Exploring anger as a moderator of narcissism and antisocial behaviour on tinder

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ABSTRACT

In an attempt to address inconsistency in the literature regarding narcissism and online antisocial behaviour, we applied the theory of threatened egotism and aggression to examine whether anger moderates the relationship between narcissism and antisocial behaviour on Tinder. Specifically, we explored anger moderating the relationship between narcissistic subtypes of Grandiose Exhibitionism and Entitlement Exploitative and perpetration of antisocial behaviour (aggression and harassment) on Tinder. Tinder users (N = 1,001; 46.3% men and 53.7% women) with an average age of 22.42 years (SD = 4.31) completed an anonymous online questionnaire. Anger was a significant moderator of all relationships between narcissism and antisocial behaviour. Specifically, at average and high levels of anger there were positive, significant relationships between both facets of narcissism, and aggression and harassment on Tinder. These results indicate that trait narcissism alone may not explain perpetration of antisocial behaviour on Tinder, and to adequately explore this relationship future research should consider the role of threatened egotism.

1. Introduction

Tinder, a Location Based Real Time Dating (LBRTD) app, has amassed enormous popularity since its introduction in 2012 (Ward, 2017). Latest annual available figures estimate over 100 million downloads, 50 million worldwide users, and 10 million daily active users (Smith, 2018). Although dating apps provide novel avenues for establishing romantic relationships, they also create potential for antisocial behaviour to occur (e.g., Duncan & March, 2019). Individuals commonly report experiencing antisocial behaviour when online dating, such as being contacted in ways that made them feel harassed or uncomfortable (Smith & Duggan, 2013). In the current study, we explore predictors of aggressive and harassing (i.e., antisocial) behaviours on Tinder, by examining for the first time the relationship between narcissism, anger, and antisociality on Tinder.

The growing popularity and use of online dating as a method to meet potential partners has changed the initiation and development of relationships (Silva, Koch, Rickers, Kreuzer, and Topolinski 2019). Such popularity and changes in relationships make online dating an attractive venue for researchers to explore; despite this, research on the topic remains relatively scarce (Silva et al., 2019). Due to the enormous popularity of Tinder (March, Grieve, Marrington, & Jonason, 2017) combined with research claims that the app has changed the dating landscape (LeFebvre, 2018), in the current study we explored behaviour on Tinder. As certain features of Tinder, such as limited feedback and anonymity (Jonason & Bulyk, 2019) may incidentally promote antisocial behaviour including exploitation and abuse of others via the app, we were interested in predicting and further understanding antisocial behaviour on Tinder

Trait narcissism is linked to a number of online aggressive, harassing behaviours including cyberstalking (Kircaburun, Jonason, & Griffiths, 2018), intimate partner cyberstalking (Smoker & March, 2017), and enjoyment of Internet trolling (Buckels, Trapnell, & Paulhus, 2014; Lyons, Messenger, Perry, & Brewer). Further, trait narcissism has been related to a number of aggressive dating behaviours, including sexual coercion, sexual narcissism, and physical assault (Ryan, Weikel, & Sprechini, 2008).

To date, contradictory effects of trait narcissism on antisocial Tinder

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use have emerged: One study found trait narcissism to be a positive predictor of perpetrating general[1] antisocial behaviour on Tinder (Duncan & March, 2019), while another study found no utility for trait narcissism to predict trolling on Tinder (March et al., 2017). These opposing results may be due in part to the complex set of motivations that appear to underpin Tinder use (e.g. Timmermans & De Caluwé, 2017). Tinder use can be motivated by the desire for sex, relationships, socializing, belongingness, and social approval, as well as a means to practice flirting and develop social skills, to meet people when travelling, to pass time, to get to know people with the same sexual orientation, and to deal with ended relationships. Other motivations include peer pressure, distraction, and curiosity. Notably, the relationship between narcissism and these various motivations differs; for example, narcissism is positively related using Tinder to gain social approval and to find sex partners, but has no relationship with socialising (Lyons et al.,). It is possible (and indeed likely) that the effect of narcissism on Tinder behaviours is also dependant on contextual factors. Additional evidence for this proposition is that non-consensual dissemination of received sexts (via both text message or apps) is correlated with narcissism, but that when other factors are included (for example the belief that doing so is appropriate at the end of a relationship, or "as a joke"), narcissism no longer has explanatory power. Together, findings from these studies (Duncan & March, 2019; Lyons et al.,; March et al., 2017; Timmermans & De Caluwé, 2017) indicate that to more fully understand how narcissism plays out in antisocial behaviours on Tinder, it would be useful to consider the role of context, grounded in appropriate theory.

