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Abstract: This experiment examined the influence of Dark Personalities in trolling behaviour towards popular and less popular Facebook profiles. One-hundred and thirty-five participants were recruited to view two fake Facebook profiles and rated on how much they would agree with some trolling comments to each profile, as well as how they perceived themselves in comparison to each profile in terms of social acceptance and rank. In addition, participants completed the short dark personality questionnaire. Results suggested Psychopathy was positively associated with trolling behaviours while Narcissism was associated with a tendency to see oneself superior to others. Moreover, the higher the Psychopathy score the more likely the participants would troll the popular profile. On the other hand, the higher the Narcissism score, the more likely participants perceive themselves more superior than the popular profile. These analyses revealed the different influence dark personality traits play on different behavioural tendencies. The discussion on the dynamics among the dark personalities in relationship with online behaviours and the implication of the study were also included.

Dear Editor,

Re: Manuscript submission: Who do you troll and why: an investigation into the relationship between the dark triad personalities and online trolling behaviours towards popular and less popular Facebook profiles

Our article will make an important contribution to the Journal of Computers in Human Behaviour and will advance the research and literature on a recent topic, examining the role of the dark personality triad in predicting online trolling behaviour. This study was novel at examining which kind of people the dark personality triad is more likely to troll. In the past, research only focused on what the different personalities of the dark triad do in their own Facebook accounts and failed to explore or research into what kind of people that they are more likely to target. This study thus showed novel results revealing that Psychopathy contrary to what has been mostly observed in the literature, is associated with trolling but more so of people that are not necessarily vulnerable, which raises the question of what kind of people Psychopaths tend to bully. This study found in a novel design that Psychopathy is associated with trolling more of popular individuals that are appetizing in some ways (physically attractive, etc.) than the less popular, weaker individuals. On the other hand Narcissism is not associated with trolling as previously observed in the literature, but with downward social comparisons particularly to popular individuals. This suggests that the Narcissist and Psychopathy constructs are showing different behaviours and may have different motivations when interacting with popular vs less popular individuals online.

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Conflict of interest – The authors state that there are no conflicts of interest associated with this paper. We confirm that this manuscript is not under review elsewhere, involves no conflict of interest, involves data that were collected ethically and involves no prior or duplicate publication. We confirm that the manuscript has been read and approved by all authors.

Yours sincerely,

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Highlights

1. Perceived popularity may attract attention and bullying in social media websites.
2. The Dark personalities predict different behaviours towards popular vs less popular Facebook profiles.
3. Psychopathy is associated with trolling behaviour and more so of popular Facebook profiles.
4. Narcissism is associated with downward social comparison and more so to popular Facebook profiles.

Who do you troll and why: an investigation into the relationship between the dark triad personalities and online trolling behaviours towards popular and less popular Facebook profiles

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Abstract

This experiment examined the influence of Dark Personalities in trolling behaviour towards popular and less popular Facebook profiles. One-hundred and thirty-five participants were recruited to view two fake Facebook profiles and rated on how much they would agree with some trolling comments to each profile, as well as how they perceived themselves in comparison to each profile in terms of social acceptance and rank. In addition, participants completed the short dark personality questionnaire. Results suggested Psychopathy was positively associated with trolling behaviours while Narcissism was associated with a tendency to see oneself superior to others. Moreover, the higher the Psychopathy score the more likely the participants would troll the popular profile. On the other hand, the higher the Narcissism score, the more likely participants perceive themselves more superior than the popular profile. These analyses revealed the different influence dark personality traits play on different behavioural tendencies. The discussion on the dynamics among the dark personalities in relationship with online behaviours and the implication of the study were also included.

Keywords: Dark Personality Triad; Trolling; Social Comparison; Popular and Less Popular Facebook Profiles

1. Introduction

An increasingly popular strand of research has examined how the Dark Personality Triad influences online behaviour such as trolling that is defined as “the practice of behaving in a deceptive, destructive, or disruptive manner in a social setting on the internet with no apparent instrumental purpose” (Buckels, Trapnell & Paulhus, 2014, p.97). Researchers tried to examine the relationship between Dark Personality Triad traits and trolling in an attempt to predict and prevent trolling behaviour (Buckels *et al.*, 2014). The Dark Personality Triad is characterised by socially offensive but not pathological traits, with Psychopathy being the most malicious of the three, showing callousness, impulsiveness, thrill seeking and remorseless behaviour (Jones & Paulhus, 2011). Machiavellians are also manipulators but less malicious than Psychopaths (Jones & Paulhus, 2014). Narcissists on the other hand, tend to show ideas of grandiosity and preoccupation with their own self advancement and with gaining the admiration and attention from others (Campbell & Miller, 2011).

