook users with higher levels of narcissism have different motivations than those with low levels of narcissism when selecting profile pictures on Facebook. Narcissistic individuals not only have a highly positive concept of themselves but also need constant external affirmation. Kapidzic’s (2013) findings imply that narcissistic individuals are highly motivated to display their positive traits on social network sites. The results also imply that narcissistic individuals strive more than others to present their online audience with the best possible image of themselves. The findings showed that narcissists select images that emphasize the attractiveness and personality of the user. The motivation to emphasize looks and personality in profile pictures might be connected to the striving for positive feedback in the form of admiring comments and “likes.” Narcissistic individuals tend to consider themselves highly attractive and might consider displaying their looks to be an easy way of gaining admiration. Furthermore, they consider themselves special and unique and seem motivated to post pictures in which their personality, lifestyle, and activities are portrayed.

Kapidzic (2013) also focused on the selection process of pictures for self-presentation. Narcissists’ main characteristics are low intimacy striving, viewing oneself as superior, and overestimation of own attractiveness. According to Kapidzic (2013), narcissists continually engage in a dynamic construction of self internally and through interpersonal interactions. It follows that narcissistic individuals are more concerned with the impressions they make and might be more highly motivated than others to garner positive feedback from their environment. Online interactions, especially on social network sites, are favorable for impression management, as they can present a selective version of the self to one’s network (Ong et al., 2011). When choosing profile pictures, narcissistic individuals may, thus, be motivated to emphasize features that will result in positive feedback and admiration (Kapidzic, 2013; Ong et al., 2011).

Ong et al. (2011) examined four Facebook profile features – profile picture, status updates, social network size, and photo count – of which the former two features present self-generated content while the latter two present system-generated content. The findings showed that even after accounting for extroversion, more narcissistic adolescents rated their Facebook profile pictures as more physically attractive, fashionable, glamorous, and “fabulous” than their less narcissistic peers. This suggests that more narcissistic adolescents select physically appealing profile photos to self-present on Facebook. This finding supports the current understanding that more narcissistic individuals are more acutely concerned about their physical appearance than less narcissistic individuals are. Furthermore, selecting self-perceived profile photos as more physically appealing is consistent with other self-regulatory strategies that more narcissistic individuals adopt to affirm the positive illusions of their physical appearances, as described in previous research.

Narcissists have more Facebook friends, wall posts, and profile pictures rated by others to be more physically attractive and self-promoting than the profile pictures of non-narcissists. In this regard, narcissists may have selected more attractive photos of themselves to affirm their inflated beliefs. An interesting study found, however, that narcissism was not related to the color features of their photos, such as color matching or variation (Kim & Kim, 2019).

One of the more important studies regarding narcissists on Facebook considered the multidimensionality of narcissism and examined the differences between the two narcissist types, grandiose and vulnerable, in their behavior on Facebook (Ozimek, Bierhoff & Hanke, 2018). A multidimensional view of the behavior of the other two dark triads on Facebook is an important research area. This study assumes that grandiose and vulnerable narcissism represent distant relatives that share some commonalities but also display distinct features. Ozimek et al. (2018) investigated the relationship between both facets of narcissism on the one hand and Facebook use on the other. Their research aimed to examine the associations of grandiose narcissism and vulnerable narcissism with social comparison orientation, and the amount of Facebook use (Ozimek et al., 2018).

Ozimek et al. (2018) examined four samples. The only requirement for participation in their studies was active use of a Facebook account. In all four studies, they used the same design and the same measures. Data were obtained online. Following the Social Online-Self-Regulation Theory, they assumed that vulnerable narcissism should be positively correlated with Facebook use after statistically controlling for grandiose narcissism. Most of the evidence was in favor of the theoretical perspective. Their findings showed that the overall index of Facebook activity was consistently related to vulnerable narcissism. They also found that grandiose narcissism did not predict Facebook activity after controlling for vulnerable narcissism. Ozimek et al. (2018) concluded that grandiose and vulnerable narcissists have similar goals, i.e., gaining admiration.