The current study took a novel approach in exploring narcissism as a predictor of antisocial behaviour, drawing on recent research trends exploring narcissism and Tinder behaviour (e.g., Duncan & March, 2019; Jonason & Bulyk, 2019; Sevi, 2019) and theory of threatened egotism and aggression (Baumeister, Smart, & Boden, 1996), which proposes that ego-threats can often result in acts of aggression. We were especially interested in whether the interaction between narcissism and anger would result in antisocial behaviour on Tinder.

Previous research has provided support for theory of threatened egotism and aggression, demonstrating trait narcissism moderates the relationship between ego-threat and aggression (Stucke & Sporer, 2002), and that individuals with high trait narcissism are more aggressive only when provoked by criticism or humiliation (i.e., ego-threat; Bushman et al., 2009). Applying this theory, and in light of previous research showing that anger and aggression moderate the relationship between narcissism and behaviour (see Michel & Bowling, 2013), we hypothesised that the relationship between narcissism and antisocial behaviour on Tinder is moderated by anger.

Finally, we also address limitations in previous research where narcissism has been conceptualised as unidimensional. Brown, Budzek, and Tamborski (2009) caution against conceptualising narcissism as a single trait, and highlight the importance of distinguishing between the grandiose and entitled facets of narcissism. Thus, we assess the narcissism facets of Grandiose Exhibitionism and Entitlement Exploitative (Ackerman et al., 2011), both considered maladaptive forms of narcissism. While both Grandiose Exhibitionism narcissism and Entitlement Exploitative narcissism share a core of arrogance (e.g. Miller, Widiger, & Campbell, 2014), delineating between facets provides additional insight into the ways that narcissism manifests. Grandiose Exhibitionism narcissism is characterised by vanity, self-absorption, and exhibitionistic behaviour (e.g. Ackerman et al., 2011), and is associated with inflated self-esteem (Clarke, Karlov, & Neale, 2015). Entitlement Exploitative narcissism is characterised by aggression, a

sense of entitlement, and the expectation that they deserve to be treated better that others (Ackerman et al., 2011), and is associated with heightened negative affect when those high in Entitlement Exploitativeness do not receive the attention they feel they are due on social media (Zell & Moeller, 2017). Notably, both of these narcissism facets are related to aggressive, antisocial behaviour online (e.g., Carpenter, 2012) and therefore may be related to aggressive behaviour on Tinder.

The aim of the current study was therefore to explore a preliminary exploration of anger as a moderator of the relationship between Grandiose Exhibitionism and Entitlement Exploitative narcissism and antisocial behaviour on Tinder (specifically, aggression and harassment). Consistent with threatened egotism and aggression theory (Baumeister et al., 1996), we predicted that anger would significantly moderate these relationships; specifically, the more anger experienced, the more likely individuals with high trait narcissism would perpetrate antisocial behaviour on Tinder.

2. Method

2.1. Participants and procedure

Ethical approval was obtained from the relevant institution Human Research Ethics Committee. Participants were recruited via social media advertisements posts inviting participation in an anonymous, online questionnaire assessing online dating behaviours. Inclusion criteria included previous or current Tinder use. The sample comprised 1001 participants (46.3% men and 53.7% women) with an average age of 22.42 years (SD = 4.31). Participants identified as heterosexual (74%), homosexual (12%), and bisexual (13%). Of participants, 49% were currently using Tinder and 51% had used Tinder in the past. Participants reported their primary purpose for using the app as: Dating (49.2%), sexual encounter/casual sex (26.4%), long-term relationship (14.8%), and friendship (9.7%).

2.2. Design and materials

The study was correlational, with Grandiose Exhibitionism and Entitlement Exploitative narcissism as predictors, and anger as the moderator. Two types of antisocial behaviour on Tinder were the outcome variables: Aggression and harassment.

