



The seriousness of humour: Examining the relationship and pathways between sexist humour and the Dark Tetrad traits

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Abstract

With blatant expressions of sexist attitudes deemed socially unacceptable, prejudice towards women may surface through subtle means, including sexist humour. However, no empirical study has explored the personality traits associated with appreciation for sexist humour. Study 1 ($N = 304$) assesses the relations between the Dark Tetrad traits (psychopathy, Machiavellianism, narcissism, and sadism) and appreciation for sexist humour, and examines whether affective and cognitive empathy mediate these associations. Findings demonstrated significant positive associations between psychopathy, Machiavellianism, sadism, and appreciation for sexist humour. Although higher psychopathy, Machiavellianism, and sadism were not associated with finding sexist statements and events humorous and entertaining (the opposite is true for sexist jokes), these traits were associated with less serious interpretation. Importantly, the relations between these traits and appreciation for sexist humour were mediated by lower levels of affective empathy only, while the associations between these traits and appreciation for sexist statements and events were mediated by lower levels of affective and cognitive empathy. Study 2 ($N = 320$) examined gender differences in appreciation for sexist humour and replicated patterns observed in Study 1, but with slightly less pronounced effects in females compared to males. Study 3 ($N = 320$) showed a relationship between these traits and use of (not just appreciation for) aggressive humour, with perceived stress as a mediator and gender as a moderator. Overall, findings corroborate that individuals who score higher on specific Dark Tetrad traits may use sexist humour as an expression of sexist attitudes with minimal social consequences.

Keywords Dark Triad · Sadism · Humour · Sexism · Empathy

Introduction

Contemporary research on individual differences in humour defines the construct as a habitual and stable behavioural pattern characterized by the tendency to laugh or tell funny stories as a way of cheering oneself and others up (Martin et al., 2003). According to McGraw and Warren's benign violation theory (2010), humour occurs in situations that are simultaneously perceived as violating of existing beliefs of what is normal and how the world ought to be

(i.e., when something seems wrong, threatening, or unsettling) and as benign (i.e., when something seems acceptable and safe). Consonantly, things are not perceived as funny when a benign situation is depicted as non-violating or when a violation is not depicted as benign. As such, a joke seizes to be funny when it is strictly benign, but also when it becomes too aggressive or when it is perceived as too risqué (i.e., malign violation). Relatedly, the incongruity-resolution theory posits that humour results from detecting incongruities in punch lines that deviate from one's expectations and the setup of the joke (Ritchie, 1999). It has also been suggested that one can expand on the personality and characteristics of the joke's main protagonist based on the storyline of the joke, and that derogation of the protagonist may provide a boost in self-esteem and feeling of superiority (Ferguson & Ford, 2008; Martin & Ford, 2018). Consequently, although numerous studies suggest that humour is associated with enhanced physical health and psychological wellbeing (Abel, 2002; Kuiper et al., 2004; Lefcourt, 2001;

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Martin, 2001; Ruch, 2008), humour can also be disparaging and have detrimental effects. Sexist humour is a form of humour which “denigrates, demeans, stereotypes, oppresses, or objectifies women” (Bemiller & Schneider, 2010; Greenwood & Isbell, 2002). Following the feminist movement of the 1970s, greater acceptance of women’s rights and for norms of gender equality emerged (Klonis et al., 2005), rendering blatant expression of sexist behaviours socially unacceptable (Barreto & Ellemers, 2013). However, harboured feelings of prejudice towards women still exist to this day (Greenwald & Pettigrew, 2014) although this may be expressed in more subtle ways to avoid scrutiny from others, such as using sexist humour (Barreto & Ellemers, 2013). Interestingly, humour is a unique medium of communication that undermines the seriousness of a given message (Ford et al., 2008). Under a “veil of benign amusement” (Ford et al., 2008), disparagement humour that is meant to denigrate and belittle others (Janes & Olson, 2000; Zillmann, 1983) provides a channel in which malicious attitudes can travel in a more socially acceptable manner compared with attitudes expressed in the form of a disparaging action or statement (Ford & Ferguson, 2004; Freud, 1960; Martineau, 1972). Ford et al. (2008) proposed that sexist humour creates a context where sexist individuals feel freer to express their malicious attitudes with a lowered perceived risk of being criticized (Gray & Ford, 2013). As such, sexist humour allows sexist views that diminish and trivialize women to ‘travel’ more readily (Gray & Ford, 2013). Although different gender identities may be targets of sexist humour, this study focuses on sexist humour used to express sexist attitudes towards females as a starting point, since the majority of the current literature and measures of sexist humour are focused on sexism against females. Moreover, exposure to sexist humour increases tolerance of sex discrimination towards women amongst both males and females who are already high in hostile sexism, which refers to one’s negative attitudes towards those who violate traditional gender stereotypes (Thomas & Esses, 2004), and that humour that is sexist against females is not only employed by men.

In addition to promoting gender inequality and sexist attitudes, individuals who appreciate sexist jokes are more likely to use sexist humour to the extent to which they score on hostile sexism (Ford, 2000; Greenwood & Isbell, 2002), and sexist jokes are further suggested to encourage greater rape proclivity amongst men higher in misogynistic views and hostile sexism (Romero-Sánchez et al., 2017). These findings indicate that sheer enjoyment of sexist humour can even have detrimental subsequent effects, and that exploring methods in which sexist attitudes can be diminished and collective action against sexism can be increased are imperative.

The use of subversive humour, that “criticizes, confronts, and questions sexism,” (also known as “feminist humour”),

can be effective in increasing tendencies to take collective action for gender equality after encountering subversive humour against sexism in a sample of both Spanish men and women with lower feminist identity (Riquelme et al., 2020). Previous studies have also examined the predictors of sexual humour (i.e., humour with sexual themes, these could or could not be sexist) and identified toughmindedness as predictive of sexual humour, with psychopathy and Machiavellianism related to toughmindedness (Eysenck & Wilson, 1978; Prerost, 1980, 1983, 1985; Ruch & Hehl, 1988). The Dark Tetrad traits (i.e., psychopathy, Machiavellianism, narcissism, sadism) represent a group of dispositions for antisocial and malevolent behaviours that are primarily perceived as socially unfavourable (Paulhus & Williams, 2002; Stead et al., 2012), and may thus show potential positive correlates with appreciation for sexist humour. Like sexist humour, Dark Tetrad traits are malicious in nature and are predictive of various aversive psychosocial outcomes that include violence and aggression towards others (Paulhus et al., 2018), desires for short-term and instrumental mating strategies (Jonason et al., 2009), high levels of infidelity (Jonason & Kavanagh, 2010), and intimidating behaviours at work (Spurk et al., 2016). More specifically, psychopathy is characterized by lack of empathy, lack of remorse, impulsivity, aggression and risk-taking behaviours (Viding et al., 2014). Machiavellianism reflects having an “ends justify the means” attitude characterized by the manipulation and exploitation of others (Christie & Geis, 1970). Narcissism is described as having a sense of grandiosity and entitlement as well as a need for admiration (Paulhus & Williams, 2002). Finally, sadism is characterized by deriving pleasure from inflicting pain, suffering or humiliation on others (O’Meara et al., 2011). Moreover, in relation to humour, traits related to psychopathy indicative of callousness and a manipulative/impulsive lifestyle are suggested to be robustly related to enjoying laughing at others (Proyer et al., 2012). Individuals with higher scores in sub-clinical psychopathy and sub-clinical Machiavellianism exhibit greater tendencies towards employing an aggressive humor style, the tendency to use humour to insult or put-down targets of the humour (Veselka et al., 2010).

