

The Relationship between Erectile Dysfunction, Sexual Self Efficacy and the Dark Triad

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ABSTRACT

Erectile dysfunction (ED) is the lack, or loss of ability to achieve or maintain an erection and is a commonly reported sexual dysfunction in healthcare. Whilst research has centred on the dark triad, personality, and sexuality; associations between dark triad traits, and sexual dysfunction appear scarce. This study aimed to establish whether there was a relationship between the dark triad traits, sexual self-efficacy (SSE) and ED. Sixty-four participants including 45 men with ED and 19 men without ED, aged between 18-60 years contributed to an online cross-sectional survey consisting of questionnaires measuring ED, the dark triad traits, SSE and demographic information. Results suggested a moderate to high positive correlation with narcissism and psychopathy traits on ED (aggravating effect) and a negative moderate to high correlation with Machiavellianism and SSE (protective effect) on ED. Both Machiavellianism, specifically subscale reputation and SSE were predictors of ED. This suggests that higher levels of SSE and Machiavellianism (reputation) were associated with lower levels of ED and narcissism and psychopathy were associated with higher levels of ED. However, until further research is conducted on a larger and diverse cohort, which examines the causal pathways SSE and the dark triad might have on ED, this remains inconclusive. Nevertheless, this area warrants further exploration, with a view to developing suitable assessment and intervention stratagem in psychosexual services to support ED.

Keywords: Erectile dysfunction, dark triad, Machiavellianism, psychopathy, narcissism, sexual self-efficacy

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I. INTRODUCTION

Erectile dysfunction (ED), is the lack, or loss of ability to achieve or maintain an erection (APA, 2013). ED is one of the more commonly reported sexual

dysfunctions in healthcare and affects approximately 4.3 million males in the UK (Hackett et al., 2018). The biopsychosocial aetiology of ED is mixed and includes for example, anxiety, fatigue, and heavy alcohol consumption/alcohol dependence (Hackett et al.,

2018). Further, there is a strong link between ED and symptoms of heart disease, high blood pressure, diabetes, and obesity (e.g. APA., 2013; Hackett et al., 2018). Akre et al. (2014) found that poor mental health, non-prescriptive drug consumption, and depression were predictors of both premature ejaculation (PE) and ED. Furthermore, lack of exercise, alcohol use and substance misuse have been significantly associated with ED (Gebremedhin et al. (2021; Abolfotouh and Al Helali., 2001) and Tomlinson and Wright (2004) found ED to be associated with low self-esteem among those in relationships. Briefly, varied interventions are available to support ED are available and include pharmaceuticals, psychoeducation, Cognitive Behavioural Therapy, and psychodynamic therapies (e.g. Fruhauf, Gerger, Schmidt, Munder, & Barth, 2013).

A growing body of research is now looking at the role sexual self efficacy (SSE) has in sexual functioning and dysfunction (e.g., Rowland., 2015). SSE is a social cognitive theory that identifies how well an individual can execute a behaviour (Bandura., 1977; 1992). Self-efficacy is related to confidence and self-esteem (e.g. Hajiloo., 2014). Constructs including self-efficacy, self-esteem, and confidence are intercorrelated whereby higher levels of self-esteem and confidence are associated with self-efficacy (Hajiloo., 2014). According to Bandura., (1977), self-efficacy is a self-sustaining trait in which a sense of autonomy and encouragement in their own decision-making reinforces and increases levels of self- efficacy. Sexual self-efficacy (SSE) is a person's belief of control, or confidence, in their sexual ability (Closson, et al., 2018). It plays a crucial role in how individuals make sexual decisions based on their confidence to engage in safe and consenting sexual engagement (Sayles et al., 2006). However, its application to sexual dysfunction is limited. Banbury et al., (2021) looked at the relationship between PE and sexual self-efficacy in relation to anxiety, depression, and sexual

fantasy among 60 British participants. Sexual self-efficacy was a significant and strong predictor of PE in which anxiety mediated the relationship between PE and SSE.