Nevertheless, they differ in their means of attaining the primary goal of narcissistic interest. Vulnerable narcissists use Facebook to attain self-regulatory goals (e.g., increasing their self-esteem, fostering positive self-presentation, and gaining the admiration of others). In contrast, grandiose narcissists (who are, in general, more socially integrated than vulnerable narcissists) do not depend heavily on social networking sites to attain their self-regulatory goals. In conclusion, Ozimek et al.’s study contributed to the working out of a theoretical framework in which vulnerable narcissism is the main predictor of the amount of Facebook activity mediated by social comparison orientation.

**Machiavellians, Psychopathy, and Facebook**.

 Little is known about Machiavellianism in online relationships (Abell & Brewer, 2014). Few studies have focused solely on psychopathic individuals and their behavior on Facebook. However, initial findings are consistent with the notion that Machiavellianism influences online behavior and that motivations for Facebook activity are self-centered rather than cooperative. Machiavellian Facebook users are more concerned with themselves than the “friends” they are interacting with on Facebook. Aggressive interactions allow Machiavellian men and women to dominate and exploit other users (Abell & Brewer, 2014).

In a sample of British university employees, Abell and Brewer (2014) found that Machiavellianism (characterized by cynicism, emotional detachment, and a willingness to manipulate others) influences online behavior. Machiavellian adults use manipulation tactics, such as making others feel ashamed, embarrassed, or guilty to navigate their offline social worlds. Protective self-monitoring may facilitate this manipulation and allow the Machiavellian individual to avoid detection and associated consequences such as loss of reputation or retaliation. The above findings demonstrate that people with high Machiavellianism also employ online self-monitoring. The use of impression management strategies on Facebook by Machiavellians may reflect a conscious effort to avoid being perceived as manipulative or exploitative. The dual nature of these friendships may increase the importance of online self-monitoring, as offline friends may detect dishonest or misleading information.

The above study also found differences between men and women. Specifically, their study shows that Machiavellian women were more dishonest in their self-promotion and were more relationally aggressive towards Facebook friends. Findings indicate that Machiavellian men engaged in more self-promotion online. Finally, Machiavellians of both sexes engaged in higher levels of self-monitoring on Facebook than those with low levels of Machiavellianism.

In a study of 477 Facebook users, Rosenberg and Egbert (2011) found that individuals who are manipulative and tend to exploit situations and people for their benefit, also known as high Machiavellians, do not show concern for secondary interaction goals and therefore are not likely to employ role-modeling tactics on Facebook. A possible explanation for this finding is that individuals scoring high in Machiavellianism tend to be assimilative and self-oriented, generally showing little concern for others and may not be interested in serving as role models. Machiavellians showed greater concern for themselves (self-oriented secondary goals when interacting with others. This is likely due to their self-oriented and manipulative streak.

As for psychopaths, the little we know from the research is that individuals with a higher level of psychopathy may use Facebook to increase their social status and monitor and manipulate social groups. Further, the Facebook statuses of these individuals appeared to lack appropriate social and verbal filters (March, 2022).

**Detecting dark personalities based on Facebook**

Two specific issues concerning Facebook and the dark triad have received particular attention. The first is the behavior of dark personalities regarding selfies. More specifically, dark personalities behave differently when taking and sharing selfies. These behaviors can assist in detecting them. The second concerns whether and how dark personalities can be identified based on the content of their posts. The assumption is that posts by individuals with dark triad traits differ from Facebook users in the norm. This distinction can provide another tool for detecting them.

**Selfies**

Recent research has documented the popularity of “selfies,” defined as pictures taken of oneself and shared on social media (March, 2022). Technological advances, including the rise of virtual social networks, the facilitation of virtual communication devices, easy internet access, free membership on networks, and the increase in smartphone use, have facilitated the phenomenon of user selfies posted online. For example, the volume of selfies between 2012 and 2013 significantly increased to 17,000%, i.e., about 93 million selfies taken by users’ smartphones daily (Soleimani Rad & Abolghasemi, 2021). This increase in selfies and postings on virtual social networks led to the introduction of selfies in the Oxford Dictionary as the International Word of the Year in 2013. According to the definition, a selfie is a photo that a person usually takes with a smartphone or webcam and shares through virtual social networks (Oxford Dictionaries, 2013).