That said, no research to date has explored the personality traits associated with appreciation for sexist humour (i.e., rating sexist jokes as humorous, entertaining and as situations that should not be taken seriously) and why certain individuals may accept or even enjoy this brand of humour. An exploratory examination into the personality traits that may be associated with an appreciation for sexist humour may add to the current research on reducing sexism and the many detrimental effects associated with sexist attitudes (e.g., disparagement of women, greater rape proclivity amongst men already high in hostile sexism, and inequality). Examining the “why” behind this appreciation may yield

insights into predisposing, precipitating, perpetuating, and even protective factors that contribute to individuals' sexist attitudes and tendencies in today's day and age. This is the crux of the present research. Study 1 investigates the relations between the Dark Tetrad traits (i.e., psychopathy, Machiavellianism, narcissism, sadism) and sexist humour, and the underlying mechanisms behind these associations (i.e., lack of affective and/or cognitive empathy). Study 2 matched male participants to female participants on age to examine gender differences in appreciation for sexist humour and to test the replicability of Study 1. Study 3 extends upon Studies 1 and 2 by evaluating whether these personality traits predict use of (and not just appreciation for) aggressive humour, as well as the role of perceived stress as a mediator and gender as a moderator in this relationship.

Study 1

Given the shared denigrating and socially aversive nature of the Dark Tetrad traits and sexist humour, and that we are unaware of research examining the relationship between Dark Tetrad traits and appreciation for sexist humour, the primary goal of Study 1 is to explore this relationship reflected in the following hypotheses.

Hypothesis 1a: The Dark Tetrad traits (i.e., psychopathy, Machiavellianism, sadism and narcissism) are positively associated with appreciation for sexist humour (i.e., rating sexist jokes as humorous, entertaining and as situations that should not be taken seriously).

Next, since sexist attitudes travel more freely through the medium of sexist humour compared to nonhumorous forms of communication, including sexist statements and events (Ford, 2000), the researchers hypothesize that the relationship between Dark Tetrad traits and sexist statements or events will be weaker than that between Dark Tetrad traits and sexist jokes. The researchers also hypothesize that stronger relationships will be observed between the Dark Tetrad traits and sexist humour compared to the relationships between the Dark Tetrad traits and neutral jokes (humorous jokes that do not contain sexist content). It is also hypothesized that sexist attitudes are expressed more readily through the medium of sexist humour given the prejudiced content of a sexist joke, while a neutral joke holds no such valence. As such, the Hypothesis 1b and 1c are as follows:

Hypothesis 1b: The associations between the Dark Tetrad traits and appreciation for neutral jokes (i.e., rating neutral jokes as humorous, entertaining and as situations that should not be taken seriously) are weaker than those

between the Dark Tetrad traits and appreciation for sexist humour.

Hypothesis 1c: The Dark Tetrad traits are associated with appreciation for sexist events and for sexist statements (i.e., rating sexist events and statements as humorous, entertaining and as situations that should not be taken seriously). However, these associations are weaker than those between the Dark Tetrad traits and appreciation for sexist humour.

Importantly, Study 1 also aims to examine two mechanisms anticipated to underlie these relationships. More specifically, affective empathy, the unconscious drive to feel and respond to others' emotions, and cognitive empathy, the largely conscious drive that enables one to understand others' emotional state, will be explored in tandem as potential mediators of this relationship. An understanding of the potential interplay between affective and cognitive empathy as underlying mechanisms may provide new insights into potential psychological, social, and biological factors that predispose, precipitate, perpetuate and that may even protect against sexist attitudes and tendencies.

By definition, the Dark Tetrad traits have collectively been characterized by a lack of empathy (Kajonius & Björkman, 2020; Paulhus & Williams, 2002; Viding et al., 2014). Interestingly, each of the Dark Triad traits (narcissism, Machiavellianism, psychopathy) are associated with unique patterns of emotional deficits (Jonason & Krause, 2013). Those high on narcissism tended to have limited affective empathy and had more difficulties identifying their emotions, while those high on psychopathy tended to have a lack of empathy overall, tended to use externally oriented thinking (i.e., difficulties attending to one's inner states) and tended to find describing their own feelings challenging (Jonason & Krause, 2013). Meanwhile, Machiavellianism is associated with externally oriented thinking (Jonason & Krause, 2013). As such, individual differences in the Dark Tetrad traits may play a role in the level and type of empathy one employs.

Next, in a study investigating the relations between cognitive and affective empathy and cyberbullying amongst adolescents, it has been suggested that girls and boys with both low cognitive and affective empathy tended to have more cyberbullying tendencies (i.e., intimidating, making fun of, and putting others down on the internet or using technology), whereas those who had high cognitive empathy tended to score lower on cyberbullying tendencies. This suggests that individual differences in cognitive and affective empathy may play a key role in engagement in malevolent tendencies (Ang & Goh, 2010), such as the potential appreciation for humour that is sexist against females as a way of putting people down.

More specifically, having difficulties with feeling and relating to others' emotions (less affective empathy) may minimize the emotional consequences of perceiving another being harmed through sexist jokes, while rationally understanding the harm caused from the sexist joke (intact cognitive empathy) may be required to process the intent of the sexist joke as humorous. This would then lead to the appreciation of sexist jokes.

As such, it is hypothesized that less affective empathy, but not less cognitive empathy, mediates the relationship between Dark Tetrad traits and appreciation for sexist humour.

On the other hand, it is hypothesized that a lack of emotion and understanding about the harm that may be inflicted on the targets of the sexist statements and events (lack of cognitive and affective empathy) may explain the relationship between the Dark Tetrad traits and appreciation for sexist statements and events.

Therefore, the following will also be tested:

Hypothesis 2a: Less affective empathy and intact cognitive empathy mediate the relationship between the Dark Tetrad traits and appreciation for sexist humour (i.e., rating sexist jokes as humorous, entertaining and as situations that should not be taken seriously).

Hypothesis 2b: Less affective and less cognitive empathy mediate the relationship between the Dark Tetrad traits and appreciation for sexist statements and events (i.e., rating sexist statements and events as humorous, entertaining and as situations that should not be taken seriously).

Methods

Participants and procedure

Undergraduate students were recruited from a large Canadian university ($N = 304$, 72.71% female, $M_{age} = 21.34$, $SD = 4.33$) through the Undergraduate Psychology Research Pool, Facebook posts in university student groups, and mass recruitment emails from the university. The study was introduced with the title, "Individual Differences in Humour". In the Letter of Information and Consent, we described the study as an exploration of personality traits related to humour, culture, and wellbeing such that participants' responses to Dark Tetrad measures would not be influenced by their knowledge of the research question. Participation was entirely voluntary, and the survey was only administered once informed consent was obtained from participants. Upon consenting to completing the study, participants were presented with a battery of self-report questionnaires and vignettes. The questionnaires were multiple choice and included demographic items and measures assessing current

state, affect, and habitual traits for the psychological variables under consideration. Participants were then debriefed upon completion of the survey, and those who completed the survey through the university research pool were granted 0.5 research credits for their time.

Measures

Sexist humour Appreciation for sexist humour was measured using a series of vignettes that were rated for how humorous, how entertaining, and how seriously one believes the presented sexist and neutral jokes/statements/events should be interpreted. These vignettes are based on the vignettes from Ford's seminal study of the effects of sexist humour on the tolerance of sexist events (Ford, 2000), but adapted to fit an undergraduate student sample (see Appendix A for the vignettes used in the present study). The first and fifth vignettes describe non-sexist "filler" events to reduce suspicion of the true purpose of the study. The second, third, and fourth conditions contain the sexist joke, neutral joke, and sexist statement conditions, respectively. In the sexist joke condition (second vignette), the first joke is neutral (non-sexist) and the remaining four are sexist. In the neutral joke condition (third vignette), all five jokes are neutral (non-sexist). In the sexist statement condition (fourth vignette), participants read five statements made by the group of university students in the scenario that is designed to communicate the content of each of the jokes from the sexist joke condition but in a nonhumorous way (as a statement). The sixth or last vignette describes an event where sexist behaviours were employed by the university students in the scenario. After reading each vignette, participants answer the following questions: "How humorous is this situation?", "How entertaining is this situation?" and "To what extent do you think the behavior described in this situation should be interpreted seriously (as opposed to a light-hearted, playful manner)?" Responses are made on a 1 (e.g., "not at all humorous") to 7 (e.g., "very humorous") Likert-scale. Finally, participants were requested to write at least one sentence indicating their reactions to the study, to check whether participants expressed suspicion of the true purpose of the study. Importantly, pretest ratings were completed by 10 pilot participants, which consists of students from a large Canadian university, prior to recruiting participants for the study. These indicate that the sexist jokes are more sexist but equally as funny as the ones in the neutral condition (Sexist Jokes: How Sexist $M = 5.26$, $SD = 2.01$; How Humorous $M = 3.00$, $SD = 1.76$; Neutral Jokes: How Sexist $M = 1.00$, $SD = 1.05$; How Humorous $M = 3.28$, $SD = 2.00$); the sexist statements are equally sexist but less funny than the sexist jokes (Sexist Statements: How Sexist $M = 5.10$, $SD = 2.59$; How Humorous $M = 1.15$, $SD = 0.95$; Sexist Jokes: How Sexist $M = 5.26$, $SD = 2.01$;