Personality traits of psychopathy, narcissism and Machiavellianism have also been associated with sexual functioning (e.g. Brewer & Abell., 2015). These traits, together make up the dark triad (Lyons, 2019); referred to as dark owing to their perceived malevolent qualities (e.g. Horowitz & Stark., 2010). Individuals high in these dark traits have been found to have a greater desire for short-term relationships, often characterised by manipulation, aggression, and exploitative interpersonal behaviour (McGreal, 2019). Furthermore, those who score high in dark traits appear to have more sexual partners and are often considered controlling and uncaring romantic partners (Pilch & Smolorz, 2019). According to Pilch & Smolorz, (2019) those with higher levels of Machiavellianism and Psychopathy are more likely to experience sexual fear and anxiety, while those with narcissism are more likely to have higher levels of sexual self-esteem and assertiveness.

Individually, Machiavellianism is characterised by a tendency to cynicism, deception, and self-interest; narcissism by entitlement, dominance, and a grandiose sense of self -importance; and psychopathy by a tendency to use charm to satisfy their needs and are impulsive thrill-seeking and aggressive, (Garcia., 2020; Lyons, 2019). On closer examination, narcissism can be divided into grandiosity and vulnerability (Bogaerts et al., 2021). Grandiose narcissism tends to be associated with general grandiosity, superiority, arrogance and entitlement whereas vulnerable narcissism is associated with low self-esteem, social withdrawal, hypersensitivity and difficulties with emotional regulation (Bogaerts et al., 2021). Indeed, McGreal (2019) argues that the different characteristics of the dark traits are made up of both psychologically healthy and unhealthy characteristics,

which can have both positive and negative impacts on an individual's sexual functioning (McGreal, 2019).

Jonason et al. (2012) showed that narcissism was correlated to preferences for friends-with-benefits (having a sexual relationship with someone who is considered a friend rather than a partner) and one-night stands, whilst psychopathy was correlated to a preference for one night stands. The study also correlated narcissism and psychopathy with a preference for non-serious relationships (Jonason et al., 2012, Kaufman et al. 2019). Jonason et al. (2012) also found that the dark traits correlate to many aspects of short-term sexual relationships among heterosexuals and that this correlation predominated in males when compared to females, with males also demonstrating exploitative short-term relationship strategies (Jonason et al., 2012).

When looking at the adaptive qualities of the dark triad the focus has centred on resilience (e.g. Papageorgiou et al., 2019) and creativity (e.g. Lebuda et al., 2021). To expand, Papageorgiou et al., (2019) found that those with subclinical narcissism possessed higher levels of mental toughness and resilience which helped with emotional regulation which increased well being and so forth. An added accompaniment to these qualities is creativity. In a meta-analysis, significant positive associations between creativity and narcissism and Machiavellianism, but not with psychopathy were found (Lebuda et al., 2021). Whilst sexual functioning was not a domain in this study, everyday creativity including performance creativity had been included. How much this extends to dating, relationships and sexual behaviour would be of interest. One could argue that resilience, mental toughness and creativity are key modern evolutionary factors necessary for survival including sexual behaviour (Lebuda et al., 2021) and for daily achievements or accomplishments along with goal setting and general wellbeing, sexual or otherwise.

Whilst a literature search found no empirical research investigating the relationship between the dark triad, SSE and ED, studies have explored the association between the dark triad and sexual relationships (e.g. Jonason et al., 2012). In one study, self-efficacy had a mediating effect on the dark triad and emotional intelligence, in particular Machiavellianism (Wu et al., 2019). Whilst this study was not related to sexual functioning, we were interested in the role SSE might play with the dark triad in the context of sexual functioning. Since those with chronic ED has been associated with having multiple sexual partners (Akre et al., 2014), a key outcome in the dark triad, along with compromised sexual self-efficacy (e.g. Banbury et al., 2021), we wanted to investigate whether there was a relationship between ED, SSE, and the dark triad. This was hoped to shed light on the role these constructs might play in sexual functioning and the implications this might have in psychosexual services in supporting sexual wellbeing. Based on the literature it is predicted that there will be a relationship between ED, SSE and the dark triad. More specifically, the levels of dark triad traits and SSE will vary between ED and non-ED groups. It was anticipated that lower levels of ED would be reported among those with psychopathy and narcissism than those with Machiavellianism. Furthermore, lower levels of ED would be reported among those with higher levels of SSE.