2.2.1. Narcissistic personality inventory

We assessed Grandiose Exhibitionism and Entitlement Exploitative narcissism using the relevant items from the Narcissistic Personality Inventory (NPI-40; Raskin & Terry, 1988). The NPI-40 comprises 40 forced-choice items, where respondents choose between a pair of narcissistic and non-narcissistic statements. The Grandiose Exhibitionism subscale comprises 10 items (α = 0.75) and the Entitlement Exploitative subscale four items (α = 0.58).

2.2.2. Tinder behaviour

In order to determine whether further exploration of these constructs is necessary, single-item measures were used. These items were constructed by the researchers. Anger on Tinder was assessed with one item "I have gotten angry when people haven't responded to my message(s)". Perpetration of antisocial behaviour on Tinder were assessed with two items: One to assess aggression ("I have abused people for not responding to my message[s]"), and one to assess harassment ("I have repeatedly messaged someone who did not respond to my initial message[s]"). Participants responded to these items on a 7-point Likert scale (1 = *Very Rarely*; 7 = *Very Frequently*). Higher scores indicated higher anger and perpetration of anti-social behaviours. For these three items, there was a 'not applicable' option participants could select.[2]

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[1] Duncan and March (2019) assessed three forms of antisocial behaviour on Tinder: Antisocial-general (e.g., "I use Tinder to show off"), antisocial-esteem (e.g., "I use Tinder to make myself feel more attractive"), and antisocial-sexual (e.g., "I use Tinder to meet own sexual needs, disregarding the benefits of others").

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[2] The original sample size was N = 1210. This was reduced to 1001 after omitting participants who responded 'not applicable' to one (or more) of these items.

Table 1

Descriptives Statistics for Grandiose Exhibitionism Narcissism, Entitlement Exploitative Narcissism, Anger, Aggression, and Harassment.

	M (SD)	Range	1	2	3	4
1. GE narcissism	3.24 (2.52)	0–10				
2. EE narcissism	1.05 (1.01)	0–4	.28**			
3. Anger	1.53 (0.85)	1–5	.11**	.17**		
4. Aggression	1.07 (0.40)	1–5	.12**	.13**	.27**	
5. Harassment	1.38 (0.76)	1–5	.10**	.22**	.41**	.32**

Note. M (SD) = Average response score; **p < .01; Of the sample, 36% had an anger score greater than 1, 20% had an aggression score greater than 1, and 26% had a harassment score greater than 1.

3. Results

Descriptive statistics and bivariate correlations are presented in Table 1.

Two initial regressions were run to test the utility of Grandiose Exhibitionism narcissism, Entitlement Exploitative narcissism, and anger in predicting aggression and harassment. Gender was also included, as were two way and three way interactions between gender, anger, and narcissism (see Table 2).

As can be seen in Table 2, both regression models were significant. Predicting aggression on Tinder, gender, GE narcissism, and anger were significant predictors, with significant interactions between gender and anger, gender and GE narcissism, and gender, anger, and GE narcissism. Regarding harassment on Tinder, EE narcissism and anger were significant predictors, with significant interactions between gender and anger, gender and EE narcissism, and gender, anger, and EE narcissism.

We also noted that the histograms of standardised residuals displayed significant non-normality, which can be attributed to a variable performing differently across different levels (Pek, Wong, & Wong, 2018). This, in combination with the significant interactions, indicated possible moderation.

First, we conducted four PROCESS (Hayes, 2017) moderation analyses to test anger as a potential moderator of the relationships between each narcissism facet and aggression and harassment. Gender was included in each model as a covariate. All interactions were significant (*p* < .001), and the conditional effects of Grandiose Exhibitionism and Entitlement Exploitative narcissism on aggression and harassment at low (−1 *SD*), medium (*M*), and high (+1 *SD*) values of anger are presented in Table 3. A visual depiction of these slopes can be seen in Fig. 1.

As shown in Table 3, at medium and high levels of anger, GE narcissism was a significant positive predictor of aggression on Tinder, and EE narcissism was a significant positive predictor of harassment and Tinder. At only high anger, EE narcissism was a significant predictor of narcissism and aggression on Tinder, and GE narcissism was a significant predictor of harassment on Tinder. In sum, when anger was low there was no utility of narcissism predicting antisocial behaviour on Tinder.

