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The interplay of gaming disorder, gaming motivations, and the dark triad

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BRIEF REPORT



ABSTRACT

Background and aims: There is a considerable amount of research on the psychological antecedents and outcomes of gaming disorder. Although many studies have examined various personality traits or motivations as predictors in isolation, fewer studies have investigated the mediations between personality traits and motivations. Furthermore, the analyzed personality traits have been limited to a few core concepts, with the Big Five personality traits being a standard model in this context. However, more recently the dark triad of personality traits (Machiavellianism, narcissism, and psychopathy) has been found to be associated with various forms of problematic online behavior and usage, such as online gambling, yet little is known about gaming disorder. The current study examines the relationship of these dark personality traits to gaming disorder with three gaming motivations (achievement, social, and escapism) as mediators. *Method:* The study uses an online survey of 1,502 German digital game users. *Results:* Results indicate a fully mediated association for narcissism via escapism and partial mediation associations for Machiavellianism and psychopathy. Direct effects on gaming disorder were observed for Machiavellianism and psychopathy. Indirect effects by psychopathy were observed via escapism and social motivation, by narcissism via escapism, and by Machiavellianism via social motivation. *Discussion and conclusions:* These findings contribute to the theoretical understanding of the mediation of gaming motivations and the dark triad personality traits' importance for gaming disorder.

KEYWORDS

computer and video games, gaming disorder, addiction, dark triad, motivation

INTRODUCTION

Over the past decade, gaming disorder has garnered media and scientific attention, which revealed its harmful consequences, such as lower academic performance, sleep problems, depression, mood problems, increased anxiety, and fatigue (Brunborg et al., 2013). In light of these findings, the World Health Organization (WHO, 2018) decided to officially include gaming disorder as a diagnosable disease in the 11th edition of the International Classification of Diseases. This has sparked a heated debate in the field, with a large group of scholars pointing out shortcomings in both the process that led to the inclusion and in the classification itself (Aarseth et al., 2017). However, there is agreement regarding the need to further examine the possible causes of gaming disorder, especially in relation to motivation and personality traits. Investigating these factors would significantly contribute to the theoretical understanding of gaming disorder and, in turn, help to identify particular at-risk groups.

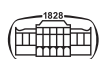
Current research does not provide a clear and unified picture: While certain motivations, such as escapism, make playing digital games appealing, a high-enough level of these motivations can transform a leisurely passion into an unhealthy obsession. Many motivations have been identified in relation to digital gaming, such as the need for competence, competition, achievements, escapism, relationships, role-playing, fantasy, recreation, and social interactions (Demetrovics et al., 2011). Researchers have also found certain motivations to predict gaming disorder, such as escapism (Dauriat et al., 2011) whereby the desire of

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escaping the real world would have players hold on to the more appealing virtual world for as long as possible. Social interaction is another identified motivation (Zhong & Yao, 2013), whereby players are engrossed in the social life of online gaming, displacing their time away from their offline relationships, such as with family and friends. It is evident that players with certain motivations can be vulnerable to gaming disorder.

Similarly, the role of personality traits is complex: They influence individuals' play experiences in online games, although differing levels of these traits predispose players toward problematic use. Initial studies based on the Big Five personality traits have revealed that gaming disorder is associated with higher levels of neuroticism (Müller, Beutel, Egloff, & Wölfling, 2014), but there have been mixed results regarding the links to extraversion, conscientiousness, agreeableness and openness to experience (Gervasi et al., 2017). Other personality traits, such as impulsivity (Nuyens et al., 2016), sensation seeking (Mehroof & Griffiths, 2010), and aggressiveness (Mehroof & Griffiths, 2010) have been associated with gaming disorder.

Recently, particular attention has been paid to *dark personality traits* and how they are related to problematic forms of Internet use. The *dark triad* is a group of personality traits, namely narcissism, psychopathy, and Machiavellianism, whose shared characteristics include malevolent and socially aversive callousness, deceptiveness, egocentric, and impulsivity (Paulhus & Williams, 2002). Those personality traits are differentiated by unique characteristics: narcissism is characterized by a sense of self-entitlement, grandiosity, and superiority; psychopathy is characterized by impulsivity, thrill-seeking, and remorselessness to harmful behaviors; and Machiavellianism is characterized by tendencies toward manipulation, deceit, and exploitation for personal gain (Paulhus & Williams, 2002). Individuals with high levels of these personality traits have been found likely to engage in socially aversive behaviors, such as cyberbullying (van Geel, Goemans, Toprak, & Vedder, 2017), trolling (Buckels, Trapnell, & Paulhus, 2014), and intimate partner violence (Carton & Egan, 2017) among others. They were more likely to enjoy certain online activities to a problematic extent, leading to behaviors such as disordered gambling (Trombly & Zeigler-Hill, 2017), problematic social media use (Kircaburun, Demetrovics, & Tosuntaş, 2018a), problematic pornography use (Kircaburun & Griffiths, 2018), and excessive digital game use (Kircaburun, Jonason, & Griffiths, 2018b). Given the affordances of online games, individuals with high levels of dark personality traits may indulge in attaining online fame and wealth, manipulating others to serve them, engage in reckless behaviors with little physical consequences, and obtain rewards more easily than is possible in offline contexts. Thus, these dark personality traits are hypothesized to predict individuals' disordered digital game use, at least to a certain extent.