1.1. The Dark Personalities' difference in motivation and associated behaviours

Interestingly, recent research by Buckels *et al.* (2014) has shown that although Psychopathy, Machiavellism and Narcissism are overlapping constructs that share commonalities (Paulhus, 2014) such as lack of empathy and callousness; these Dark Triad personalities also display different behaviours online. It seems that Psychopaths and Machiavellians have a tendency to display anti-social behaviour including trolling and acting against the law for example engaging in internet hacking (Buckels, Jones & Paulhus, 2013) however, this was not found to be the case amongst the Narcissistic sample (Buckels *et al.*, 2014). Narcissism in contrast was found to be negatively related to trolling (Buckels *et al.*, 2014). Overall, research thus seems to suggest that the three Dark Triad personalities have different motivations and beliefs that may have an impact on the behaviour they display.

Under a cognitive-behavioural framework, beliefs and associated cognitions are part of self and other schemas that act as “lenses” through which information is perceived and appraised thus determining behaviour, which in turn will help to maintain the beliefs (Ellis, 1985). On one hand, Psychopathy is characterised by inherent beliefs that others’ are to be manipulated and hurt for their own benefit and an underlying sadistic motivation to cause harm to others (both psychological and physical) that ultimately will give pleasure to Psychopaths. This sadistic streak motivates Psychopaths to bully and prey on people that catches their attention so that they can use for their own benefit and self advancement, *e.g.* bullying and blackmailing popular individuals for social connections and social gains. The behaviour of bullying will therefore maintain their sadistic beliefs and motivation by providing them with feelings of pleasure derived from provoking harm to people that are important and socially salient and attractive (Holtzman & Strube, 2013). Moreover, although Psychopaths may be motivated to bully weaker and vulnerable victims (see Hare, 1999), they are also aware that they can obtain more from weaker, lower status victims by showing false sympathy and modesty, thus gaining their trust (Hare, 2006). This is because vulnerable victims usually have lower self esteem and self confidence, are more gullible and are more willing to trust (which makes them easier to be manipulated) than mentally strong victims (Hodges & Perry, 1999). Thus bullying vulnerable and less popular individuals does not give as much sadistic pleasure to Psychopaths as bullying popular people. This is simply because bullying vulnerable low status individuals does not pose necessarily a challenge to Psychopaths; it is too easy to do so and does not necessarily bring any benefit or pleasure to Psychopaths.

In contrast to Psychopaths, Narcissists display a self serving schema composed of strong beliefs about their own distorted sense of self importance and grandiosity hence their underlying motivation is not necessarily to cause harm to others but to socially compare themselves favourably to other perceived important people, as this will help them to maintain their inflated views of their own self, thus protecting their self esteem (Campbell & Miller, 2011). Like Narcissists, Machiavellians have also been characterised with self-interest in which they will manipulate,

deceive and exploit others in order to achieve their goals (Jakobwitz & Egan, 2006). As can be seen by previous literature, positive inter-correlations between Machiavellianism and Narcissism have been detected (Jones & Paulhus, 2014) and Narcissists and Machiavellians are seen to be similar in regards to manipulating and exploiting others in order to promote their self-advancement and success. This suggests that Narcissists and Machiavellians may be only motivated to bully when this leads to personal gains and self advancement, whereas Psychopaths seem to bully not only to self advance but also simply because they get kicks out of harming other people just for the fun of it.

Further research on the dark personality triad's behaviour online has examined how the dark personalities use social media. For example, research that has utilised social media websites has suggested that Narcissists are more frequent users of Facebook (Ljepava, Orr, Locke & Ross, 2013). Carpenter (2012) conducted a study on students and identified a clear link between the number of Facebook friends and people who score highly on the Narcissistic Personality Inventory questionnaire. 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 made about them and change their profile pictures more often. Furthermore, Marshall, Lefringhausen and Ferenczi (2015) researched personality predictors of Facebook status update topics. They found that extroverts update more frequently about their social activities and Narcissists update more frequently about their achievements, diet and exercise.

In conclusion, research seems to suggest that trolls are displaying Psychopathic tendencies whereas Narcissists use social media websites to promote themselves and that social status and social comparison may be important variables to examine when exploring trolling behaviour of the Dark Personality Triad.