II. METHODS AND MATERIAL

Materials

Demographic details consisting of 10 questions confirmed the prevalence of ED based on the DSM-5 (APA, 2013).

The International Index of Erectile Function (IIEF) is a validated, multi-dimensional self-reported questionnaire. The questionnaire consists of 15 items that examine four domains of male sexual function: erectile function, orgasmic function, sexual desire, and intercourse satisfaction. Each item is scored from

0-5 (Rosen et al., 1997). For example, the options for item 1 “How often were you able to get an erection during sexual activity?” are 0 – No sexual activity, 1- Almost never or never, 2 – A few times (less than half the time), 3 – Sometimes (about half the same), 4 – Most times (more than half the time) and 5 – Almost always or always (Rosen et al., 1997). The IIEF exhibited high internal consistency, the value for Cronbach’s alpha, is $\alpha = 0.990$. The Cronbach alpha on the participants in this study retained a high internal consistency $\alpha = 0.953$ (high).

The Adapted Sexual Self-Efficacy Erectile tool (SSES-E; Libman et al., 1985) is a 25-item questionnaire which focuses on sexual confidence and behaviour change associated with therapy. Participants’ responses are measured via a 10-item scale ranging from 10 to 100. Here, 10 (input 1) is the lowest level of self-efficacy and 100 (input 10) is the highest. There are no reverse questions. The Cronbach’s alpha for men with erectile difficulties is $\alpha = 0.88$ (high). There is no other sexual self-efficacy questionnaire which has been developed for men. This questionnaire was adapted to reflect the participants in this study. The adapted questionnaire retained a high Cronbach $\alpha = 0.981$ (high).

The Dark Triad of Personality (D3-Short) is a self-report questionnaire that measures the three dark personality traits of narcissism, psychopathy, and Machiavellianism (SD3: Jones & Paulhus, 2014). It consists of 27 items with 9 items ascribed to each of the sub-scales, narcissism, psychopathy, and Machiavellianism. Sub-scales for Machiavellianism include reputation, coalition building, Cynicism and planning; narcissism subscales included Leadership, Exhibitionism, Grandiosity and Entitlement; and psychopathy subscales included Antisocial Behaviour, Erratic Lifestyle, Callous Affect and short term manipulation. Each item is scored on a Likert-type scale from strongly disagree (1) to strongly agree (5). For example, the responses to item 3 on the Machiavellianism subscale “Whatever it takes, you must get the important people on your side” are 1-

strongly agree, 2 – disagree, 3 – neither agree or disagree, 4 – agree, 5 – strongly agree. However, some of the items were reversed scored from strongly agree (1) to strongly disagree (5), for example, item 2 on the narcissism subscale, “I hate being the centre of attention responses range from 1- strongly agree, 2 – agree, 3 – neither agree or disagree, 4- disagree and 5 – strongly disagree (Kaufman et al., 2019). The D3-Short exhibited high internal consistency, the value of Cronbach alpha ranges between $\alpha = 0.730$ to 0.850. The Cronbach alpha on the participants in this study retained a high internal consistency $\alpha = 0.814$ (high).

Procedure

Following ethical approval from London Metropolitan University’s Research Ethics Review Panel and in accordance with the British Psychological Society code of ethics and conduct BPS internet mediated research, 2017), a Google form survey web link was accessible via Facebook, Reddit, LinkedIn and Twitter. The ordering of the materials in the survey was as follows: the participant information sheet and consent form, demographic information, The International Index of Erectile Function (IIEF, Rosen et al., 1997), Dark Triad of Personality (D3- short. Jones, & Paulhus., 2014), and debrief form.

The participant information sheet included an overview of the study where both the information sheet and consent form reminded participants that they do not have to answer all questions if they so wish and that they could withdraw from the study at any point. The consent form provided definitions of ED. Example questions were provided. Further, the consent form mentioned that some of the questions would be of a delicate/sensitive nature owing to the subject matter being addressed.