How Humorous $M = 3.00$, $SD = 1.76$); the non-sexist events indicate no perception of sexist events while the sexist event yields perception of the event being sexist (Neutral Events: How Sexist $M = 1.30$, $SD = 0.92$; Sexist Event: How Sexist $M = 6.00$, $SD = 1.05$). All t -tests resulted in p -values that were < 0.01 . Means observed are comparable to those in Ford's seminal study.

Psychopathy Levenson's Self-Report Psychopathy Scale (LSRP; Levenson et al., 1995) measures psychopathy, a malevolent personality trait characterized by lack of empathy and remorse, impulsivity, aggression and risk-taking behaviours (Viding et al., 2014), on a 5-point Likert scale (from 1 = "strongly disagree" to 5 = "strongly agree"). Sample items from the scale include "Success is based on survival of the fittest; I am not concerned about the losers," and "Love is overrated". Previous studies have reported good convergent, discriminant, and construct validity for the scale (Brinkley et al., 2001; Sellbom, 2011) as well as excellent reliability ($\alpha = 0.85$; Brinkley et al., 2001). The LSRP was used in place of the Short Dark Triad as the latter is a "brief proxy measure" (Jones & Paulhus, 2014) while the former takes a deeper and more nuanced account of psychopathy. More specifically, the LSRP accounts for both primary and secondary psychopathy, which involve lack of anxiety, rationality, and superficial charm (primary psychopathy), but also intense emotional arousal, psychosocial issues, vulnerability and interpersonal aggression (secondary psychopathy). The LSRP was included in addition to the SD3-Short because although the SD3-Short is an effective brief proxy measure for psychopathy, it only captures the callous and impulsive aspects of psychopathy which does not capture a holistic picture of this construct.

Machiavellianism The Short Dark Triad of Personality (SD3-Short; Jones & Paulhus, 2014) is a 27-item self-report questionnaire that measures subclinical Machiavellianism, as well as narcissism and psychopathy. Machiavellianism is a tendency towards manipulative and exploitative behaviours (e.g., "Make sure your plans benefit you, not others") and is measured on a 5-point Likert scale (from 1 = "strongly disagree" to 5 = "strongly agree") in the SD3. The SD3 has been reported to have adequate concurrent validity and external validity (Jones & Paulhus, 2014), as well as adequate reliabilities for Machiavellianism ($\alpha = 0.77$), narcissism ($\alpha = 0.71$), and psychopathy ($\alpha = 0.80$; Jones & Paulhus, 2014).

Narcissism Narcissism, characterized by a sense of grandiosity and entitlement (e.g., narcissism (e.g., "People see me as a natural leader,")) was also measured using the SD3-Short (Jones & Paulhus, 2014). The scale has demonstrated good concurrent and external validity, as well as strong reliabilities as evidenced above (Jones & Paulhus, 2014).

Sadism The Assessment of Sadistic Personality (ASP; Plouffe et al., 2017) is comprised of 9 items assessing subclinical sadism described as deriving pleasure from inflicting pain or humiliation in others. Items are rated on a 5-point Likert scale (ranging from 1 = "strongly disagree" to 5 = "strongly agree"). An example item is "When I mock someone, it is funny to see them get upset." This measure has demonstrated acceptable internal consistency and convergent validity (Plouffe et al., 2017, 2019).

Affective and cognitive empathy The Basic Empathy Scale (BES; Jolliffe & Farrington, 2006) is a measure of affective empathy (i.e., one's unconscious drive to respond to another's affect) and cognitive empathy (i.e., a conscious drive that is required to understand another's affect). This 20-item measure is assessed on a 5-point Likert scale, from 1 = "strongly disagree" to 5 = "strongly agree". This measure has demonstrated good internal consistency (Jolliffe & Farrington, 2006).

Aggressive humour The Aggressive Humour subscale from the Humor Styles Questionnaire (HSQ; Martin et al., 2003) is comprised of 8 items on a 7-point Likert scale from 1 = "totally disagree" to 7 = "totally agree", measuring the tendency to use humour that involves put-downs, sarcasm, ridiculing and teasing at the expense of others (e.g., "If I don't like someone, I often use humor or teasing to put them down"). This scale has demonstrated adequate internal consistency ($\alpha = 0.77$; Vernon et al., 2008).

Perceived Stress The Perceived Stress Scale (PSS; Cohen, 1988) is a 4-item scale measuring the degree to which one appraises events in their lives as stressful (e.g., "In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?") using a 5-point Likert scale ranging from 0 = "never" to 4 = "very often". This measure has demonstrated good internal consistency, factorial validity and hypothesis validity (see Lee, 2012 for review).

Data analysis

Prior to conducting primary analyses, the reliability of all measures were checked and showed adequate to excellent reliability (Table 1). Of participants who completed the questionnaire, 57 were removed due to incorrectly answered Attention Checks (e.g., participant clicked "Moderately Disagree" when the question asked them to choose "Strongly Disagree"). Mahalanobis distance, the length between a single point and the centroid of all remaining points (Tabachnick et al., 2019) was also employed to further screen the data for univariate outliers, identifying and removing 8 outliers. Given the current study aims to investigate individuals' reactions and attitudes