Monacis et al. (2020) explained that “selfitis” represents an obsessive-compulsive desire to take photos and share them via social media to compensate for a lack of self-esteem and fill a gap in intimacy. Balakrishnan and Griffiths (2018) empirically showed the existence of “selfitis” as a potential behavior to add to technologically related mental health disorders. They developed a psychometric scale, the Selfitis Behavior Scale (SBS), which classified individuals into one of three categories first outlined in the hoax article (i.e., borderline, acute, and chronic). Balakrishnan and Griffiths’ starting point was the observation that even though posting selfies allows individuals to express their self-oriented actions and establish their individuality and self-importance, other psycho-social-environmental factors might generate different selfie behaviors. The Selfitis Behavior Scale comprises six sub-components:

* environmental enhancement (i.e., to feel good and show off to others in specific locations);
* social competition (i.e., to get more “likes” on social media);
* attention seeking (i.e., to gain attention from others);
* mood modification (i.e., to feel better);
* self-confidence (i.e., to feel more positive about oneself);
* subjective conformity (i.e., to fit in with one’s social group and peers).

However, it seems that some people are more inclined than others to the phenomenon of taking selfies and sharing them on social networks. Some psychological and personality factors of individuals may affect this phenomenon; also, taking selfies has a psychological effect on individuals (Soleimani Rad & Abolghasemi, 2021). Based on their review, Vander Molen et al. (2018) concluded that the self-promoting and duplicitous behaviors of individuals higher on the dark triad traits (particularly for narcissists and psychopaths) are manifested in their Facebook content. As mentioned by Vander Molen et al. (2018), based on previous research, those higher in the dark triad traits are not only frequent Facebook users but also use Facebook in ways that are consistent with the nature of the traits. For example, narcissists tend to have many Facebook “friends,” have more Facebook-based social interactions, post “selfies,” and post a large amount of information about themselves. Machiavellians engage in self-promoting behaviors (e.g., tagging themselves in photos) on Facebook. Psychopaths tend to post selfies and photographs of socially inappropriate and risky behaviors. All the above suggests that dark triad personalities invest in their selfie posts more than people who do not have these personality disorders.

It is not surprising that researchers have examined the relationship between dark triad traits and their unique behavior in posting selfies. Monacis et al. (2020) found positive narcissism-selfitis behavior association and psychopathy-selfitis behavior association in a sample of Italian students. These relationships were confirmed by the finding of a direct relationship in the total sample and partial relationship for males and females. In this study, no significant relationship was found for Machiavellians. Monacis et al. (2020) explained that narcissists and psychopaths are ego-driven. However, unlike Machiavellians, they are self-vs-others-oriented since they tend to satisfy their self-reinforcement by emotionally dealing with others and therefore depend on others. Similarly, the primary dependence is further strengthened by selfitis activity, which not only represents an apparent gratifying means of being connected with others by posting selfies on social media, but may also promote the addictive use of social media. According to Monacis et al. Machiavellians show an ego drive (i.e., the tendency to derive satisfaction from successful attempts at persuasion and an independence tendency). So for Machiavellians , Monacis et al. argue, selfies are not likely to be employed as a tactic and strategy on social media, given their strong sense of independence.

In a sample of 202 undergraduate students selected by cluster sampling from the faculties of an Iranian university, Soleimani Rad and Abolghasemi (2021) found that selfie-taking individuals have higher scores on narcissism and Machiavellianism than non-selfie-takers. These differences indicated that selfie-takers have more narcissistic and Machiavellian traits than non-selfie-takers. However, no significant difference was observed in the psychopathy trait. Therefore, it can be said that taking selfies and sharing them is closely related to narcissism and is a way to attract the attention and admiration of others, which in part satisfies the narcissistic needs of individuals as well. People who consider themselves attractive and better than others take headshots and share them on virtual social networks in an attempt to show others their attractiveness and beauty, resulting from this narcissistic image.