Finally, to explore the two significant three way interactions between gender, narcissism, and antisocial behaviour, the data was split by gender and two PROCESS moderation analyses were conducted to test anger as a potential moderator of the relationship between GE narcissism and aggression, and EE narcissism and harassment. For women, there were no significant interactions. For men, anger was a significant moderator of the relationship between GE narcissism and aggression; specifically, at medium and high levels of anger, GE narcissism was a significant, positive predictor of aggression (*p* = .003 and 0.001, respectively). For men, anger was also a significant moderator of the relationship between EE narcissism and harassment; specifically, at medium and high levels of anger, EE narcissism was a significant, positive predictor of harassment (*p* = .001 and 0.001, respectively).

Table 2

Summary of Regression Analyses with Predictors of Grandiose Exhibitionism Narcissism, Entitlement Exploitative Narcissism, and Anger and Outcomes of Aggression and Harassment.

	B	SE	β	F(df)	R²adj
Aggression				19.97 (9, 967)**	14.9%
Gender	0.40	0.06	.50**		
GE Narcissism	0.03	0.02	.22*		
EE Narcissism	0.02	0.04	.09		
Anger	0.12	0.02	.25**		
Gender x Anger	−0.24	0.03	−0.78**		
Gender x GE Narcissism	−0.04	0.01	−0.41**		
Gender x EE Narcissism	−0.04	0.02	−0.17		
Gender x Anger x GE Narcissism	0.02	0.01	.34**		
Gender x Anger x EE Narcissism	0.01	0.01	.12		
Harassment				42.88 (9, 967)**	27.9%
Gender	0.07	0.11	0.04		
GE Narcissism	−0.01	0.03	−0.04		
EE Narcissism	0.21	0.07	.29**		
Anger	0.61	0.08	.67**		
Gender x Anger	−0.27	0.06	−0.45**		
Gender x GE Narcissism	0.01	0.02	.06		
Gender x EE Narcissism	−0.14	0.04	−0.30**		
Gender x Anger x GE Narcissism	0.01	0.01	.01		
Gender x Anger x EE Narcissism	0.03	0.02	.16*		

Note. **p < .01, *p < .05.

Table 3

Conditional Effects of GE and EE Narcissism on Tinder Aggression and Harassment at Low, Medium, and High Values of Anger.

	Cut-off value	Effect	SE	t
GE Narcissism and Aggression				
Low Anger	1.00	−0.01	.01	−1.95
Medium Anger	1.53	.01	.01	2.40*
High Anger	2.38	.05	.01	7.49**
EE Narcissism and Aggression				
Low Anger	1.00	−0.02	.01	−1.50
Medium Anger	1.53	.01	.01	1.06
High Anger	2.38	.06	.01	4.69**
GE Narcissism and Harassment				
Low Anger	1.00	.00	.01	0.07
Medium Anger	1.53	.01	.01	1.59
High Anger	2.38	.03	.01	3.02**
EE Narcissism and Harassment				
Low Anger	1.00	.03	.02	1.31
Medium Anger	1.53	.08	.02	3.83**
High Anger	2.38	.15	.02	6.22**

Note. SE = standard error; ** *p* < . 01, * *p* < .05; Effect refers to effects of X on Y at −1*SD*, 0*SD*, and +1*SD* of the moderator.