However, few studies have examined the mediation of motivations and personality traits with respect to gaming disorder. Certain personality traits predict motivations—for

example, narcissists play due to the escapism motivation in their need for admiration as it is easier to self-promote in a gaming world through displays of virtual wealth and abilities for other players to admire (Stopfer, Braun, Müller, & Egloff, 2015). Studies have found that gaming motivations, such as escapism, fantasy (Ballabio et al., 2017), competition and social (Király et al., 2015), mediated the relationship between psychiatric symptoms and gaming disorders. Kircaburun et al. (2018b) found that the dark personality traits had a direct relationship with gaming disorder and mediated that relationship via escapism, fantasy, competition, and skill development.

Given the results from Kircaburun et al. (2018b), we expect to find similar results and hypothesize that escapism and achievement motivations mediate the relationship between the dark personality traits and gaming disorder. Online gaming provide an escapist avenue from offline contexts as there are few consequences for socially aversive behaviors, making it attractive for individuals with dark personality traits. The achievement motivation in the present study is operationalized as improving one's video game performance against other players. Personal gain is a Machiavellian characteristic, thus are motivated to gain higher gaming abilities; for narcissists, it is the recognition of their skills and for psychopaths it is the thrill in fighting against opponents more skilled than them. Kircaburun et al. (2018b) reported that social motivation did not mediate the relationship between gaming disorder, nevertheless we hypothesize that social motivation mediate the relationship with gaming disorder. Narcissists are motivated to play with friends in seeking for their admiration and praise; Machiavellians are motivated to have friends in order to manipulate and exploit them whereas psychopaths' impulsivity and thrill-seeking motivate them to seek similar others in gaming. In contrast to existing studies, our analyses are not based on a small self-recruited participant sample, but on a large proportionate stratified sample.

METHOD

Participants and procedure

A proportionate stratified sample of 2000 German Internet users was recruited, stratified by age, gender, and region based on an online panel conducted by a leading German market and opinion research institute. The questionnaire measured a variety of different online habits and behaviors. 71 respondents were removed due to data irregularities (i.e., straight-lining responses, extreme values, and obvious mistakes in answers to media usage questions). As the current analyses focused on gaming disorder, all participants who reported not playing digital games were excluded, resulting in a final sample of 1,502 participants. Respondents included male ($n = 805$; 53.6%) and female ($n = 697$; 46.4%) digital game users who ranged in age from 14 to 39 ($M = 27.62$, $SD = 6.90$). Respondents included full-time ($n = 747$; 49.7%) and part-time ($n = 155$; 10.3%) working individuals,



unemployed or retired individuals ($n = 122$; 12.6%), university students ($n = 252$; 16.8%), vocational training ($n = 56$; 3.7%) and school pupils ($n = 170$; 11.3%). A total of 77 respondents (5.1%) had basic German school-leaving qualification (*Hauptschulabschluss*), 351 (23.4%) had midlevel qualification (*Realschulabschluss*), 532 (35.5%) had the highest school-leaving qualification (*Abitur/Fachabitur*), and 361 (24%) had a university degree. The remaining participants were still in school ($n = 170$; 11.3%), had different qualifications ($n = 2$; 0.1%), or had left school without any qualification ($n = 9$; 0.6%).

Measures

Dark triad of personality traits. The German Naughty Nine inventory was used (Jonason & Webster, 2010; Kűfner, Dufner, & Back, 2015), which is a validated standard short scale for dark triad personality traits. The items assessed respondents' narcissism ("I tend to want others to admire me"), Machiavellianism ("I tend to manipulate others to get my way") and psychopathy ("I tend to lack remorse"). Respondents indicated how each statement described them on a 9-point Likert scale (1 = does not apply at all; 9 = does fully apply).

Gaming motivations. Nine items were adopted from the scale developed by Schumann & Schultheiss, 2009. Similarly to other internationally used gaming motivation scales (Reer & Krämer, 2019; Scharkow, Festl, Vogelgesang, & Quandt, 2015; Yee, 2006), our instrument included statements on achievement ("to improve my skills through training"), social ("to find new friends"), and escapism ("to be someone else") motivations. Each of the three motivations was measured with three items that were rated on a 5-point Likert scale (1 = strongly disagree; 5 = strongly agree; see Supplementary Material for a full description of the items).