Table 1 Summary statistics and zero-order correlations among variables

| | M | SD | Psychopathy | Narcissism | Machiavellianism | Sadism | Affective Empathy | Cognitive Empathy | Sexist Joke (H) | Sexist Joke (E) |
|----------------------|---------|---------|----------------------|----------------------|------------------|------------------|-------------------|-------------------|------------------|------------------|
| Psychopathy | 2.18 | .44 | .85 | | | | | | | |
| Narcissism | 2.67 | .58 | .27*** | .70 | | | | | | |
| Machiavellianism | 3.10 | .56 | .65*** | .41*** | .76 | | | | | |
| Sadism | 1.78 | .58 | .62*** | .30*** | .49*** | .80 | | | | |
| Affective Empathy | 3.78 | .60 | -.24*** | -.14* | -.17** | -.27*** | .86 | | | |
| Cognitive Empathy | 4.06 | .47 | -.28*** | .01 | -.14* | -.18** | .32*** | .83 | | |
| Sexist Joke (H) | 3.06 | 1.31 | .27*** | .18** | .26*** | .27*** | -.20*** | -.07 | .76 | |
| Sexist Joke (E) | 2.82 | 1.29 | .21*** | .11 | .22*** | .24*** | -.15* | -.05 | .92*** | .78 |
| Sexist Joke (S) | 3.11 | 1.48 | -.23*** | -.14* | -.24*** | -.19*** | .25*** | .12* | -.48*** | -.43*** |
| Sexist Statement (H) | 3.56 | 1.33 | .11* | .05 | .09 | .13* | -.06 | -.17** | .36*** | .35*** |
| Sexist Statement (E) | 3.34 | 1.35 | .03 | .02 | .06 | .07 | -.10 | -.17** | .40*** | .38*** |
| Sexist Statement (S) | 1.86 | .99 | -.22*** | -.12* | -.15* | -.17** | .19** | .25*** | -.13* | -.10 |
| Sexist Event (H) | 1.30 | .59 | .14* | .06 | .11 | .19** | -.12* | -.19*** | .31*** | .31*** |
| Sexist Event (E) | 1.41 | .73 | .13* | .13* | .13* | .12* | -.08 | -.15** | .27*** | .28*** |
| Sexist Event (S) | 5.05 | 1.57 | -.25*** | -.10 | -.21*** | -.27*** | .21*** | .22*** | -.22*** | -.18** |
| Neutral Joke (H) | 1.37 | .70 | .01 | .01 | -.02 | .10 | .03 | .01 | .50*** | .50*** |
| Neutral Joke (E) | 1.44 | .88 | -.01 | .01 | .01 | .09 | .08 | .02 | .47*** | .54*** |
| Neutral Joke (S) | 4.91 | 1.63 | -.14* | -.07 | -.19*** | -.10 | .17** | .03 | -.30*** | -.27*** |
| | | | Sexist Statement (H) | Sexist Statement (S) | Sexist Event (H) | Sexist Event (E) | Sexist Event (S) | Neutral Joke (H) | Neutral Joke (E) | Neutral Joke (S) |
| Psychopathy | | | | | | | | | | |
| Narcissism | | | | | | | | | | |
| Machiavellianism | | | | | | | | | | |
| Sadism | | | | | | | | | | |
| Affective Empathy | | | | | | | | | | |
| Cognitive Empathy | | | | | | | | | | |
| Sexist Joke (H) | | | | | | | | | | |
| Sexist Joke (E) | | | | | | | | | | |
| Sexist Joke (S) | .85 | | | | | | | | | |
| Sexist Statement (H) | -.16** | .83 | | | | | | | | |
| Sexist Statement (E) | -.20*** | .70*** | | | | | | | | |
| Sexist Statement (S) | .50*** | -.29*** | .86 | | | | | | | |
| Sexist Event (H) | -.07 | .45*** | .37*** | .90 | | | | | | |
| Sexist Event (E) | -.13* | .38*** | .44*** | -.16** | .80 | | | | | |
| Sexist Event (S) | .43*** | -.22*** | -.13* | -.15** | .65*** | .80 | | | | |
| | | | | .56*** | -.21*** | -.20*** | .80 | | | |

Table 1 (continued)

| | Sexist Joke (S) | Sexist Statement (H) | Sexist Statement (S) | Sexist Statement (E) | Sexist Event (H) | Sexist Event (S) | Sexist Event (E) | Sexist Event (S) | Neutral Joke (H) | Neutral Joke (E) | Neutral Joke (S) |
|------------------|-----------------|----------------------|----------------------|----------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Neutral Joke (H) | -.07 | .26*** | .11* | .26*** | .21*** | .11 | .02 | .76 | | | |
| Neutral Joke (E) | -.03 | .27*** | .12* | .30*** | .21*** | .13* | .03 | .92*** | .80 | | |
| Neutral Joke (S) | .62*** | .02 | .31*** | -.04 | .06 | .02 | .27*** | -.13* | -.11 | .79 | |

N = 304, MacDonald's Omega in diagonal are in italics. * $p < .05$, ** $p < .01$, *** $p < .001$. H = How Humorous is the Situation?, E = How Entertaining is the Situation?, S = How Seriously Should the Situation be Interpreted?

towards sexist humour in a normative subclinical population, we removed outliers who endorsed pathological or clinical levels of the Dark Tetrad traits. In addition, the skewness and kurtosis of the variables did not denote significant deviations from a normal distribution and no significant deviations were detected after screening the data for linearity, normality, homoscedasticity, homogeneity, and absence of multicollinearity (Tabachnick et al., 2019). The final sample comprised of 304 participants.

Model 4 of the PROCESS plug-in for SPSS was used to run all analyses (Hayes, 2017). Bivariate correlations were calculated to identify significant associations between the independent and dependent variables, as well as between potential mediators.

Next, a series of multiple mediation analyses were conducted with psychopathy, Machiavellianism, sadism and narcissism each tested as predictor variables for rating sexist jokes, statements, and events as “humorous”, “entertaining”, and as “situations to be taken seriously” (outcome variables), through both affective and cognitive empathy (mediators). The conceptual framework for the multiple mediation analyses is shown in Fig. 1.

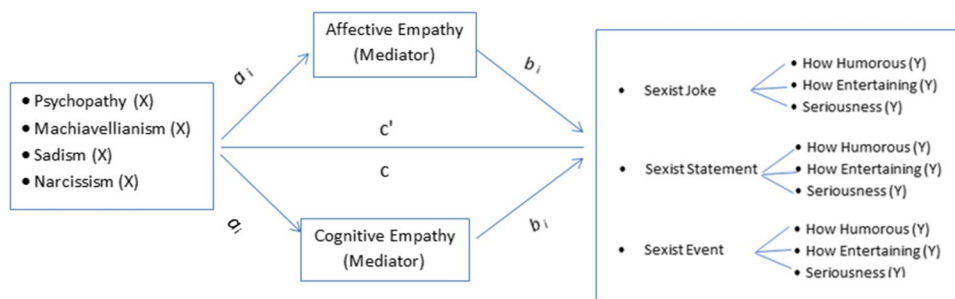
As seen in Fig. 1, the following were tested for each multiple mediation model: (1) the total effects of the predictors on the outcome variables (i.e., “c” path), (2) the direct effects of the predictors on the outcome variables (i.e., “c” path), (3) the direct effects of the predictors on the mediators (i.e., “a” paths), (4) the direct effects of the mediators on the outcome variables (i.e., “b” paths), and (5) the indirect effects of the predictors on the outcome variables through each of the mediators (i.e., “ab” path). More specifically, assumptions that paths a, b and c are significant must be met to test for mediation (Baron & Kenny, 1986). The Bootstrap method (Preacher & Hayes, 2008) was then employed to test for the indirect effects between the predictor and outcome variables through mediator variables over 5000 simulations (i.e., “ab” path), where there is evidence of a significant mediation effect when the 95% bias-corrected confidence interval does not contain zero (Preacher & Hayes, 2008). Finally, there is evidence for a full mediation if the direct effect from the independent variable to dependent variable is no longer significant when controlling for the mediator variables (i.e., non-significant “c” path), and evidence for a partial mediation if the direct effect from the independent variable to dependent variable is still significant when controlling for the mediators (i.e., significant “c” path).

Results

Correlation analyses

Consistent with Hypothesis 1a, significant positive moderate correlations were observed between psychopathy,

Fig. 1 Conceptual framework for the multiple mediation analyses



Machiavellianism, and sadism, respectively, and appreciation for sexist humour, which includes rating sexist jokes as humorous, entertaining and not to be taken seriously (Table 1). However, the relationship between narcissism and rating sexist jokes as humorous and not to be taken seriously were statistically significant but weak ($r=0.18, p < 0.01$ and $r=-0.14, p < 0.05$, respectively), and the correlation between narcissism and rating sexist jokes as entertaining was non-significant ($r=0.11, p > 0.05$).

In contrast and consistent with Hypothesis 1b, the associations between all four Dark Tetrad traits and rating neutral jokes as humorous, entertaining, and not to be taken seriously were weak or non-significant (Table 1).

Lastly, consistent with Hypothesis 1c, there were weak or non-significant associations between psychopathy, Machiavellianism and sadism, respectively, and rating sexist statements and events as humorous or entertaining as shown in Table 1. However, contradicting Hypothesis 1c, significant moderate correlations between psychopathy, Machiavellianism and sadism, respectively, and rating sexist statements and events as situations that should not be taken seriously were observed (Table 1). In addition, the correlations between narcissism and rating sexist statements as humorous, entertaining, and not to be taken seriously were either weak or non-significant (Table 1).