4. Discussion

The aim of this study was to determine whether there is reason to further explore to explore anger as a moderator of the relationship between Grandiose Exhibitionism and Entitlement Exploitative narcissism and aggressive, harassing behaviours on Tinder. Results supported the hypotheses, such that the relationship between both narcissism facets and aggression and harassment was only (positively) significant at medium and high levels of anger, indicating that anger plays a crucial role in the relationship between narcissism and antisocial behaviour on Tinder. Based on these results, trait narcissism alone has only a limited ability to explain antisocial behaviour on Tinder, which may help to explain inconsistencies in previous research (e.g., Duncan & March, 2019; March et al., 2017). Our predictions drew on the theory of
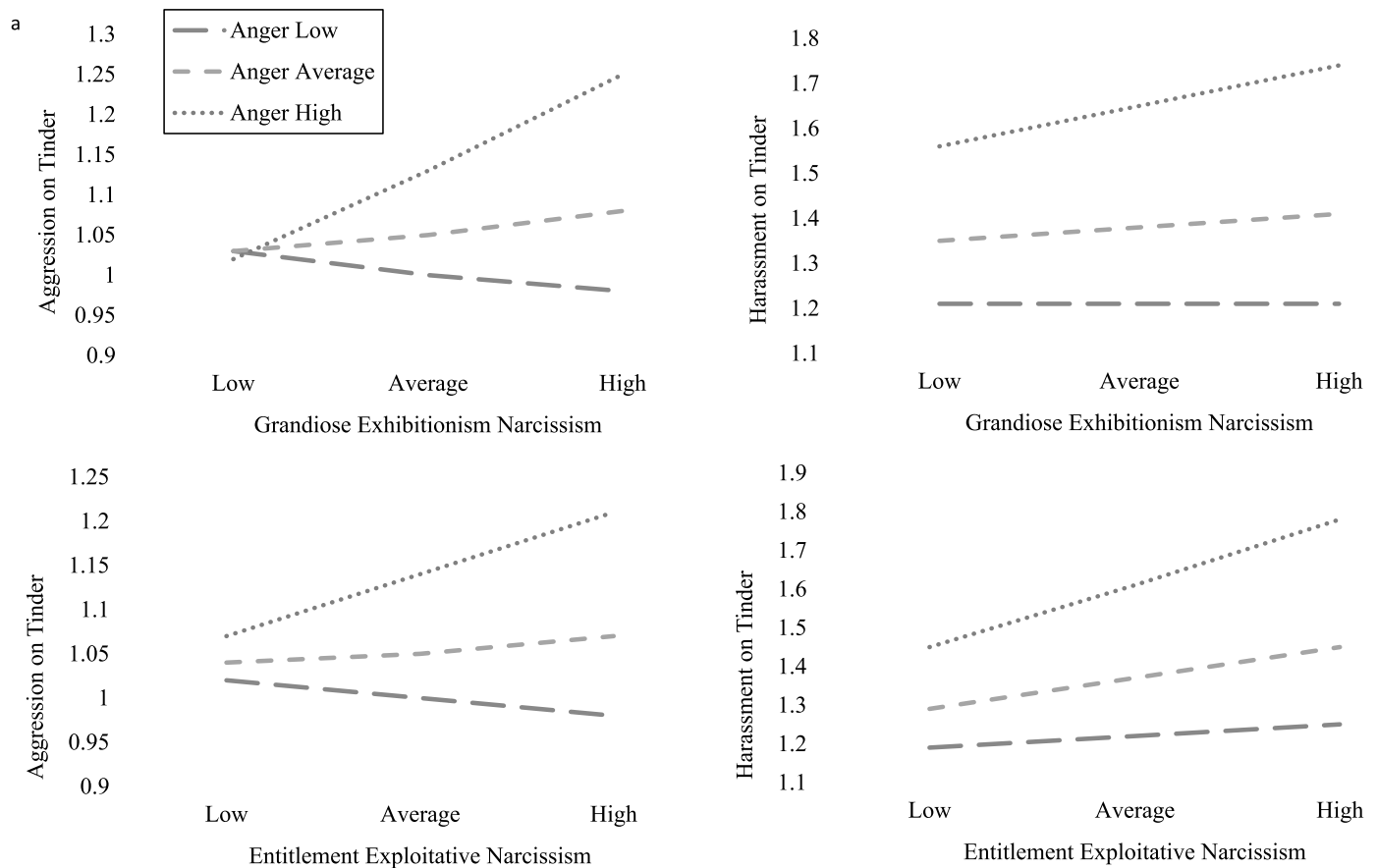
Fig. 1. Conditional effects of Grandiose Exhibitionism narcissism and Entitlement Exploitative narcissism on aggression and harassment on Tinder at low, medium, and high values of anger.

threatened egotism and aggression (Baumeister et al., 1996), and our findings support the previous research of Bushman et al. (2009) who found that individuals with high trait narcissism are more aggressive than others only when provoked by ego-threat. In our study, this ego-threat played out as anger when an individual did not respond to one's romantic advances.