Participants were ensured anonymity and confidentiality concerning their responses. Participants choose a 4-digit code and could withdraw

their responses following the completion of the survey. Participants were reminded that their survey responses could be terminated up to 2 weeks following their survey submission. All data has been stored online on a password protected site accessible by the principal researcher in accordance with the General Data Protection Regulation (GDPR) and Data Protection Act (2018). The debrief form provided a list of supporting organisations for those who felt that they might need additional support.

Statistical plan

Both parametric and non-parametric statistics were conducted on the data set following assumption testing including normality testing and homogeneity of variance (Field., 2018).

A Cronbach's alpha was conducted on the questionnaires used to determine their reliability on the current sample. Pearson's correlation coefficients were followed by linear regression to identify which independent variables best predicted the dependent variable (Field., 2018). The DV was the ED and the IVs included sexual self-efficacy and the dark triad traits. Owing to the small sample, and to get a better understanding of the role the dark triad traits might have with ED and SSE, it was decided to conduct statistical analysis on the dark triad trait sub-scales.

Kruskal-Wallis H compared levels of the dark triad traits with ED and non-ED groups.

SPSS 26 (IBM 2018) was used to carry out the statistical analysis.

III. RESULTS AND DISCUSSION

Results

The relationship between ED, the Dark Triad and Sexual self-efficacy.

A low positive correlation with narcissism leadership was seen on ED, $r(64)=.378$, $p=.002$ (38%

variance), and narcissism exhibitionism on ED, $r(64)=.417$, $p<.001$ (42% variance). There were moderate positive correlations with narcissism grandiosity on ED, $r(64)=.532$, $p<.001$ (53% variance), narcissism entitlement on ED, $r(64)=.541$, $p<.001$ (54% variance), psychopathy antisocial behaviour on ED, $r(64)=.540$, $p<.001$ (54% variance), psychopathy erratic lifestyle on ED, $r(64)=.517$, $p<.001$ (52% variance), psychopathy callous affect on ED, $r(64)=.540$, $p<.001$ and psychopathy short term manipulation on ED, $r(64)=.520$, $p<.001$ (52% variance). There was a moderate to high negative correlation with Machiavellianism Reputation on ED, $r(64)=-.635$, $p<.001$ (64% variance) and a high positive correlation with SSE on ED, $r(64)=.817$, $p<.001$ (82% variance). There was a moderate negative correlation with Machiavellianism planning on ED, $r(64)=-.551$, $p<.001$ (55% variance) and a low negative correlation with Machiavellianism coalition building on ED, $r(64)=-.266$, $p=.033$ (27% variance). There was no correlation between Machiavellianism cynicism on ED, $r(64)=-.103$, $p=.418$. There were high intercorrelations between the triad traits and with SSE where $p<.05$. This may be due to the small sample size.

Predictors of ED

A multiple regression analysis indicated that the Durbin-Watson was .982 suggesting that adjacent variables were not correlated. With reference to significant outcomes only, the regression equation produced a moderate to high fit with the data explaining 66% of the variance ($R^2=.664$). The overall model was also significant ($F(12, 51) = 11.388$, $p<.001$). Machiavellian subscale reputation ($\beta = -.355$, $p=.031$) was a significant and low to moderate predictor of ED. SSE was a significant and strong predictor of ED ($\beta = .975$, $p<.001$). There were no other predictors in the data set where $p>.05$.