Multiple mediation analyses

In support of Hypothesis 2a, results from the multiple mediation analyses indicated that the associations between each

of the Dark Tetrad traits and rating sexist jokes as humorous and low on how seriously they should be taken, respectively, were partially mediated by less affective empathy, but not less cognitive empathy (e.g., Fig. 2). More specifically, those who scored higher on the Dark Tetrad traits significantly reported having less affective empathy (e.g., psychopathy → affective empathy: $b = -0.33, SE = 0.08, p < 0.001$; see Table 2 for all direct effects or “a” paths), which was subsequently related to rating sexist jokes as humorous and low on how seriously they should be taken (e.g., affective empathy → rating sexist jokes as humorous: $b = -0.43, SE = 0.12, p < 0.001$; see Table 3 for all direct effects or “b” paths). A 95% confidence interval based on 5000 Bootstrap resamples indicated that the indirect effects through less affective

Table 2 Direct effects of psychopathy, Machiavellianism, sadism and narcissism on affective and cognitive empathy

| Independent Variable | Mediator | Direct Effect (a_i) | | |
|----------------------|----------|-------------------------|-----|-------|
| | | Coefficient | SE | p |
| Psychopathy | AE | -.33 | .08 | <.001 |
| | CE | -.30 | .06 | <.001 |
| Machiavellianism | AE | -.18 | .06 | <.01 |
| | CE | -.11 | .05 | <.05 |
| Sadism | AE | -.28 | .06 | <.001 |
| | CE | -.14 | .05 | <.01 |
| Narcissism | AE | -.15 | .06 | <.05 |
| | CE | .01 | .05 | .84 |

AE Affective Empathy; CE Cognitive; SE standard error. a_i =direct effects of the independent variable on the mediator ($X \rightarrow M$)

Fig. 2 The relationship between psychopathy and rating sexist jokes as humorous is partially mediated by less affective empathy (while cognitive empathy remains intact). Note. * $p < .05$, ** $p < .01$, *** $p < .001$

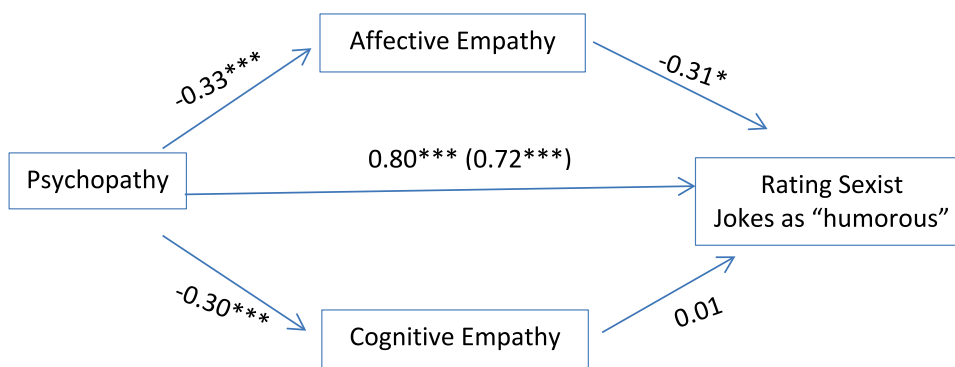


Table 3 Direct and indirect effects of Dark Tetrad traits on sexist jokes/statements/events ratings through cognitive and affective empathy

| Independent Variable | Mediator | Direct Effect (b_i) | | | Indirect Effect ($a_i b_i$) | | | | | |
|--|----------|-------------------------|-----|----------|-------------------------------|---------|-------|-------|--------------|--|
| | | Coefficient | SE | <i>p</i> | Coefficient | Boot SE | Lower | Upper | <i>power</i> | |
| Rating Sexist Jokes as “humorous” (<i>Y</i>) | | | | | | | | | | |
| Psychopathy | AE | -.43 | .12 | <.001 | -.31 | .12 | -.56 | -.07 | .75 | |
| | CE | -.20 | .16 | .22 | .01 | .16 | -.31 | .33 | .13 | |
| Machiavellianism | AE | -.43 | .12 | <.001 | -.35 | .12 | -.59 | -.11 | .69 | |
| | CE | -.20 | .16 | .22 | -.10 | .16 | -.41 | .21 | .03 | |
| Sadism | AE | -.43 | .12 | <.001 | -.29 | .13 | -.54 | -.05 | .68 | |
| | CE | -.20 | .16 | .22 | -.06 | .16 | -.37 | .25 | .06 | |
| Narcissism | AE | -.43 | .12 | <.001 | -.39 | .12 | -.63 | -.14 | .56 | |
| | CE | -.20 | .16 | .22 | -.20 | .16 | -.51 | .11 | .00 | |
| Rating Sexist Jokes as “entertaining” (<i>Y</i>) | | | | | | | | | | |
| Psychopathy | AE | -.31 | .12 | <.05 | -.22 | .12 | -.46 | .03 | .51 | |
| | CE | -.15 | .16 | .35 | .01 | .16 | -.31 | .33 | .11 | |
| Machiavellianism | AE | -.31 | .12 | <.05 | -.24 | .12 | -.48 | .00 | .44 | |
| | CE | -.15 | .16 | .35 | -.07 | .16 | -.35 | .24 | .04 | |
| Sadism | AE | -.31 | .12 | <.05 | -.19 | .13 | -.43 | .06 | .36 | |
| | CE | -.15 | .16 | .35 | -.03 | .16 | -.34 | .27 | .05 | |
| Narcissism | AE | -.31 | .12 | <.05 | -.29 | .12 | -.53 | -.04 | .38 | |
| | CE | -.15 | .16 | .35 | -.15 | .16 | -.46 | .16 | .00 | |
| Rating Sexist Jokes as “a situation to be taken seriously” | | | | | | | | | | |
| Psychopathy | AE | .61 | .14 | <.001 | .51 | .14 | .23 | .78 | .92 | |
| | CE | .36 | .18 | <.05 | .18 | .18 | -.18 | .54 | .05 | |
| Machiavellianism | AE | .61 | .14 | <.001 | .53 | .14 | .26 | .80 | .79 | |
| | CE | .36 | .18 | <.05 | .27 | .18 | -.08 | .62 | .04 | |
| Sadism | AE | .61 | .14 | <.001 | .52 | .14 | .24 | .80 | .91 | |
| | CE | .36 | .18 | <.05 | .26 | .18 | -.09 | .62 | .07 | |
| Narcissism | AE | .61 | .14 | <.001 | .57 | .14 | .30 | .85 | .66 | |
| | CE | .36 | .18 | <.05 | .37 | .18 | .02 | .72 | .01 | |
| Rating Sexist Statement as “humorous” | | | | | | | | | | |
| Psychopathy | AE | -.06 | .06 | .32 | -.03 | .06 | -.15 | .08 | .05 | |
| | CE | -.21 | .07 | <.01 | -.18 | .07 | -.33 | -.04 | .69 | |
| Machiavellianism | AE | -.06 | .06 | .32 | -.04 | .06 | -.16 | .07 | .04 | |
| | CE | -.21 | .07 | <.01 | -.20 | .07 | -.34 | -.06 | .50 | |
| Sadism | AE | -.06 | .06 | .32 | -.02 | .06 | -.14 | .09 | .06 | |
| | CE | -.21 | .07 | <.01 | -.19 | .07 | -.33 | -.04 | .63 | |
| Narcissism | AE | -.06 | .06 | .32 | -.05 | .06 | -.16 | .06 | .03 | |
| | CE | -.21 | .07 | <.01 | -.21 | .07 | -.35 | -.07 | .03 | |
| Rating Sexist Statement as “entertaining” | | | | | | | | | | |
| Psychopathy | AE | -.12 | .07 | .08 | -.12 | .07 | -.26 | .02 | .15 | |
| | CE | -.27 | .09 | <.01 | -.27 | .09 | -.45 | -.10 | .75 | |
| Machiavellianism | AE | -.12 | .07 | .08 | -.11 | .04 | -.06 | .10 | .10 | |
| | CE | -.27 | .09 | <.01 | -.26 | .09 | -.43 | -.08 | .43 | |
| Sadism | AE | -.12 | .07 | .08 | -.11 | .07 | -.25 | .04 | .12 | |
| | CE | -.27 | .09 | <.01 | -.26 | .09 | -.43 | -.08 | .59 | |
| Narcissism | AE | -.12 | .07 | .08 | -.12 | .07 | -.26 | .02 | .07 | |
| | CE | -.27 | .09 | <.01 | -.27 | .09 | -.44 | -.10 | .03 | |
| Rating Sexist Statement as “a situation to be taken seriously” | | | | | | | | | | |
| Psychopathy | AE | .49 | .15 | <.00 | .38 | .15 | .08 | .67 | .39 | |
| | CE | .82 | .19 | <.001 | .67 | .19 | .30 | 1.05 | .84 | |