It should also be noted that the bivariate correlations between GE narcissism, EE narcissism, and antisocial behaviour were low ($r < 0.22$). These low correlations should be recognised, highlighting the ongoing conflicting accounts of the role of narcissism in predicting antisocial behaviour on Tinder (e.g. Duncan & March, 2019; March et al., 2017). As noted, the roles of motivation and context are important when considering Tinder usage (Timmerman and De Caluwé, 2017), and while the current study examined took into account the role of anger in eliciting antisocial Tinder behaviours, it remains that other motivational and contextual factors are likely to play a part, given the correlations seen here.

This research was exploratory in nature, and thus took a relatively parsimonious approach to the investigation. Single-item measures show reasonable reliability and validity for a variety of psychological measures (e.g., social identification, Reysen, Katzarska-Miller, Nesbit, & Pierce, 2013, and satisfaction with life, Cheung & Lucas, 2014). Single-item measures of anger have also been used in previous research (Fatfouta, Gerlach, Schröder-Abé, & Merkl, 2015). However, given that the measures used in this study have not been validated, and concerns raised by other researchers over the use of single-item measures (Sarstedt & Wilczynski, 2009), in the future, including additional items to assess the variables of anger, abuse, and harassment would capture greater variation. For example, a scale to measure antisocial Tinder behaviour now exists (Duncan & March, 2019). Nonetheless, it remains

that even with single items, significant effects were evident, suggesting that while adding additional items would increase sensitivity, it may not be essential to do so.

Drawing on threatened egotism and aggression theory, we investigated narcissism in terms of Grandiose Exhibitionism and Entitlement Exploitative narcissism facets, although it would be worth exploring these relationships using other models of narcissism. For example, investigating how ego-threat would interact with vulnerable narcissism might elicit a different pattern of results, particularly as vulnerable narcissism is characterised by fragile self-belief and contingent self-esteem (e.g. Pincus et al., 2009). We suggest that future research investigate this option, particularly as the utility of investigating vulnerable narcissism in online contexts has been recently identified (e.g. Casale, Fioravanti, & Rugai, 2016; Grieve, March, & Watkinson, 2020; March, 2019). Further, although beyond the scope of the current study, as research has shown gender to interact with narcissism to predict online behaviour (e.g., Weiser, 2015), future researchers could explore these interactions when predicting antisocial behaviour on Tinder. Finally, given the potential importance of anger moderating the relationship between narcissism and online antisocial behaviour (i.e., aggression and harassment), we recommend exploring narcissism online include a measure of experienced anger in an attempt to control potential confounds and moderation. Future research should endeavour to continue exploring the premise that such aggression may be a result of anger at experiencing narcissistic injury. Furthermore, future research could explore the outcome of other ego threats received online, such as an explicit rejection.

Overall, this brief study provides initial groundwork that harassing and aggressive behaviour on dating apps is a result of complex interactions between personality and reactions to rejection. When an

individual's egoism is high but they are subsequently rejected, the anger they experience in response to their ego being threatened predicts whether they will act with hostility.

CRediT authorship contribution statement

Evita March: Conceptualization, Methodology, Formal analysis, Writing - original draft, Writing - review & editing, Visualization. **Rachel Grieve:** Formal analysis, Writing - original draft, Writing - review & editing, Validation. **Danielle Wagstaff:** Writing - original draft, Writing - review & editing, Validation. **Alexandra Slocum:** Investigation, Data curation.

References

Ackerman, R. A., Witt, E. A., Donnellan, M. B., Trzesniewski, K. H., Robins, R. W., & Kashy, D. A. (2011). What does the narcissistic personality inventory really measure? *Assessment, 18*, 67–87. https://doi.org/10.1177/1073191110382845.

Baumeister, R. F., Smart, L., & Boden, J. M. (1996). Relation of threatened egotism to violence and aggression: The dark side of high self-esteem. *Psychological Review, 103*, 5–33. https://doi.org/10.1037/0033-295X.103.1.5.

Brown, R., Budzek, K., & Tamborski, M. (2009). On the meaning and measure of narcissism. *Personality and Social Psychology Bulletin, 35*, 951–964. https://doi.org/10.1177/0146167209335461.