Regarding Machiavellianism, they believe that the ends justify the means and that speaking should be based on the person’s own will. Therefore, taking selfies and sharing them in different situations is a way to show off what they want to project and attract other people’s attention. Thus, projecting an ideal self can explain why taking selfies and sharing them is related to Machiavellianism, as demonstrated in Soleimani Rad and Abolghasemi (2021) study.

In the case of psychopaths, others’ feedback is not essential and does not gratify them. Since the feedback of others on virtual social networks is a factor in taking and sharing selfies, psychopathic people tend to be indifferent to selfies. However, on the other hand, due to their characteristic drives to humiliate and ridicule others on virtual social networks, psychopaths may tend to write negative comments about the selfies of others (Soleimani Rad & Abolghasemi, 2021).

A different view regarding psychopathy was advanced by March (2022). According to March, people with higher levels of psychopathy posted many selfies daily. They were less likely to experience negative emotions during the selfie process (i.e., posting a selfie and gaining likes and comments on a selfie). Specifically, the higher an individual’s level of psychopathy, the less likely they are to experience negative emotions in reaction to likes, comments, etc. This lack of negative affect experienced from selfie feedback is due to the callous, unemotional nature of trait psychopathy. Also, individuals with high psychopathy seek excitement combined with characteristic impulsivity and may post selfies to create excitement when bored (March, 2022).

Stuart and Kurek (2019) investigated the mediating effects of selfies and those taken to appear physically attractive (i.e., sexualized selfies) on the relationship between narcissism and cyber behaviors. They examined 262 young women from New Zealand who reported taking selfies in the study. Their findings showed that selfie behavior mediated the effects of narcissism on cyber behaviors. Narcissism was measured using a multidimensional approach: Four maladaptive sub-factors of the Pathological Narcissism Inventory were used to assess elements of a narcissistic personality. These four factors comprised two elements of grandiose narcissism: exploitativeness and grandiose fantasy, as well as two elements of vulnerable narcissism: entitlement rage and contingent self-esteem.

The authors mentioned that exploitativeness was associated with taking more selfies and self-sexualizing selfies. In turn, exploitativeness was also indirectly (via selfies) and directly associated with increased negative cyber behaviors. According to Stuart and Kurek (2019), one of the reasons for these associations may be that individuals high in exploitativeness tend to manipulate situations to profit in some way. For the young women higher in exploitativeness in their study, taking selfies may be a goal-driven activity utilized to exploit the conditions of the digital environment, garnering attention as their desired outcome.

However, because they relied on the evaluations of others, individuals with higher levels of grandiose narcissism may be at risk of both acting out and experiencing diminishing self-worth when they do not receive the approval or attention from others they desire. Therefore, while young women high on exploitativeness may be self-sexualizing to elicit a response from their networks to increase feelings of empowerment and self-worth, they may inadvertently put themselves at greater risk of peer rejection and social isolation. In addition, because young women who post provocative images are subject to a double standard, where the broader peer groups often disparage overt sexualization, these young women may become the target of online aggression. (Stuart & Kurek, 2019).

Alongside the results supporting the relationship between grandiose narcissism and selfie behavior, their results also found a positive association between contingent self-esteem (a component of vulnerable narcissism) and sexualized selfies. The authors contended that, compared to those high in grandiose narcissism, individuals high in vulnerable narcissism often rely on covert forms of self-enhancement to mitigate feelings of inadequacy and inferiority. The study found that contingent self-esteem was not significantly associated with taking selfies, but it was associated with taking sexualized selfies. These results suggest that young women who believe their self-worth is conditional on the approval of others may be more likely to engage in self-sexualization and, in turn, be more likely to be victimized. This potentially indicates that young women who base their self-worth on the opinions of others believe portrayals of desirability are a means of achieving such approval. However, they may fail to assess the risks of this behavior (Stuart & Kurek, 2019).