Table 3 (Continued)

| Independent Variable | Mediator | Direct Effect (b_i) | | | Indirect Effect ($a_i b_i$) | | | | |
|--|----------|-------------------------|-----|-------|-------------------------------|---------|-------|-------|-------|
| | | Coefficient | SE | p | Coefficient | Boot SE | Lower | Upper | power |
| Machiavellianism | AE | .49 | .15 | <.00 | .44 | .15 | .14 | .73 | .36 |
| | CE | .82 | .19 | <.001 | .77 | .19 | .40 | 1.14 | .62 |
| Sadism | AE | .49 | .15 | <.00 | .40 | .15 | .10 | .70 | .38 |
| | CE | .82 | .19 | <.001 | .75 | .19 | .38 | 1.12 | .81 |
| Narcissism | AE | .49 | .15 | <.00 | .46 | .15 | .16 | .75 | .27 |
| | CE | .82 | .19 | <.001 | .83 | .19 | .46 | 1.19 | .05 |
| Rating Sexist Event as “humorous” | | | | | | | | | |
| Psychopathy | AE | -.14 | .07 | <.05 | -.11 | .07 | -.25 | .02 | .14 |
| | CE | -.28 | .08 | <.001 | -.25 | .09 | -.42 | -.07 | .68 |
| Machiavellianism | AE | -.14 | .07 | <.05 | -.27 | .07 | -.26 | .01 | .12 |
| | CE | -.28 | .08 | <.001 | -.13 | .08 | -.43 | -.10 | .48 |
| Sadism | AE | -.14 | .07 | <.05 | -.09 | .07 | -.23 | .04 | .09 |
| | CE | -.28 | .08 | <.001 | -.24 | .08 | -.41 | -.08 | .64 |
| Narcissism | AE | -.14 | .07 | <.05 | -.14 | .07 | -.27 | .00 | .09 |
| | CE | -.28 | .08 | <.001 | -.28 | .08 | -.45 | -.12 | .03 |
| Rating Sexist Event as “entertaining” | | | | | | | | | |
| Psychopathy | AE | -.12 | .08 | .16 | -.08 | .09 | -.25 | .09 | .07 |
| | CE | -.28 | .11 | <.01 | -.23 | .11 | -.45 | -.01 | .49 |
| Machiavellianism | AE | -.12 | .08 | .16 | -.09 | .09 | -.26 | .08 | .04 |
| | CE | -.28 | .11 | <.01 | -.25 | .11 | -.46 | -.04 | .35 |
| Sadism | AE | -.12 | .08 | .16 | -.08 | .09 | -.25 | .10 | .06 |
| | CE | -.28 | .11 | <.01 | -.25 | .11 | -.46 | -.04 | .49 |
| Narcissism | AE | -.12 | .08 | .16 | -.09 | .08 | -.26 | .07 | .03 |
| | CE | -.28 | .11 | <.01 | -.28 | .11 | -.49 | -.08 | .03 |
| Rating Sexist Event as “a situation to be taken seriously” | | | | | | | | | |
| Psychopathy | AE | .58 | .15 | <.001 | .44 | .15 | .14 | .75 | .56 |
| | CE | .75 | .20 | <.001 | .56 | .20 | .16 | .95 | .59 |
| Machiavellianism | AE | .58 | .15 | <.001 | .50 | .15 | .20 | .80 | .47 |
| | CE | .75 | .20 | <.001 | .67 | .19 | .29 | 1.05 | .52 |
| Sadism | AE | .58 | .15 | <.001 | .41 | .16 | .10 | .71 | .43 |
| | CE | .75 | .20 | <.001 | .61 | .19 | .23 | .99 | .64 |
| Narcissism | AE | .58 | .15 | <.001 | .55 | .15 | .25 | .85 | .45 |
| | CE | .75 | .20 | <.001 | .76 | .19 | .37 | 1.14 | .03 |

AE Affective Empathy; CE Cognitive; SE standard error

empathy, holding less cognitive empathy constant, did not include zeros (e.g., affective empathy → rating sexist jokes as humorous, controlling for psychopathy: $b = -0.31$, $Boot SE = 0.12$, 95% CI = [-0.56, -0.07]; see Table 3 for all indirect effects or “ab” paths). On the other hand, the indirect effects through less cognitive empathy included zeros (e.g., cognitive empathy → rating sexist jokes as humorous, controlling for psychopathy: $b = 0.01$, $Boot SE = 0.16$, 95% CI = [-0.31, 0.33]; see Table 3 for all indirect effects or “ab” paths). Further, those who scored high on the Dark Tetrad traits reported finding sexist jokes humorous and low on how seriously they should be taken even when accounting

for the indirect effects of the Dark Tetrad traits through both affective and cognitive empathy (e.g., psychopathy → rating sexist jokes as humorous: $b = 0.72$, $SE = 0.17$, $p < 0.001$; see Table 4 for direct effects or “c” paths), providing evidence for partial mediations.

In support of Hypothesis 2b, less cognitive and less affective empathy partially mediated the relationship between psychopathy, Machiavellianism and sadism, and rating sexist events and statements as situations that should not be taken seriously (e.g., Fig. 3). More specifically, those who scored higher on psychopathy, Machiavellianism, and sadism significantly reported having less affective empathy

Table 4 Total and direct effects of the Dark Tetrad traits on sexist joke/statement/event ratings