Moreover, Nevin (2015) has found that internet users actually display higher levels of the Dark Triad trait Psychopathy online rather than offline, which was particularly prominent in males. The researcher had participants score on personality measures and then rate the acceptability and likelihood of engaging in both online and offline misconduct behaviours provided in the form of

vignettes. The researcher suggested that the internet facilitates increased expression of Psychopathic personality traits and one explanation for this is that of the online disinhibition effect, the view that anonymity online may contribute to more deviant behaviour (Suler, 2004).

The current study proposes to investigate a new and interesting direction: whether the Dark Triad personalities show different online behaviours towards people of different social status. Previous literature has supported that Psychopaths choose target victims carefully (Hare, 2006), and Narcissists behave in a showier fashion under particular circumstances (Campbell & Miller, 2011; Wallace and Baumeister, 2002) but these lines of study have not been extended to online behaviour yet. Thus, the main purpose of this study will be to examine how the different Dark Triad personalities behave towards popular vs less popular Facebook profiles.

1.2. The Dark Personalities behave differently towards people of different popularity

Previous research has emphasised the importance of striving for self-enhancement as a central characteristic of Narcissism (Campbell & Miller, 2011). Narcissism is linked with the materialistic pursuit of wealth and Narcissistic displays of self-enhancement have taken the form of many behaviours including the need to display a superior status (Rose, 2007) alongside promoting a certain public image that consists of expensive clothing (Vazire, Naumann, Rentfrow & Gosling 2008). Narcissists focus on enforcing traits such as dominance and competitiveness as a means to self-enhance (Wallace, 2011) and strive in domains that offer power and status (Rose & Campbell, 2004).

Since Narcissists seem to show a self grandiose schema and consequently social status and comparison are important because these help to maintain their self enhancing beliefs (Rose & Campbell, 2004), this study manipulated the social status of the Facebook profiles in an attempt to explore how Narcissists behave online towards people of different perceived popularity. The current study thus devised two Facebook profiles based on the social-evolutionary definition of popularity as being the perceived higher social rank and status that is characterised by symbols of power,

acceptance and availability of resources *e.g.* wealth (Gilbert, 2001). On the other hand, less popular individuals are usually perceived as possessing lower social rank and acceptance, vulnerability, less socially attractive qualities *e.g.* lower physical attractiveness, and social weaknesses such as awkward behaviour, low self-esteem, clinginess, low assertiveness and socially inept behaviour (Gilbert, 2001). This manipulation was devised because social hierarchies are important to Narcissists that they feel they have to compare and to compete with others for resources and sources of self-esteem and self-worth (Campbell & Miller, 2011). Further to this, Festinger's (1954) Social Comparison Theory may shed some light into why it is expected that Narcissistic individuals may behave differently online towards popular and less popular people. He argued that individuals determine their own social and personal worth based on how they continually evaluate their own abilities in comparison to others, success and popularity are part of these domains. Therefore, it is important to explore whether Narcissists that have a tendency to see themselves as more accepted and of a higher rank and status than others will behave differently towards a popular individual compared to a less popular individual. It may be that Narcissists will respond more negatively and compare themselves more favourably to the popular individuals because they see them as a threat to their own popularity and self-advancement. On the other hand, they may try to befriend the individual to help with their self-advancement.

Machiavellians similarly to Narcissists, have also been characterised with self-interest in which they will manipulate, deceive and exploit others in order to achieve their goals (Jakobwitz & Egan, 2006). Therefore, with these two Dark Triad traits being characterised by a streak of competitiveness, the current study intend to explore if the status of an individual, whether they are deemed as a threat to one's self-advancement will influence or encourage the likelihood to behave negatively towards that individual and subsequently troll that individual on Facebook. To our awareness no research has explored this topic up until now.

Unlike Narcissists that are preoccupied with self enhancing social comparison, Psychopaths on the other hand have been identified as self-destructive (Fite *et al.*, 2010), characterised by high

impulsivity (Hare, 1999) and lack the ability to hold back antisocial impulses (Foster & Trimm, 2008). Therefore, having negative consequences not only on themselves but also on others (Fite *et al.*, 2010). Psychopaths out of the three dark personalities are the ones that appear to have very little or no conscience (Hare, 2006). The absence of this inhibitory mechanism, restricting most others from acting on antisocial thoughts, allows Psychopaths to engage in a wide range of antisocial behaviour and criminal acts that often are violent in nature (Hare, 2006; Jones & Miller, 2012). Psychopathy is the most aggressive and overtly criminal of the subcomponents of the Dark Triad; they are often hostile and aggressive, and have few qualms about exploiting others for their own benefit (Seibert, Miller, Few, Zeichner, & Lynam, 2011). This predilection for crime and the inability to feel guilt for their actions or empathy for their victims may enable Psychopaths to be skilled and experienced manipulators who are easily able to take advantage of others to benefit themselves.