**Facebook content**

One of the interesting aspects of Facebook, Instagram, Twitter, and other social media is that their content enables the detection of dark personalities. The idea that one can gain insight into an individual’s psychological characteristics and functioning by studying how this person uses language has been around for some time (Bogolyubova et al., 2018; Marengo & Settanni, 2023). According to this idea, there should be a relationship between linguistic expressions and dark personality traits. More specifically, the content available on such networks can be acquired and analyzed to identify individuals with dark triad traits behavior.

To exemplify this contention, according to Bogolyubova et al. (2018), narcissistic individuals who use language on social network sites have unique features that can be attributed only to them. More specifically, narcissism is associated with a propensity for I-talk (frequent use of personal pronouns). In addition, individuals scoring high on psychopathy and Machiavellianism used more swear words, more verbal makers of anger, and fewer first-person plurals and positive emotion words (Sumner, Byers, Boochever, & Park, 2012).

Several scholars have tried to examine this theory. Bogolyubova et al. (2018) analyzed Russian Facebook users’ language to identify instances of dark personality traits employed in their online communication. The most notable observation from their data was that Machiavellianism is associated with posting fewer and shorter posts. In addition, there were no positive correlations between this dark trait with morphological, lexical, and semantic features. One interpretation is that the Machiavellian propensity for manipulating others and controlling one’s public image leads social network site users with this trait to disclose less about themselves and maintain a careful façade in online communication. Unlike Machiavellian subjects, individuals with a high narcissism were more likely to write longer posts and employ longer sentences. This is consistent with theoretical models of narcissism that highlight tendencies to exhibit oneself and attract attention. Highly narcissistic individuals were characterized by employing semantic clusters revolving around social interaction, self-image, status, and reflections on one’s mental processes. The results of their study do not support the existence of a relationship between first-person singular pronoun use and narcissism.

Finally, for individuals scoring high in psychopathy, two semantic features primarily characterized their language use. They often referred to basic needs and satisfaction or politics and authority-related issues in their posts. Focus on political terms was also evident at the level of lexemes used by these study participants (Bogolyubova et al., 2018). Some of the findings of this study are specific to Russian culture, and there is a need to replicate them in other countries and cultures.

Vander Molen et al. (2018) investigated the extent to which active Facebook users could make accurate judgments about dark triad traits in the posts of other users. They tested whether unacquainted observers can accurately interpret these dark expressions from the content of dark individuals’ Facebook profiles. In their experiment design, 145 undergraduate students in 34 groups provided dark triad self-ratings and rated their group members on these traits based on Facebook profiles. Their results revealed that observer accuracy is low to moderate for narcissism but nonexistent for psychopathy and Machiavellianism.

Yuan, Hong, and Wu (2020) also examined how the language features linked to power on Facebook can predict whether a user belongs to a dark triad personality. In their study, participants were asked to allow the researchers to access their Facebook, particularly their Facebook posts. A program called Linguistic Analysis and Word Count (LIWC-22), which calculates the percentage of words in each text that fall into one or more of over 80 linguistic, psychological, and topical categories indicating various social, cognitive, and affective processes, was used to analyze the content of the posts and compare it to the participants’ self-reported personality variables, attitudes, or demographic information. Their study analyzed 2,497 posts, which consisted of a total of 10,364 words. Based on their findings, they concluded that language features on Facebook reflecting an individual’s need for power are predictive of dark triad traits. Specifically, language features such as I-words, negative emotion, and clout are positively related to Machiavellianism. Those who use the first-person pronoun to express themselves online tend to have high Machiavellianism. Language features such as analytic, I-words, and social words were indirectly associated with the need for power via narcissism. They found that psychopathy was positively related to authenticity. In addition, analytic language was negatively related to psychopathy. Their findings showed that individuals with high psychopathy tend to use less formal or logical language and focus on their here-and-now and personal experiences.