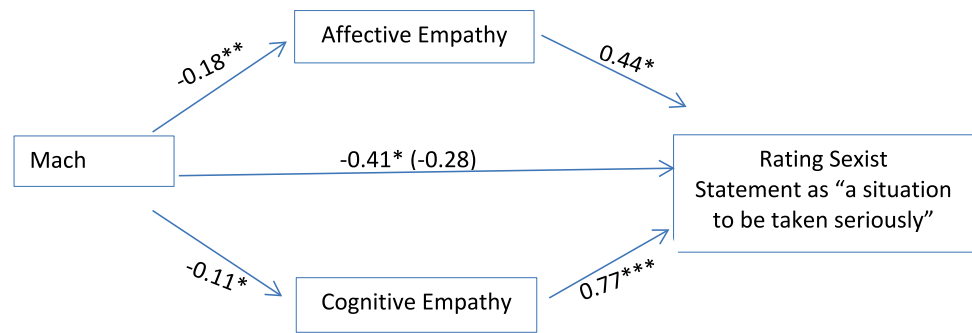
| Outcome (<i>Y</i>) | Total Effect (<i>c</i>) | | | Direct Effect (<i>c'</i>) | | | <i>power</i> |
|--|---------------------------|-----------|----------|-----------------------------|-----------|----------|--------------|
| | Coefficient | <i>SE</i> | <i>p</i> | Coefficient | <i>SE</i> | <i>p</i> | |
| Psychopathy (<i>X</i>) | | | | | | | |
| Rating Sexist Jokes as “humorous” | .80 | .17 | <.001 | .72 | .17 | <.001 | .59 |
| Rating Sexist Jokes as “entertaining” | .61 | .17 | <.001 | .56 | .17 | <.001 | .42 |
| Rating Sexist Jokes as “a situation to be taken seriously” | −.76 | .19 | <.001 | −.60 | .20 | .00 | .49 |
| Rating Sexist Statement as “Humorous” | .15 | .08 | .05 | .10 | .08 | .21 | .47 |
| Rating Sexist Statement as “Entertaining” | .05 | .10 | .57 | −.04 | .10 | .67 | .28 |
| Rating Sexist Statement as “a situation to be taken seriously” | −.77 | .20 | <.001 | −.52 | .21 | .01 | .18 |
| Rating Sexist Event as “Humorous” | .22 | .09 | <.05 | .13 | .09 | .17 | .25 |
| Rating Sexist Event as “Entertaining” | .26 | .11 | <.05 | .19 | .12 | .12 | .24 |
| Rating Sexist Event as “a situation to be taken seriously” | −.93 | .21 | <.001 | −.68 | .22 | <.01 | .05 |
| Machiavellianism (<i>X</i>) | | | | | | | |
| Rating Sexist Jokes as “humorous” | .60 | .13 | <.001 | .54 | .13 | <.001 | .47 |
| Rating Sexist Jokes as “entertaining” | .50 | .13 | <.001 | .46 | .13 | <.001 | .32 |
| Rating Sexist Jokes as “a situation to be taken seriously” | −.62 | .15 | <.001 | −.52 | .15 | <.001 | .42 |
| Rating Sexist Statement as “Humorous” | .09 | .06 | .12 | .07 | .06 | .24 | .27 |
| Rating Sexist Statement as “Entertaining” | .08 | .07 | .29 | .04 | .07 | .58 | .11 |
| Rating Sexist Statement as “a situation to be taken seriously” | −.41 | .16 | .01 | −.28 | .16 | .07 | .07 |
| Rating Sexist Event as “Humorous” | .14 | .07 | .06 | .10 | .07 | <.001 | .11 |
| Rating Sexist Event as “Entertaining” | .20 | .09 | <.05 | .17 | .09 | .06 | .14 |
| Rating Sexist Event as “a situation to be taken seriously” | −.60 | .16 | <.001 | −.48 | .16 | <.01 | .05 |
| Sadism (<i>X</i>) | | | | | | | |
| Rating Sexist Jokes as “humorous” | .62 | .13 | <.001 | .54 | .13 | <.001 | .55 |
| Rating Sexist Jokes as “entertaining” | .53 | .12 | <.001 | .48 | .13 | <.001 | .32 |
| Rating Sexist Jokes as “a situation to be taken seriously” | −.49 | .14 | <.001 | −.33 | .15 | <.05 | .63 |
| Rating Sexist Statement as “Humorous” | .13 | .06 | <.05 | .11 | .06 | .08 | .33 |
| Rating Sexist Statement as “Entertaining” | .09 | .07 | .22 | .04 | .07 | .59 | .13 |
| Rating Sexist Statement as “a situation to be taken seriously” | −.45 | .15 | <.01 | −.28 | .16 | .07 | .09 |
| Rating Sexist Event as “Humorous” | .22 | .07 | <.001 | .18 | .07 | <.05 | .17 |
| Rating Sexist Event as “Entertaining” | .18 | .09 | <.05 | .14 | .09 | .12 | .18 |
| Rating Sexist Event as “a situation to be taken seriously” | −.76 | .16 | <.001 | −.60 | .16 | <.001 | .05 |
| Narcissism (<i>X</i>) | | | | | | | |
| Rating Sexist Jokes as “humorous” | .40 | .13 | <.01 | .35 | .13 | <.01 | .41 |
| Rating Sexist Jokes as “entertaining” | .24 | .13 | .06 | .20 | .13 | .11 | .27 |
| Rating Sexist Jokes as “a situation to be taken seriously” | −.36 | .14 | <.05 | −.28 | .14 | <.05 | .53 |
| Rating Sexist Statement as “Humorous” | .50 | .06 | .39 | .50 | .06 | .36 | .04 |
| Rating Sexist Statement as “Entertaining” | .03 | .07 | .71 | .02 | .07 | .77 | .05 |
| Rating Sexist Statement as “a situation to be taken seriously” | −.32 | .15 | <.05 | −.28 | .15 | .06 | .16 |
| Rating Sexist Event as “Humorous” | .08 | .07 | .28 | .07 | .07 | .33 | .07 |
| Rating Sexist Event as “Entertaining” | .19 | .09 | <.05 | .20 | .09 | <.05 | .03 |
| Rating Sexist Event as “a situation to be taken seriously” | −.29 | .16 | .08 | −.23 | .16 | .14 | .26 |

AE Affective Empathy; *CE* Cognitive; *SE* standard error

(e.g., Machiavellianism → affective empathy: $b = -0.18$, $SE = 0.06$, $p < 0.01$; see Table 2 for all direct effects or “a” paths) and less cognitive empathy (e.g., sadism → cognitive empathy: $b = -0.14$, $SE = 0.05$, $p < 0.01$; see Table 2 for all

direct effects or “a” paths). These were each subsequently related to rating sexist events and statements as low on how seriously they should be taken (e.g., affective empathy → rating sexist event as a situation to be taken seriously:

Fig. 3 The relationship between Machiavellianism and rating sexist statements as situations to be taken seriously is partially mediated by both less affective and less cognitive empathy. . Note. * $p < .05$, ** $p < .01$, *** $p < .001$



$b = 0.58$, $SE = 0.15$, $p < 0.001$, cognitive empathy \rightarrow rating sexist event as a situation to be taken seriously: $b = 0.75$, $SE = 0.20$, $p < 0.001$; see Table 3 for all direct effects or “b” paths). A 95% confidence interval based on 5000 Bootstrap resamples indicated that the indirect effects through less affective empathy, holding less cognitive empathy constant, did not include zeros (affective empathy \rightarrow rating sexist event as a situation to be taken seriously, controlling for psychopathy: $b = 0.44$, $Boot SE = 0.15$, 95% CI = [0.14, 0.75]; see Table 3 for all indirect effects or “ab” paths). Statistical power analyses can be found in Tables 3 and 4 (Schoemann et al., 2017).

Similarly, the indirect effects through less cognitive empathy, holding less affective empathy constant, did not include zeros either (cognitive empathy \rightarrow rating sexist event as a situation to be taken seriously, controlling for psychopathy: $b = 0.56$, $Boot SE = 0.20$, 95% CI = [0.16, 0.95]; see Table 3 for all indirect effects or “ab” paths), and these indirect effects were larger than those through less affective empathy ($b = 0.56 > b = 0.44$). In addition, those who scored high on psychopathy, Machiavellianism, and sadism rated sexist events and statements low on how seriously they should be taken even when accounting for the indirect effects of these traits through both affective and cognitive empathy (e.g., sadism \rightarrow rating sexist event as a situation to be taken seriously: $b = -0.60$, $SE = 0.16$, $p < 0.001$; see Table 4 for direct effects or “c” paths), providing support for partial mediations.