The literature has shown that those that score highly on the Psychopathic personality trait tend to victimise those with a general demeanour of vulnerability and have been found to brutally detect and exploit their victims' weak spots (Hare, 1999). The characteristics that often are associated with vulnerability to victimization include high depression and anxiety, low self-esteem, gullibility, naiveté, a willingness to trust others, a sense of inadequacy, and low assertiveness (D'Esposito, Blake, & Riccio, 2011; Hawker & Boulton, 2000; Hodges, Boivin, Vitaro, & Bukowski, 1999; Ladd & Kochenderfer Ladd, 2002; Richards *et al.*, 1991; Rubin & Copeland, 2004). Less popular individuals may be therefore chosen as targets because they tend to be perceived as possessing low self-esteem and as being socially inadequate, *e.g.* too clingy and awkward (Hodges & Perry, 1999). Although Psychopaths may be inclined to prey on perceived vulnerable victims, there is literature to suggest that Psychopaths may also prey on people that catch their attention for other reasons. For example, the small amount of research on this topic has shown that Psychopaths may be attracted to physically attractive and or extroverted individuals that catch their attention in a different way (Holtzman & Strube, 2013). Psychopaths can therefore be attracted to individuals that are

“appetising” and socially salient either because they are physically attractive or because they seem to show signs of wealth or social status *e.g.* high quality adornments (expensive clothes, car, etc.). The Psychopaths' curiosity for these individuals is aligned with the Psychopaths' tendency to exploit people for their own benefit (see Holtzman & Strube, 2013) so for example, using popular people to enhance social connections and also with their sadistic tendency to undermine and bully people that are socially salient and popular just for fun (Buckels *et al.*, 2014).

1.3. Hypotheses

In conclusion, literature on Psychopathy has found that in offline contexts Psychopaths tend to prey on individuals that possess vulnerable personality traits (see Hare, 2006) and that Psychopathy in online contexts is associated with trolling (Nevin, 2015). However, there is research that seems to suggest that Psychopaths may bully individuals that possess physically attractive traits and other positive qualities that catch their attention (Holtzman & Strube, 2013). To address this gap in the literature we hypothesised that Psychopathy would be associated with trolling and more significantly so to the popular Facebook profile. Moreover, since the literature is telling us that Narcissism is characterised by a need to uphold grandiose views of oneself and to self-advance (Campbell & Miller, 2001) and that Narcissism is not associated with trolling (Buckels *et al.*, 2014) we hypothesised that Narcissism would be associated with downward social comparisons and more significantly so to the popular Facebook profile. In other words, Narcissism is expected to be associated with superiority in comparison to popular individuals.

2. Method

2.1. Participants and Procedure

One hundred and thirty-five participants completed this study, among which there were 22 males and 113 females, with a mean age of 20.45 years ($SD = 3.55$). The inclusion criteria of the study

included being 18 years or above and a Facebook user. Participants were students at De Montfort University in the UK.

Participants followed a webpage link that directed them to the Qualtrics study. They were first provided with the Information Sheet, and if they agreed to participate in the study they would click the START button, which led them to the socio-demographic questions. The information participants provided about their gender lead them to the same-sex fake Facebook profiles. All participants experienced the same procedure. They first completed the SD3 questionnaire, and then they were exposed to the two Facebook profiles: popular and less popular that were presented in a randomised order. They then completed the social comparison scale comparing themselves to the user and finally answered the trolling comment agreement scale for the different statuses of the Facebook profile they were exposed to. On completion, participants were provided with the debrief form and were thanked for their participation. The study took approximately 20-30 minutes to complete.

The British Psychology Society (BPS) ethics code for internet mediated research was adhered to, and the study was approved by the ethics committee in School of Health and Life Sciences of De Montfort University.