Analysis of sexual self-efficacy and the dark triad on ED and non-ED groups

The sample for this analysis was small/skewed and included ED (n=45), and non-ED, (n=19). Owing to violations of assumption testing (homogeneity of variance, $p < .05$ and Shapiro Wilk, $p < .05$), it was decided to conduct a Kruskal-Wallis H test. Significant differences between ED and non-ED groups were across most constructs. Those with narcissism Leadership, $\chi^2(1) = 8.501$, $p = .004$ with mean rank scores 28.28 ED and 42.50 non-ED; Narcissism Exhibitionism, $\chi^2(1) = 11.171$, $p = < .001$ with mean rank scores 27.58 ED and 44.16 non-ED; Narcissism Grandiosity, $\chi^2(1) = 17.102$, $p = < .001$ with mean rank scores 26.32 ED and 47.13 non-ED; Narcissism Entitlement, $\chi^2(1) = 17.395$, $p = < .001$ with mean rank scores 26.51 ED and 46.68 non-ED; Psychopathy Antisocial Behaviour, $\chi^2(1) = 17.188$, $p = < .001$ with mean rank scores 26.31 ED and 47.16 non-ED; Psychopathy Erratic Lifestyle, $\chi^2(1) = 17.284$, $p = < .001$ with mean rank scores 26.33 ED and 47.11 non-ED; Psychopathy Callous Affect, $\chi^2(1) = 17.241$, $p = < .001$ with mean rank scores 26.52 ED and 46.66 non-ED; Psychopathy Short-Term Manipulation $\chi^2(1) = 15.563$, $p = < .001$ with mean rank scores 26.76 ED and 46.16 non-ED; Machiavellianism Coalition Building, $\chi^2(1) = 4.668$, $p = .031$ with mean rank scores 35.68 ED and 24.97 non-ED; Machiavellianism Planning, $\chi^2(1) = 17.284$, $p = < .001$ with mean rank scores 38.71 ED and 17.79 non-ED; Machiavellianism Reputation, $\chi^2(1) = 24.747$, $p = < .001$ with mean rank scores 39.76 ED and 15.32 non-ED and SSE, $\chi^2(1) = 29.627$, $p = < .001$ with mean rank scores 51.95 ED and 24.29 non-ED. There was no significant difference between ED and non-ED groups with Machiavellianism Cynicism, $\chi^2(1) = .464$, $p = .496$ with mean rank scores 31.42 ED and 34.82 non-ED.

Discussion

This exploratory study examined the relationship between ED, SSE and the dark triad subscales. It also aimed to compare SSE and the dark triad traits between those with and without ED. The hypotheses were partially supported as it was anticipated that lower levels of ED would be reported in those with narcissism and psychopathy. There was a moderate to high positive correlation in those with narcissism and psychopathy traits on ED (an aggravating effect) and a negative moderate to high correlation with Machiavellianism and SSE (a protective effect) on ED. Both Machiavellianism, specifically subscale reputation and SSE were predictors of ED. All effect directions were supported in the ED vs. non-ED comparisons. In other words, with higher levels of SSE and Machiavellianism, subscale reputation was associated with lower levels of ED and higher levels of ED were associated with psychopathy and narcissism.

According to Kafeai Atrian et al., (2019) sexual self-efficacy refers to the self-confidence needed for managing sexual relationships and the ability to compromise with the sex partner. Further, increasing levels of sexual self-efficacy can reduce sexual problems and promote an 'enjoyable' sex life (Mastro & Zimmer-Gembeck., 2015). Outcomes in this study were similar to Rowland et al's., (2015) research which investigated whether levels of SSE differed between 60 men with ED and 14 non-ED groups. Similar to the current study, the non-ED group reported higher levels of SSE than the ED group. Rowland et al (2015) also examined cognitive, affective, motivational, and behavioural responses to sexual behaviour arguing that sexual self-efficacy might have an important role in the assessment in psychosexual services. Additionally, higher levels of SSE have been reported among men with premature ejaculation (PE) than non-PE groups (Banbury et al., 2021).

Mixed outcomes regarding SSE and sexual functioning have been reported (Kafeai Atrian et al., 2019).

Alirezaee et al., (2014) found a positive correlation between SSE and fertility among married women in an Iranian cohort. Similarly, Aliakbari (2013), found a positive correlation between SSE and sexual function. However, Lemieux et al. (2013) observed no significant correlation between SSE and sexual function or satisfaction. However, the authors reported higher levels of partner-perceived self-efficacy with decreased pain in women with dyspareunia. Whilst the general consensus suggests that SSE is associated with positive sexual functioning, this is a relatively recent application to different facets of sexual behaviour, in particular sexual dysfunction. Understanding more about the role sexual self-efficacy has in healthcare might support earlier detection of sexual dysfunction. This coupled with psychosexual support, for both individuals and couples might minimise further associated complications (Salazar-Molina, Klijn, & Delgado., 2015).