Hancock, Woodworth, and Boochever (2018) examined 110 undergraduate students (85 females) at a large US research university. Their study focused on detecting psychopaths based on the content of their posts across three types of online communication (email, Facebook, and SMS text messaging). Their findings showed that in online communication, participants higher in psychopathy referred less often to their conversation partner, used more psychological distancing, produced less comprehensible text, and used more interpersonally hostile language, such as anger and swear words. However, participants higher in psychopathy did not focus more on basic needs or less on higher-level needs in online communication. In contrast, a positive relationship between basic needs and psychopathy scores was observed in the elicited narratives, one of the few instances where associations emerged in the narratives but not in online communication. For instance, narratives are more likely to explain why a person acted (e.g., “At the birthday party, I just wanted to eat the cake because I was starving”). Finally, psychopathy scores were not correlated with conjunctions, suggesting that participants higher in psychopathy did not use more cause-and-effect statements.

According to Hancock et al. (2018), speech difficulties, such as lack of cohesion or increased speech disfluencies, are also apparent in text-based online communication contexts with reduced readability. Evidence of increased anger and swearing in online communication is consistent with psychopaths’ proclivity for interpersonal manipulation and the poor behavioral controls associated with callous affect, specifically for anger. For example, one participant wrote in an email: “I do not wish to talk to you anymore about anything ever again. I am glad that this is over because talking to you is like sticking a spoon in my ass”. The same participant had the following Facebook status updates: “Dead,” “Bored,” “Tired,” “Fighting with her again,” and “Hate everyone” According to Hancock et al. (2018), psychopaths are known for their impulsivity. Their increased usage of swear words and anger words could indicate their reduced ability to control the type of language they produce (e.g., adverse) in natural discourse.

Hancock et al. (2018) concluded that discourse patterns of participants higher in psychopathy showed evidence of narcissism, and psychological distancing, produced less comprehensible text, and used more words indicative of an interpersonally hostile style, including more anger and swear words. These results were more pronounced in online discourse than in elicited narrative discourse, suggesting that real-world discourse is more revealing of psychopathic tendencies. There may be features unique to online communication that afford a better opportunity to spot these linguistic traces of psychopathy or online interactions that are more likely to trigger or prompt these differences. Regardless, according to Hancock et al. (2018), their results reinforce the theory that individual personality characteristics, such as psychopathic tendencies, can be reflected in discourse patterns found in online communication.

An interesting trend in studies for detecting dark triad personalities is using automated approaches to studying language, starting from the assumption that linguistic content and style differ between individuals. Measurements are based on word count. These studies attempt to detect dark personalities using their pattern of activities by applying computational models for dark triad personalities covering machine learning and deep learning-based techniques. The aim is to develop an automated method to filter dark triad personalities from non-dark triad personalities using textual content on social media sites. Many researchers adopting this approach have used LIWC-22 that, as mentioned above, reports the number (proportion) of words found in a document related to each category (Ahmad et al., 2020; Asghar et al., 2021; van der Vegt, Kleinberg & Gill, 2022).

Van der Vegt et al. (2022) recruited 800 participants through Prolific Academic’s online crowdsourcing platform. Only adult UK citizens with English as their first language were eligible. The participants produced a unique data set of 789 abusive messages directed at politicians. Their study examines statistical relationships between the demographics of text authors and (abusive) language, then uses a machine learning approach to predict personality, age, and gender based on language in the texts. Results showed that (a) personality traits, including the dark triad, could be determined within 10% of their actual value. The authors concluded that even though they found statistically significant relationships between language use and demographics, prediction performance was poor compared to previous author profiling research. Therefore, they suggest that further research is needed before author profiling systems can be of significant value within the context of abusive language and threat assessment.

Hassanein et al. (2021) propose a prediction method for the dark triad traits by analyzing personality characteristics identified as personal values and needs that can be extracted from users’ text on social media. More specifically, personal values were based on using the personality characteristics inference like the “Big Five,” and the values features are based on Schwartz’s personal values theory. The proposed features are employed, singly and in combination, with various machine learning techniques for predicting the triad classes. A labeled dataset from Twitter for 863 users was used. The experimental study indicated that the proposed personality characteristics of values and needs features can classify the dark triad traits with an accuracy of up to 70%, surpassing existing related work that employs traditional textual features. Furthermore, their findings showed that personal values have the highest accuracy for the dark triad prediction, with an average accuracy of 67.3%. Furthermore, the features were the best predictors of Machiavellianism and Narcissism traits.