Disordered use of digital games. An internationally established instrument (IGDS-SF9) by Pontes and Griffiths (2015) was used. The short-form scale was translated by German and English speaking researchers in cooperation with a professional translation service. The items assessed

the respondents' gaming disorder ("Do you feel the need to spend an increasing amount of time engaged gaming in order to achieve satisfaction or pleasure?"). Its instruction included all gaming-related activity during the past 12 months on any device with offline and online play, and were rated on a 5-point Likert scale (1 = never; 5 = very often). The average time playing digital games per week was $M = 10.86$ hours ($SD = 17.10$ h).

Statistical analysis

SPSS Statistics 25 was used for statistical analysis. As the data was not normally distributed, we calculated non-parametric correlations (Kendall's tau, see Table 1). We conducted parallel mediation analyses with the PROCESS SPSS macro under model 4 (Hayes, 2013) for each dark personality trait, with age, gender, time spent playing digital games, and the remaining two dark personality traits as covariates. PROCESS estimates the coefficients of the direct and indirect effects in unstandardized form using ordinary least-squares regression models, allows for bootstrapping, generating a bias-corrected 95% bootstrap confidence interval for indirect effects and is robust on non-normal distribution data (Hayes, 2013).

Ethics

The study was conducted in accordance with the ethical approval regulations of the host institution. Field work was conducted by a professional research institute, adhering to the ESOMAR code. Participants were informed about the purpose of the study and could opt out at all times.

RESULTS

Mediational analyses

As seen in Fig. 1, higher levels of dark triad personality traits were associated with greater levels of achievement, escapism and social gaming motivations, except for the non-significant relation between narcissism and social motivation and

Table 1. Descriptive statistics and Kendall's tau correlations between variables

	1	2	3	4	5	6	7
Gaming disorder score	–						
Narcissism	0.24*	–					
Machiavellianism	0.37*	0.47*	–				
Psychopathy	0.36*	0.35*	0.53*	–			
Achievement gaming motivation	0.32*	0.18*	0.21*	0.20*	–		
Escapism gaming motivation	0.36*	0.14*	0.17*	0.18*	0.42*	–	
Social gaming motivation	0.41*	0.16*	0.26*	0.26*	0.48*	0.46*	–
M	1.83	4.30	3.59	3.46	2.77	2.30	2.65
SD	0.94	1.99	1.88	1.87	1.11	1.08	1.20
Cronbach's alpha	0.95	0.85	0.82	0.77	0.81	0.79	0.87

Note. * $p < 0.01$.

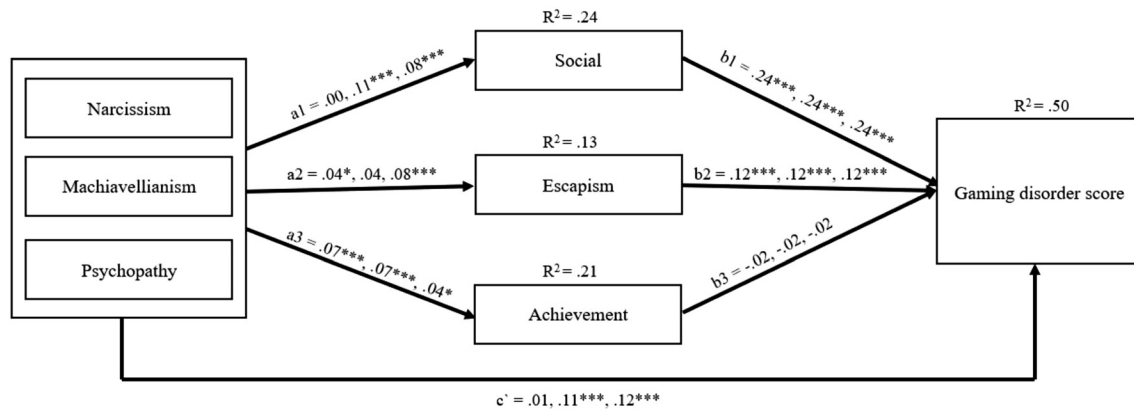


Figure 1. Direct and indirect unstandardized coefficient effects. * $p < 0.05$, *** $p < 0.001$. The first value is the path coefficient in which narcissism is the independent variable, the second one is Machiavellianism and third one is psychopathy. Age, gender, time spent playing digital games and the remaining two dark personality traits are covariates for each mediation model and therefore the explained variance (R^2) are the same across all models