2.2. Instruments

2.2.1. The Short Dark Triad Personality Questionnaire (SD3) (Johns & Paulhus, 2014)

SD3 was administered to assess the Dark Triad traits: Machiavellianism, Narcissism, and sub-clinical Psychopathy. There were 27 items, with 9 items assessing each sub-scale of the trait. One example for Machiavellianism was “it’s not wise to tell your secrets”, for Narcissism “people see me as a natural leader”, and for Psychopathy “I’ll say anything to get what I want”. Responses were rated on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). The average score of the 9 items per Dark Triad trait was calculated for each individual. Composite scores range from 1 to 5 on each Dark Triad trait with a higher score indicating a higher level of possessing that

particular trait. The Cronbach's alphas were 0.71 for Machiavellianism, 0.78 for Narcissism, and 0.70 for Psychopathy.

2.2.2. *The Fake Facebook Profiles*

A pilot study composed of 20 students from De Montfort University in the UK was conducted in order to gather information from current students on what they would expect to find on a 'popular' student's Facebook profile compared to a less "popular" student's Facebook profile. The findings shaped the construction of the fake Facebook profiles. The popular students' Facebook profiles were made up of statuses that reflected an extroverted, outgoing personality with the individual having many visible friends; whereas the less popular students' Facebook profiles were made up of statuses that suggested low self-esteem, evidence of online gaming activity and romantic relationships alongside attention seeking by expressing about their misfortune. Empirical research has supported the pilot findings by lending support to the types of personalities and predictors of Facebook update status topics. Marshall *et al.* (2015) found that extroverts post about their social activities and everyday life with Facebook use being motivated by the need to communicate and connect with others online; while those with low self-esteem update statuses in regards to romantic partners due to being fearful of losing their partner alongside using Facebook as a means for self-expression.

In addition, male and female Facebook profiles were created for both popular and less popular students in order to administer same-sex profiles to participants. Previous research found that Facebook users do not prefer to look at pages of people of the same sex more than the opposite sex, however, females are more likely to do this than males (McAndrew & Jeong, 2012). In addition, the same study (McAndrew & Jeong, 2012) revealed that males not in a relationship spend less time looking at the pages of same-sex others than males in a relationship, but relationship status has no effect on females in doing so. Therefore, to avoid the complication of sex-related effects, in this

study, males were viewing two fake male profiles and females were viewing two fake female profiles, one being popular and the other less popular in both genders.

The order of the presentation of both popular and less popular Facebook profiles was randomised to avoid carry over effects.

2.2.3. Social Comparison Scale (Allan & Gilbert, 1995)

Participants were asked to compare themselves to the individuals of a particular Facebook profile (popular and less popular) using Allan and Gillbert's (1995) Social Comparison Scale. This scale measures self-perceived social rank and relative social standing on 11 bipolar constructs (e.g. superior vs. inferior, unattractive vs. more attractive), rated on a 10-point scale. A social comparison score is computed by averaging the scores of the 11 items. Scores range from 1-10, with a higher score indicating viewing themselves as more superior to the person of the Facebook profile. On the other hand, lower scores indicate feelings of inferiority and general low rank of self-perception. The Cronbach's alphas for the current study were 0.93 for the popular profile, and 0.87 for the less popular profile.

2.2.4. Measure of Trolling: Scale of Agreement to Trolling Comments towards the Facebook Profiles

The measure of trolling in this study was an indirect measure similar to other measures that also have been adopted in previous research (Nevin, 2015). The measure asked participants firstly to read comments to two statuses provided for each Facebook profile Status 1 for both the popular and less popular Facebook profiles of males and females concerning educational attainment. The popular students' Facebook profiles contained a status surrounding achieving a high grade. On the other hand, the less popular students' Facebook profile contained a status in regards to their disappointment in not attaining a higher grade. Status 2 was in regards to personal life. The popular students' Facebook profiles contained a status in regards to owning a flashy new car as a symbol of wealth. On the contrary, the less popular students' Facebook profile contained a status in which they

are complaining about having a cold. All of these statuses could be viewed from both sides and evoke either friendly and or negative reactions from the participants to the individual.

On each status, participants were able to see some comments that had been posted by other users, among which there were two trolling comments (*e.g.* “No matter how hard you try, you’ll never get a good grade coz you’re an idiot!” to the less popular profile; and “Which lecturer did you sleep with to get that grade?” to the popular profile). Trolling comments were based on responses provided by students in the pilot study. We asked them for examples of trolling comments that they thought could have been provided to the two different statuses of the popular and less popular Facebook profiles. The most common trolling comments were selected and these were rated by two independent reviewers that independently both agreed as being the best examples of trolling comments to each status (*Kappa* .90). Raters also agreed that in spite of the trolling comments being two different statements specific to each Facebook profile, they were equivalent in terms of content and meaning.