Buckels, E., Trapnell, P., & Paulhus, D. (2014). Trolls just want to have fun. *Personality and Individual Differences, 67*, 97–102. https://doi.org/10.1016/j.paid.2014.01.016.

Bushman, B. J., Baumeister, R. F., Thomaes, S., Ryu, E., Begeer, S., & West, S. G. (2009). Looking again, and harder, for a link between low self-esteem and aggression. *Journal of Personality, 77*, 427–446. https://doi.org/10.1111/j.1467-6494.2008.00553.x.

Carpenter, C. J. (2012). Narcissism on facebook: Self-promotional and anti-social behavior. *Personality and Individual Differences, 52*, 482–486. https://doi.org/10.1016/j.paid.2011.11.011.

Casale, S., Fioravanti, G., & Rugai, L. (2016). Grandiose and vulnerable narcissists: Who is at higher risk for social networking addiction? *Cyberpsychology, Behavior, and Social Networking, 19*, 510–515. https://doi.org/10.1089/cyber.2016.0189.

Cheung, F., & Lucas, R. E. (2014). Assessing the validity of single-item life satisfaction measures: Results from three large samples. *Quality of Life Research, 23*, 2809–2818. https://doi.org/10.1007/s11136-014-0726-4.

Clarke, I. E., Karlov, L., & Neale, N. J. (2015). The many faces of narcissism: Narcissism factors and their predictive utility. *Personality and Individual Differences, 81*, 90–95. https://doi.org/10.1016/j.paid.2014.11.021.

Duncan, Z., & March, E. (2019). Using tinder® to start a fire: Predicting antisocial use of tinder® with gender and the dark tetrad. *Personality and Individual Differences, 145*, 9–14. https://doi.org/10.1016/j.paid.2019.03.014.

Fatfouta, R., Gerlach, T. M., Schröder-Abé, M., & Merkl, A. (2015). Narcissism and lack of interpersonal forgiveness: The mediating role of state anger, state rumination, and state empathy. *Personality and Individual Differences, 75*, 36–40. https://doi.org/10.1016/j.paid.2014.10.051.

Grieve, R., March, E., & Watkinson, J. (2020). Inauthentic self-presentation on Facebook as a function of vulnerable narcissism and lower self-esteem. *Computers in Human Behavior, 102*, 144–150. https://doi.org/10.1016/j.chb.08.020.

Hayes, A. F. (2017). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (2 ed.). New York: Guilford Press.

Jonason, P., & Bulyk, R. (2019). Who uses tinder?: The dark triad traits, attachment, and mate value. *Studia Psychologica: Theoria et Praxis, 19*, 5–15. https://doi.org/10.21697/sp.2019.19.1.01.

Kircaburun, K., Jonason, P. K., & Griffiths, M. (2018). The dark tetrad traits and problematic social media use: The mediating role of cyberbullying and cyberstalking. *Personality and Individual Differences, 135*, 264–269. https://doi.org/10.1016/j.paid.2018.07.034.

LeFebvre, L. E. (2018). Swiping me off my feet: Explicating relationship initiation on tinder. *Journal of Social and Personal Relationships, 35*, 1205–1229. https://doi.org/10.1177/0265407517706419.

Lyons, M., Messenger, A., Perry, R., & Brewer, G. (2020). The dark tetrad in tinder: Hook-up app for high psychopathy individuals, and a diverse utilitarian tool for Machiavellians? *Current Psychology.doi.* https://doi.org/10.1007/s12144-019-00589-z.

March, E. (2019). Psychopathy, sadism, empathy, and the motivation to cause harm: New evidence confirms malevolent nature of the internet troll. *Personality and Individual Differences, 141*, 133–137. https://doi.org/10.1016/j.paid.2019.01.001.

March, E., Grieve, R., Marrington, J., & Jonason, P. K. (2017). Trolling on tinder® (and other dating apps): Examining the role of the dark tetrad and impulsivity. *Personality and Individual Differences, 110*, 139–143. https://doi.org/10.1016/j.paid.2017.01.025.

Michel, J. S., & Bowling, N. A. (2013). Does dispositional aggression feed the narcissistic response? The role of narcissism and aggression in the prediction of job attitudes and counterproductive work behaviors. *Journal of Business and Psychology, 28*, 93–105. https://doi.org/10.1007/s10869-012-9265-6.