All subscales of narcissism and psychopathy were correlated with ED with higher levels being reported in the ED than non-ED groups. Limited comparative data is available when examining the traits in relation to sexual dysfunction. It was anticipated that lower levels of ED would have been reported among those with narcissism and psychopathy. Indeed, previous research has suggested that a component of narcissism has pro-social qualities which have been linked to self-esteem (e.g., Papageorgiou et al., 2017; Papageorgiou, Malanchini, et al., 2018). According to Vaknin (2018), those with narcissistic traits possess pro-social behaviours which are used to entice and charm those around them. Once in a relationship, those with narcissistic traits can start to minimise their contributions to the relationship, including sex. According to Kinsey (2021) ED is associated with the emotional difficulties experienced by those with narcissism. This can include shame, humiliation, and emptiness when disappointed (Vaknin., 2018). Perhaps ED might be a means of avoiding real or

perceived criticism associated with sexual functioning. Further, those with narcissism can blame their partners for their sexual difficulties and yet engage in extra marital affairs (Madden., 2014). Perhaps sex is a way of achieving self-esteem through control and the emotional/physical manipulation of others. Engaging in extra marital affairs/multiple partners may feel safer and less intimate, thus making those with narcissism feel less vulnerable. Therefore, problems with the emotional connection among narcissists and those with psychopathy might lend themselves to ED, particularly in long term relationships (Vakhin., 2018). Another explanation could be the Coolidge effect which refers to a renewed interest in sexual behaviour when exposed to a novel sexual partner (Lester and Gorzalka., 1988). Perhaps boredom in long term relationships does play a role in ED and research looking at how creative novelty might minimise ED symptomatology would be of interest.

Psychopaths are chiefly focused on getting their needs met, regardless of the expense to others, whereas personal needs might centre on gain/self-gratification over sexual performance (Meyers., 2014). Indeed, the dark triad traits are often associated with short term brief relationships or casual sex which, for some, are sexually rewarding (e.g., Jonason, Luevano, & Adams, 2012; Koladich & Atkinson, 2016). Whilst speculative, among those with ED, perhaps having a brief encounter (short term mating) might avoid detection of an existing sexual issue. Research looking at ED in relation to grandiose and vulnerable narcissism and a closer examination of the subscales of the dark triad traits would be of interest among a larger and diverse cohort. This might shed light on 'the different types/subscales' of those with narcissism, psychopathy and Machiavellianism. This would need to be reflected in the subscales of the assessments used (i.e., grandiose vs vulnerable etc).

Certainly, those with dark triad traits tend to be preoccupied with sexual matters which can be a

source of distress and can be associated with externalized dysfunction (Lee & Forbey, 2010; Snell, 2001). Interestingly, for some, infidelity can cause ED for men who have cheated and who have been cheated on (Mark et al., 2011). In a study of 506 men and 412 women who reported being in sexual relationships there was no significant 23 percent of men and 19 per cent of women had engaged in extra marital affairs. However, there were gender differences with infidelity predictors. For men, these included impulsivity, propensity for sexual excitation and sexual performance anxiety and for women relationship dissatisfaction (Mark et al., 2011). Perhaps high-risk situations support arousal among those with sexual dysfunction. A closer examination of this relationship between the dark triad traits and gender would be of interest.

In this study, the Machiavellianism subscale reputation was a protective predictor of ED. Compared to the other traits, Machiavellianism tends to over evaluate perceived harmful situations (Birkás, Pátkai, & Csathó, 2018). Indeed, they are distrustful of others' intentions, and take risks only if that may not have any severe negative consequences (Tamás et al., 2018). It is worth noting that in this study there was a significant positive intercorrelation between SSE and Machiavellianism subscale reputation. Higher levels of SSE have been associated with safer sexual practices, risk evaluation and relationship caution (e.g., Bond et al., 2020). Indeed, in a correlational study of 324 participants looking at the dark tetrad personality traits and gender differences in sexual fantasies and behaviours, those with Machiavellianism were more likely to engage in safe sex behaviour (Nab et al., 2022). Further, this group are less likely to engage in spontaneous sexual activity without an obvious reward (Sekścińska, & Rudzinska Wojciechowska, 2020). Certainly, a component of reputation is resilience, and reputation resilience is associated with an evaluation of harmful situations, perceived stressful situations, risk evaluation and

assessing the pros and cons of a reward (Davis., 2020). These attributions are arguably essential for success and survival. Resilience can be defined as the ability to overcome stressful situations, such as ED and has been associated with sexual well-being (e.g. Oliva et al., 2022). Further, sexual resilience is where an individual or couple withstand or adapt to, and find solutions to challenging sexual situations, such as sexual dysfunction (Beck & Robinson., 2015).