between Machiavellianism and escapism. Higher levels of Machiavellianism ($c' = 0.11$, LLCI = 0.09, ULCI = 0.14, $R^2 = 0.50$) and psychopathy ($c' = 0.12$, LLCI = 0.09, ULCI = 0.15, $R^2 = 0.50$) were directly associated with higher gaming disorder scores. Bias-corrected bootstrap confidence intervals for the indirect effects by narcissism via escapism ($a_2b_2 = 0.01$, LLCI = 0.0007, ULCI = 0.01) were significant. Indirect effects by Machiavellianism via social ($a_1b_1 = 0.03$, LLCI = 0.02, ULCI = 0.04) were significant. Indirect effects by psychopathy through escapism ($a_2b_2 = 0.01$, LLCI = 0.004, ULCI = 0.02) and social ($a_1b_1 = 0.02$, LLCI = 0.01, ULCI = 0.03) were significant. There were no indirect effects by any dark triad personality trait via the achievement motivation on gaming disorder scores.

DISCUSSION AND CONCLUSION

The current study examined the relationship between the dark triad personality traits and gaming disorder as mediated by motivations of escapism, achievement, and social interaction. The mediation results revealed mixed support of the hypotheses regarding the dark personality traits' direct and indirect effects on gaming disorder. Psychopathy and Machiavellianism were directly associated with higher gaming disorder scores, however narcissism was not. The indirect effects to gaming disorder scores via escapism was found for all dark personality traits, social motivation mediated for psychopathy and Machiavellianism, but achievement was not a significant mediator. Thus, the relationship between narcissism and gaming disorder is fully mediated via escapism whereas psychopathy and Machiavellianism are partially mediated.

However, the gaming motivations scale may not capture all the motives related to dark personality traits. For example, individuals high in Machiavellianism are manipulative and exploitative of others, which belies the significant relationship to social gaming motivation. It is likely that

these individuals have ulterior motives, such as seeking exploitable friends for their goals, and the ease afforded by the online gaming environment increases the risk of gaming disorder. We recommend that future studies should further consider the characteristics of gaming motivations in relation to personality traits. Given that dark personality traits were also associated with other problematic uses of the Internet, it is surmised that the online world may facilitate deviance (Denegri-Knott & Taylor, 2005). These results yield a significant contribution to the understanding of disordered digital game use as being linked to a combination of motivations and personality traits. In particular, the dark triad deserves more attention in future studies, due to the notable direct and indirect effects on gaming disorder.

It needs to be stressed that the results diverged from Kircaburun, Jonason, & Griffiths, 2018, b). The earlier study reported only indirect relationships via different gaming motivations for each dark personality traits; for example, narcissism's indirect effect via escapism and fantasy. Another divergence was the mediation of the social motivation. They reported that the social motivation was not associated with the dark personality traits and gaming disorder, yet our study found such a relationship. This divergence may be due to the current study's larger sample size, thus highlighting the need for more high-powered studies. Furthermore, as the differences between measures may lead to divergent results, future studies should consider standardized measurements. With both studies supporting the research regarding escapism as a significant predictor of higher gaming disorder scores, future studies should consider a closer examination of escapism.

The current study has some advantages over the previous work, but it also carries some limitations. As noted before, one advantage is the large sample of German male and female Internet users the study is based on. The age range encompasses the whole spectrum of typical digital game users in Germany (BIU, 2017), and the sample is not limited to a specific group of self-selected and self-identified 'gamers'. However, one should also mention that even

though the sample was stratified based on age, gender, and living region, the fact that the study was conducted online might negatively affect the representativeness. A notable limitation is the cross-sectional character of the study, which precludes definitive causal inferences. Also, the self-reporting measures used here are subject to memory and social desirability biases, in particular to the socially aversive wording of the dark personality traits measure. As the study was part of a larger survey, it could not examine a wider variety of personality traits and gaming motivations due to space and time constraints. Thus, future research should use longitudinal designs to establish the causal relationships between personality traits, motivations, and gaming disorder.

Nevertheless, the study presents evidence of the dark triad personality traits' role in gaming disorder. Given the results, perhaps there are specific constellations of personality traits and motivations that predispose individuals toward disordered game use. The interplay of these factors is a promising object for further investigation, and the identification of the relevant constellations might help in developing a clearer understanding of gaming disorder.

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Authors contributions: FR, TQ and WYT planned the design of the survey. WYT wrote the manuscript and conducted the statistical analyses. FR and TQ improved the manuscript via statistical and editorial assistance. All authors had full access to the data in the study and take responsibility for the integrity of the data and the accuracy for the data analyses. All authors agreed on the final version of the manuscript and agreed submission.

Conflict of interest: The authors declare no conflict of interest.

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SUPPLEMENTARY MATERIAL

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