Participants were then asked to respond with how much they agreed with the 6 comments on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Overall, there were four trolling scores to each fake Facebook profile (two per status) and a composite score was calculated by averaging participants’ ratings of agreement to the trolling comments. The composite score ranged from 1-5, and a higher score indicated a higher tendency to agree with trolling comments to the fake Facebook profiles. The Cronbach’s alpha was 0.70 for the agreement to trolling comments for the popular profile, and the Cronbach’s alpha was 0.68 for the less popular profile. This suggests a reasonable level of consistency since there were only four items of trolling.

3. Results

3.1. Manipulation checks

3.1.1. Liking of the Facebook profiles

After participants viewed each Facebook profile, they were asked to rate on how much they liked the person presented by the profile on a 1-5 Likert scale from “not at all” to “a lot”. A Pair-wise T-test revealed that participants liked the popular profile ($M = 2.89, SD = 0.94$) more than the less popular profile ($M = 2.39, SD = 0.96$), $t(134) = 4.57, p < .001$.

3.1.2. Perceived Social rank and acceptance of the Facebook profiles

A pairwise t test was conducted to examine the differences in the perceived social rank and acceptance of the two Facebook profiles. Results showed that participants rated the less popular profile significantly lower than the popular profile on the Social Comparison Scale, $t(134) = 5.18, p < .001$, meaning that participants viewed the less popular profile as possessing lower social standing compared to the popular profile.

These results thus suggest that the manipulation was successful since the designed popular profile was not only significantly more popular, but also was considered to be of a higher social rank and more socially accepted than the less popular profile.

3.2. Descriptive Statistics

The descriptive statistics were tabulated in Table 1. The mean scores of the Dark Personality traits were comparable to the published norms by Paulhus and Jones (2011) in which study they validated the SD3.

-----Please Insert table 1 around here-----

3.3. Inferential Statistics

3.3.1. Hypothesis 1

A multivariate regression analysis was conducted to test hypothesis 1 with trolling scores towards the popular and less popular profiles as multiple DVs, and scores of the dark personality traits as IVs to investigate whether the dark personality traits would affect participants' trolling to the popular and less popular profiles differently. Results showed that dark personality traits had an overall significant influence on one's trolling scores to both popular and less popular profiles, $F(3, 131) = 5.67, p < .001$. In addition, Machiavellianism and Psychopathy affected people's ratings towards popular and less popular profiles differently, with $F(2, 130) = 3.90, p = .023$, and $F(2, 130) = 14.40, p < .001$, respectively. Two follow up linear regression analyses were conducted, with the trolling scores to popular and less popular profile as DV, and the scores of the dark personality traits as IVs for each regression equation. Overall model fitting results and coefficients of the two regression analyses were summarised in Table 2. As indicated in Table 2, the coefficient of Psychopathy towards the popular profile was 0.55 ($t(131) = 5.38, p < .001$), which was statistically significantly higher than towards the less popular profile with the coefficient being 0.29 ($t(131) = 2.67, p = .008$), suggesting that people with a higher score on Psychopathy trait would agree more with the trolling comments towards the popular profile than the less popular profile. It is worth noting that Psychopathy was positively associated with trolling scores towards both popular and less popular profiles, but the association was stronger to the popular profile.

-----Please Insert Table 2 around here-----

3.3.2. Hypothesis 2

A multivariate regression analysis was conducted to test hypothesis 2 with social comparison scores towards the popular and less popular profiles as multiple DVs, and scores of the dark personality traits as IVs to investigate whether the dark personality traits would affect participants' trolling to the popular and less popular profiles differently. Results showed that dark personality traits had an overall significant influence on one's trolling scores to both popular and less popular profiles, $F(3,$

131) = 5.73, $p < .001$. In addition, Machiavellianism and Narcissism affected people's ratings towards popular and unpopular profiles differently, with $F(2, 130) = 3.86$, $p = .023$, and $F(2, 130) = 14.50$, $p < .001$, respectively. Two follow up linear regression analyses were conducted, with the social comparison score to popular and unpopular profiles as DV, and scores of the dark personality traits as IVs for each regression equation. Overall model fitting results and coefficients of the two regression analyses were summarised in Table 3. As indicated in Table 3, the coefficient of Narcissism towards the popular profile was 0.83 ($t(131) = 3.81$, $p < .001$), which was significantly higher than towards the less popular profiles with the coefficient being 0.51 ($t(131) = 3.02$, $p = .003$), indicating people with a higher score on Narcissism trait would perceive themselves more superior towards the popular profile than to the less popular profile. It is worth noting that Narcissism was positively associated with a downward social comparison towards both popular and less popular profiles (*i.e.* feelings of superiority), but the association was stronger to the popular profile.