Since Machiavellians are more likely to be motivated by individual rewards and are considered master manipulators, through deception, plausible lies can deceive their partners about their sexual histories (Giammarco et al., 2013). This extends to sexual performance and prowess in how much personal information these individuals choose to disclose (Brewer & Abell., 2015). Machiavellianism is associated with creativity (Lebuda et al., 2021) and might lend itself to fabricating one's sexual behaviour and combining fact and fiction to justify manipulation whilst determining whether the 'potential mate' is worthy of pursuit (e.g. Gino and Ariely, 2012, Gino and Wiltermuth, 2014). However, an alternative view is that part of being creative might extend into the bedroom in terms of sexual well-being, e.g. more variety and less boredom (Beck & Robinson., 2015). Further research looking at the relationship between Machiavellianism and sexual function mediated by SSE, reputation, resilience and creativity might provide more information on this.

The results of this study provide tentative directions for future work where limitations can be minimised. Additionally, to the limitations of self-report measures, outcomes yielded from a small and unevenly distributed sample cannot be considered generalizable to the wider ED populace (Tipton et al., 2015). Indeed, the dark triad traits and SSE were intercorrelated which resulted in multicollinearity. Therefore, a higher sample might change the results of the regression. An interesting outcome of this study

was the age group which predominated between 18-30 years of age. The average age for ED is approximately 40 years and above (Gebremedhin et al., 2021). Perhaps the use of social media sites to recruit participants targeted this age group and a more diverse means of recruitment might have increased participant numbers across all ages. Further, this study did not differentiate between acquired and life-long ED which might, in part, account for the 'skewed' age group in this study. The demographics in this study did not identify LGBTQIA++ groups which might have yielded different outcomes. Future research looking at sexual dysfunction and the dark triad in relation to sexuality, culture, and relationship diverse people requires focus. Additionally the demographics did not indicate whether participants were taking Sildenafil along with the frequency of participants sexual attempts. This would provide useful information in regards to the relationship between ED and the dark triad traits.

IV. CONCLUSION

Despite the limitations in this study, the outcomes were nonetheless of interest, whereby Machiavellianism subscale reputation and SSE were predictors of ED (a protective effect). Higher levels of narcissism and psychopathy were reported among the ED than non-ED groups (an aggravating effect). Research needs to target a larger and more diverse cohort including men and women looking at the relationship between sexual functioning with dark triad traits. This needs to extend to sexual dysfunction as outlined in the DSM-5 (APA., 2013). Focus on the dark triad sub scales might shed light on how 'the different types/subscales' of those with narcissism, psychopathy and Machiavellianism might impact sexual functioning. This would have to be reflected in the subscales of the assessments used (i.e., grandiose vs vulnerable etc). Research also needs to look at how reputation, resilience and the creative role Machiavellianism might have with sexual

functioning. Utilising the dark triad in the assessment process in psychosexual services might support the psychosocial elements associated with sexual dysfunction. Whilst traits can be enduring, the use of Cognitive Behavioural Therapy might support a better understanding of how Machiavellianism, narcissism and psychopathy affects others and the quality of their relationships and sexual functioning, both positively and negatively. Targeting certain distorted beliefs and vulnerabilities might better support more fulfilling relationships and support sexual wellbeing. However, this is down to the individual or couple to determine what they consider to be a fulfilling relationship and sex life. Since monogamy is an arguably socially constructed concept (e.g., Conley et al., 2013), it does not suit everyone. Indeed, how the dark triad traits would 'play out' in polyamorous/non-monogamous relationships and sexual functioning would be of interest. This extends to sexuality, cultural, and relationship diverse people.

There is no conflict of interest

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