Asghar et al. (2021) used a deep neural network model called Bi-LSTM. They acquired the required dataset from social media sites like Facebook and Twitter. For example, they used the hashtag “#psychopath” to crawl the tweets they needed using a Python-based library, namely, Tweepy. To annotate each review text/tweet in the acquired dataset into psychopath and non-psychopath classes, they performed manual annotation by assigning the task to three human annotators (psychiatrists), each of them assigned a class label: “psychopath” or “non-psychopath. “In this way, they received three votes for each tweet. The class label is selected based on the majority voting scheme, i.e., a tweet having two votes for “psychopath” and one for “non-psychopath” is tagged as “psychopath.” The required dataset contains 601 user input text samples. The proposed Bi-LSTM model, when applied to the labeled dataset, yielded the best performance results in terms of precision (85%), recall (85%), score (86%), and accuracy (85%) (Asghar et al., 2021).

Ahmad et al. (2020) also applied a deep neural network, Bi-LSTM, for dark triad prediction. The dataset was collected from social media sites such as Twitter and Facebook. The Tweepy library based on python was used to extract the relevant tweets using the hashtag “#dark-triad (psychopath. They found that the proposed method produced improved results (AUC=0.82) concerning the benchmark work. Ahmad et al. (2020) concluded by saying that the study had certain drawbacks, including limited dataset size, using only one dataset, and usage of a single deep neural network model.

Similarly, Alotaibi, Asghar, and Ahmad (2021) tried detecting psychopathic classes from Twitter users with a hybrid deep-learning model.Their study aimed to build an automated method to classify the available textual content on social network sites into psychopaths and non-psychopaths.In their study, a deep learning model called CNN-LSTM was applied to classify input text into psychopath or non-psychopath categories. The proposed system performed the following tasks: (i) dataset collection, (ii) data processing, (iii) formation of the feature vector, (iv) feature extraction with CNN, (v) preservation of sequential information with LSTM, and (vi) prediction.

The required data were collected from social media sites using the hashtag psychopath (#psychopath) by applying a Python-based library, namely, Tweepy. The collected dataset was transformed into an Excel file. Psychiatrists were asked to manually label the dataset by assigning a class label, i.e., “psychopath” or “non-psychopath,” to each tweet. As a result, three votes were obtained for each tweet. Using the majority voting scheme, a tweet with the maximum number of votes was assigned a particular label. For example, a tweet having two votes for “psychopath” and one vote for “non-psychopath” was tagged under the “psychopath” class.

In the proposed CNN-LSTM model, a CNN was combined with LSTM neural network since, in recent years, both models have shown great success and are considered integral components of deep learning models. Meanwhile, the LSTM was utilized to handle the issue of limited contextual information by learning the contextual information to detect psychopathic behavior from online texts. The performance of the proposed model was evaluated with state-of-the-art methods, and the experimental results showed that the proposed model outperformed the other methods in terms of its accuracy (91.67%), precision (0.93), recall (0.92), and F-measure (0.91).

Gunasekara and Gunasekara (2019) contended that considering the related work, most of the research has been done on predicting psychopaths using text on social media performed well in general clustering but that the researchers overall had poor accuracy when classifying individuals (Marengo & Settanni, 2023). According to them, studies have proven the importance of the factor structure of the psychopath checklist. Furthermore, they concluded that factorial classification in psychopaths makes it possible to sub-categorize identified psychopaths into further groups. This allows us to identify what kind of psychopaths we are dealing with and study them from a clear perspective. Developing an accurate model for classifying individuals as psychopaths and dividing psychopaths into clusters according to factor structure will help address this gap in the research by identifying psychopaths and factorial classification using social media. This argument of Gunasekara and Gunasekara (2019) might also be relevant to the two other dark personalities, Machiavellians, and Psychopaths.