4. Discussion

This study set to examine how the different dark triad personalities are associated with different online behavioural tendencies towards people of different popularity.

Regarding the research question as to whether Psychopaths victimise only weaker and vulnerable people or whether Psychopaths prey on different types of people, including people that are popular (see Holtzman & Strube, 2013), it was hypothesised that Psychopathy was a significant predictor of online trolling behaviour and more so to the popular Facebook profile. The hypothesis was fully supported. Firstly, the result is in line with previous literature that Psychopathy predicts trolling (Nevin, 2015). Moreover, this result makes a significant contribution to the existing literature by showing that Psychopathy is associated with trolling of popular individuals more than of less popular individuals. This trend suggests that Psychopaths indeed show a predilection for bullying perceived popular individuals. It seems therefore that Psychopaths on one hand do prey on victims

that are perceived as being weaker and showing less self-esteem (Hare, 2006) but on the other hand, they may be curious and actually prefer to prey and bully more the people that are generally more liked and are perceived to have a higher social status, possessing therefore more popularity. The popular individuals are therefore likely to be victims of Psychopaths and can be exploited for their own benefit (Hare, 2006). This result sheds light to a new direction of research since past literature focused mainly on the perceived weaker and less popular individuals as potential victims of Psychopaths' behaviour (Hare, 1999). Moreover, this result suggests that Psychopaths may have different motivations when trolling. On one hand they may want to prey on weaker victims and exploit their weak spots, such as low self-esteem and attention seeking behaviours and on the other hand they may be also motivated to bully people that are socially salient and popular just for the sake of undermining their social status or just for fun (Buckels *et al.*, 2014). In other words, the Psychopaths' sadistic tendencies lead them to get kicks out of bullying people that are perceived to be physically attractive, wealthy and popular, just because of the simple fact that they are more socially salient and generally catch the attention more than other people do.

In contrast to Psychopaths, the literature has been arguing that Narcissists do not have a tendency to troll (Buckels *et al.*, 2014). Indeed, we hypothesised that Narcissism would be associated with a downward social comparison, particularly to the popular Facebook profile and this was fully supported. Results thus suggest on one hand Narcissism is not associated with trolling (Buckels *et al.*, 2014) but more importantly our results add to the literature by showing that Narcissists perceive themselves as being superior to everyone but more so to popular than to less popular ones. This result supports past literature that has shown that Narcissists are self-absorbed, are preoccupied with obtaining high social status and rank and perceive themselves as being unique and special (Campbell & Miller, 2011). Our result also demonstrates that popular people may be particularly of relevance because Narcissists need to feel that they are more important and more accepted than other perceived important and socially salient people in order to protect their own self-esteem and sense of grandiosity (Campbell & Miller, 2011). Moreover, Narcissists may perceive popular

instead of less popular individuals as their direct competitors. This means that Narcissists may focus their attention more on the popular rather than less popular individuals because they may perceive them as being a threat to their own social status and popularity and because Narcissists need to feel that they are special, that they are the best out of the best.

The implications of this study are on one hand theoretical, suggesting that the personalities that compose that dark personality triad although overlapping, for example they all show deceitfulness and manipulation, are distinctive enough to be examined as separate constructs. It seems that Narcissism is associated with downward social comparison rather than trolling whereas Psychopathy predicts trolling behaviour but not social comparison. Our results also support a cognitive-behavioural framework to explain the dark personality triad personalities' different motivations and behaviours online. Under the light of a typical cognitive behavioural model (see Ellis, 1985), Narcissism as a personality is characterised by a self serving schema that is composed of distorted self enhancing beliefs and cognitions of self importance that are associated with the underlying need of acquiring and maintaining a grandiose self-image and a higher social status, which then leads to a self-enhancing social comparison to other perceived popular individuals. On the other hand, Psychopathy as a personality is characterised by a sadistic schema composed of cognitions about the acceptability of harming others for fun and the associated sadistic pleasure of causing pain to others, which are then linked to socially deviant behaviour and bullying. The practical implications of this study are therefore suggesting that the monitoring of online behaviour should look more into the Psychopathic trait and underlying beliefs and motivations rather than the overall dark personality triad.