Miller, J. D., Widiger, T. A., & Campbell, W. K. (2014). Vulnerable narcissism: Commentary for the special series "Narcissistic personality disorder—New perspectives on diagnosis and treatment. *Personality Disorders: Theory, Research, and Treatment, 5*, 450–451. https://doi.org/10.1037/per0000083.

Pek, J., Wong, O., & Wong, A. (2018). How to address non-normality: A taxonomy of approaches, reviewed, and illustrated. *Frontiers in Psychology, 9*, 2104. https://doi.org/10.3389/fpsyg.2018.02104.

Pincus, A. L., Pimentel, C. A., Ansell, E. B., Cain, N. M., Wright, A. G., & Levy, K. N. (2009). Initial construction and validation of the pathological narcissism inventory. *Psychological Assessment, 21*, 365–379. https://doi.org/10.1037/a0016530.

Raskin, R., & Terry, H. (1988). A Principal- Components Analysis of the narcissistic personality inventory and further evidence of its construct validity. *Journal of Personality and Social Psychology, 54*, 890–902 0022-3514/88/S00.75.

Reysen, S., Katzarska-Miller, I., Nesbit, S. M., & Pierce, L. (2013). Further validation of a single-item measure of social identification. *European Journal of Social Psychology, 43*, 463–470. https://doi.org/10.1002/ejsp.1973.

Ryan, K., Weikel, K., & Sprechini, G. (2008). Gender differences in narcissism and courtship violence in dating couples. *Sex Roles, 58*, 802–813. https://doi.org/10.1007/s11199-008-9403-9.

Sarstedt, M., & Wilczynski, P. (2009). More for less? A comparison of single-item and multi-item measures. *Die Betriebswirtschaft, 69*, 211–227. Retrieved from http://www.schaeffer-poeschel.de/.

Sevi, B. (2019). The dark side of tinder. *Journal of Individual Differences, 40*, 242–246. https://doi.org/10.1027/1614-0001/a000297.

Silva, R. R., Koch, M. L., Rickers, K., Kreuzer, G., & Topolinski, S. (2019). The Tinder™ stamp: Perceived trustworthiness of online daters and its persistence in neutral contexts. *Computers in Human Behavior, 94*, 45–55. https://doi.org/10.1016/j.chb.2018.12.041.

Smith, A., & Duggan, M. (2013). Online dating & relationships. *Pew Internet & American Life Project*. Retrieved from http://www.pewinternet.org/2013/10/21/online-dating-relationships/.

Smith, C. (2018). *50 interesting Tinder® statistics and facts*(September 2018). Retrieved from https://expandedramblings.com/index.php/tinder-statistics/.

Smoker, M., & March, E. (2017). Predicting perpetration of intimate partner cyber-stalking: Gender and the dark tetrad. *Computers in Human Behavior, 72*, 390–396. https://doi.org/10.1016/j.chb.2017.03.012.

Stucke, T. S., & Sporer, S. L. (2002). When a grandiose self-image is threatened: Narcissism and self-concept clarity as predictors of negative emotions and aggression following ego-threat. *Journal of Personality,, 70*, 509–532. https://doi.org/10.1111/1467-6494.05015.

Timmermans, E., & De Caluwé, E. (2017). Development and validation of the tinder motives scale (TMS). *Computers in Human Behavior, 70*, 341–350. https://doi.org/10.1016/j.chb.2017.01.028.

Ward, J. (2017). What are you doing on Tinder? Impression management on a match-making mobile app. *Information, Communication and Society, 20*, 1644–1659. https://doi.org/10.1080/1369118X.2016.1252412.

Weiser, E. B. (2015). #Me: Narcissism and its facets as predictors of selfie-posting frequency. *Personality and Individual Differences, 86*, 477–481. https://doi.org/10.1016/j.paid.2015.07.007.

Zell, A. L., & Moeller, L. (2017). Narcissism and "likes": Entitlement/exploitativeness predicts both desire for and dissatisfaction with responses on Facebook. *Personality and Individual Differences, 110*, 70–73. https://doi.org/10.1016/j.paid.2017.01.029.