Also, a very important contribution of our study is to highlight that not only the perceived vulnerable victims (people that are perceived as being weak) are targeted by Psychopaths. Indeed, popular individuals are as likely as less popular individuals to be victims of Psychopaths. As such, practical implications for preventing trolling should consider not only monitoring the online behaviour and underlying motivations of people that have Psychopathic tendencies but also

interventions that raise awareness about being a potential prey of Psychopaths may need to take into account different people and should not only be targeting the typical victims.

Although the study brought important results it has some limitations. Firstly, one limitation that is also present in other studies in the literature is the measure of online trolling behaviour. The measure we used was indirect and only measured agreement with trolling comments made *a priori*, which does not tap into the real behaviour. However, due to ethical constraints, most studies only have the means of using indirect measures of trolling (see Buckels *et al.*, 2014; Nevin, 2015) and in the future it would be of great value to have a more direct measure of online trolling behaviour *e.g.* actual measure of the frequency of “live” trolling comments in a particular website.

Secondly, although there was evidence to suggest that the fake Facebook profiles were indeed different in terms of likeability and social status, acceptance and rank, however it could be argued that the popular profile was not extremely popular because the likeability score was around the mid-point in the scale. In the future the Facebook profiles should attempt to show people that have different levels of popularity and social status, *e.g.* celebrities, average people etc.

5. Conclusions

Our study was novel in showing that the dark triad personalities are associated with different behaviours online towards different types of Facebook profiles. The study's main results suggest that Narcissism is associated with downward social comparisons (*i.e.* they look down on other people) whereas Psychopathy is associated with trolling, and both behavioural tendencies particularly target the more popular individuals. This is key since the literature has not explored in the direction of differentiating online behaviours based on the popularity of the receiving end. An important implication of this study for the monitoring of online trolling behaviours, is to focus on Psychopathy being linked to victimising different types of people with a particular predilection for people that are popular. Future research could therefore explore in more depth the underlying

motivations of Psychopathic individuals when trolling different types of people and measure the online behaviour against different profiles of potential “victims”, e.g. celebrities.

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Table 1. Means, SDs, and bivariate correlations of variables used in the study.

	Descriptive		Correlation							
	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	
1 Machiavellianism	3.14	0.56								
2 Narcissism	2.66	0.63	0.14							
3 Psychopathy	2.30	0.56	0.45 ***	0.25 **						
4 Troll_P	1.62	0.64	0.16	0.08	0.45 ***					
5 Troll_LP	1.56	0.64	0.22 *	0.08	0.30 ***	0.50 ***				
6 Compare_P	5.50	1.64	0.22 **	0.34 ***	0.17	0.09	0.06			
7 Compare_LP	6.42	1.23	0.02	0.28 **	0.13	0.12	-0.04	0.00		

Note. *** $p < .001$; ** $p < .01$; $N = 135$

Troll_P = Agreement score to trolling comments towards the popular Facebook profile; Troll_LP = Agreement score to trolling comments towards the less popular Facebook profile; Compare_P = Social comparison score to the popular Facebook profile; Compare_LP = Social comparison score to the less popular Facebook profile.

Table 2.

Coefficients of Multivariate regression analyses using dark personality traits predicting trolling scores towards popular and less popular profiles

Predictors	DV: Trolling scores			
	Popular profile		Less popular profile	
Machiavellianism	-0.05		0.11	
Narcissism	-0.03		0.00	
Psychopath	0.55	***	0.29	**
F-statistic	$F(3, 131) = 11.31$		$F(3, 131) = 4.75$	
	$p < .001$	$R^2 = 0.20$	$p = .004$	$R^2 = 0.10$

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

Table 3.

Coefficients of Multivariate regression analysing using dark personality traits predicting social comparison scores towards popular and less popular profiles

Predictors	DV: Social comparison scores			
	Popular profile		Less popular profile	
Machiavelianism	0.51		-0.13	
Narcissism	0.83	***	0.51	**
Psychopath	0.03		0.21	
F-statistic	$F(3, 131) = 7.65$		$F(3, 131) = 4.00$	
	$p < .001$	$R^2 = 0.15$	$p = .009$	$R^2 = 0.08$

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