Study 2

To examine gender differences in appreciation for sexist humour and to examine whether main effects from Study 1 could replicate, a new sample of 611 undergraduate participants was collected from the same Qualtrics survey and measures from Study 1 from extended recruitment. All measures demonstrated adequate to excellent reliability with McDonald’s ω ranging from 0.72 to 0.90. From this sample, 124 participants were removed due to incomplete responses or incorrectly answering Attention Checks. Another 4 outliers were removed following screening of data for univariate outliers. No significant deviations were detected after

checking for skewness, kurtosis, linearity, normality, homogeneity, homoscedasticity, and absence of multicollinearity. This sample consisted of 483 participants ($N = 483$, 33.14% male, $M_{age} = 21.73$, $SD = 3.71$), 160 of whom were male (remaining participants identified as “prefer not to say” or provided a self-chosen gender identity). Male participants were then matched to female participants on age to form a new sample of 160 males and 160 females. From this, we conducted Study 2, a replication of Study 1 using the new male and female samples independently to examine gender differences in appreciation for sexist humour using the same set of analyses conducted in Study 1 and using Model 4 version of the PROCESS plug-in for SPSS. Total and direct effects of the Dark Tetrad traits on sexist jokes, statements and events, direct effects of psychopathy, Machiavellianism, sadism and narcissism on affective and cognitive empathy, as well as direct and indirect effects of the Dark Tetrad traits on sexist jokes, statements, and events through cognitive empathy and affective empathy demonstrated similar patterns of effects as those in Study 1 in both the new female and male samples. To minimize redundancy, detailed Study 2 results can be found in Tables 5, 6, 7, 8, 9 and 10. However, a noteworthy result is that total, direct and indirect effects were slightly smaller for females compared to males. Main effects from Study 1 were replicated in our second study. Study 2 also indicates that psychopathy, Machiavellianism, and sadism in females is still related to appreciation for sexist humour that denigrates women even in a female sample, but that these effects are smaller compared to a male sample.

Study 3

To further replicate and extend upon findings from Studies 1 and 2, Study 3 examines whether Dark Triad traits predict use of aggressive humour with perceived stress as the mediator and gender as the moderator (see Fig. 4). Studies 1 and 2 examined appreciation for sexist humour but not whether dark personality traits predict use of sexist humour. Given sexist humour is a form of aggressive

Table 5 Total and direct effects of the Dark Tetrad traits on sexist joke/statement/event ratings for female sample (Study 2)

| Outcome (Y) | Total Effect (c) | | | Direct Effect (c') | | | |
|--|------------------|-----|-------|--------------------|-----|-------|-------|
| | Coefficient | SE | p | Coefficient | SE | p | power |
| Psychopathy (X) | | | | | | | |
| Rating Sexist Jokes as “humorous” | .74 | .18 | <.001 | .68 | .13 | <.001 | .63 |
| Rating Sexist Jokes as “entertaining” | .53 | .14 | <.001 | .51 | .11 | <.001 | .51 |
| Rating Sexist Jokes as “a situation to be taken seriously” | −.72 | .26 | <.001 | −.63 | .18 | .05 | .60 |
| Rating Sexist Statement as “Humorous” | .11 | .13 | .06 | .24 | .12 | .20 | .50 |
| Rating Sexist Statement as “Entertaining” | .06 | .11 | .59 | −.02 | .14 | .54 | .26 |
| Rating Sexist Statement as “a situation to be taken seriously” | −.66 | .18 | <.001 | −.48 | .24 | .01 | .16 |
| Rating Sexist Event as “Humorous” | .16 | .06 | <.05 | .17 | .09 | .14 | .28 |
| Rating Sexist Event as “Entertaining” | .23 | .09 | <.001 | .22 | .06 | .11 | .23 |
| Rating Sexist Event as “a situation to be taken seriously” | −.81 | .22 | <.001 | −.64 | .25 | <.01 | .07 |
| Machiavellianism (X) | | | | | | | |
| Rating Sexist Jokes as “humorous” | .54 | .13 | <.001 | .55 | .12 | <.001 | .54 |
| Rating Sexist Jokes as “entertaining” | .47 | .13 | <.001 | .42 | .10 | <.001 | .29 |
| Rating Sexist Jokes as “a situation to be taken seriously” | −.62 | .15 | <.001 | −.43 | .13 | <.001 | .47 |
| Rating Sexist Statement as “Humorous” | .10 | .06 | .09 | .03 | .05 | .28 | .29 |
| Rating Sexist Statement as “Entertaining” | .07 | .07 | .04 | .01 | .03 | .47 | .09 |
| Rating Sexist Statement as “a situation to be taken seriously” | −.33 | .16 | .06 | −.24 | .19 | .03 | .10 |
| Rating Sexist Event as “Humorous” | .15 | .07 | .08 | .11 | .05 | <.001 | .16 |
| Rating Sexist Event as “Entertaining” | .18 | .09 | <.05 | .14 | .08 | .05 | .21 |
| Rating Sexist Event as “a situation to be taken seriously” | −.48 | .16 | <.05 | −.36 | .13 | <.01 | .06 |
| Sadism (X) | | | | | | | |
| Rating Sexist Jokes as “humorous” | .64 | .13 | <.001 | .48 | .16 | <.001 | .67 |
| Rating Sexist Jokes as “entertaining” | .51 | .12 | <.001 | .42 | .14 | <.001 | .42 |
| Rating Sexist Jokes as “a situation to be taken seriously” | −.37 | .14 | <.001 | −.53 | .19 | <.05 | .58 |
| Rating Sexist Statement as “Humorous” | .12 | .06 | <.05 | .12 | .05 | .06 | .19 |
| Rating Sexist Statement as “Entertaining” | .09 | .07 | .19 | .01 | .04 | .61 | .15 |
| Rating Sexist Statement as “a situation to be taken seriously” | −.44 | .15 | <.01 | −.25 | .17 | .08 | .11 |
| Rating Sexist Event as “Humorous” | .14 | .07 | <.001 | .13 | .08 | <.05 | .16 |
| Rating Sexist Event as “Entertaining” | .10 | .09 | <.01 | .15 | .06 | .09 | .23 |
| Rating Sexist Event as “a situation to be taken seriously” | −.69 | .16 | <.001 | −.52 | .13 | <.001 | .05 |
| Narcissism (X) | | | | | | | |
| Rating Sexist Jokes as “humorous” | .31 | .13 | <.01 | .31 | .14 | <.01 | .31 |
| Rating Sexist Jokes as “entertaining” | .26 | .13 | .08 | .16 | .18 | .08 | .18 |
| Rating Sexist Jokes as “a situation to be taken seriously” | −.29 | .14 | <.05 | −.34 | .13 | <.05 | .54 |
| Rating Sexist Statement as “Humorous” | .51 | .06 | .41 | .47 | .04 | .42 | .07 |
| Rating Sexist Statement as “Entertaining” | .01 | .07 | .58 | .03 | .03 | .81 | .06 |
| Rating Sexist Statement as “a situation to be taken seriously” | −.18 | .15 | <.05 | −.33 | .11 | .07 | .20 |
| Rating Sexist Event as “Humorous” | .12 | .07 | .17 | .05 | .04 | .41 | .11 |
| Rating Sexist Event as “Entertaining” | .13 | .09 | <.05 | .22 | .06 | <.05 | .05 |
| Rating Sexist Event as “a situation to be taken seriously” | −.24 | .16 | .02 | −.21 | .12 | .18 | .34 |

AE Affective Empathy; CE Cognitive; SE standard error

humour (Romero-Sánchez et al., 2021; Woodzicka & Ford, 2010) but Ford’s sexist humour does not measure sexist humour use, Study 3 examines whether dark personality traits could predict use of aggressive humour while also exploring gender differences. As such, Study 3 examines

whether findings from Studies 1 and 2 could be applicable to use of aggressive forms of humour in addition to appreciation. Moreover, aggressive humour is the only humour style that has not been found to be associated with satisfaction with life, and gender has been found to moderate the

Table 6 Direct effects of psychopathy, Machiavellianism, Sadism and Narcissism on affective and cognitive empathy for female sample (Study 2)

| Independent variable | Mediator | Direct effect (a_i) | | |
|----------------------|----------|-------------------------|-----|-------|
| | | Coefficient | SE | p |
| Psychopathy | AE | -.31 | .10 | <.001 |
| | CE | -.27 | .08 | <.001 |
| Machiavellianism | AE | -.20 | .05 | <.01 |
| | CE | -.12 | .04 | <.05 |
| Sadism | AE | -.35 | .07 | <.001 |
| | CE | -.11 | .04 | <.01 |
| Narcissism | AE | -.19 | .05 | <.01 |
| | CE | .02 | .08 | .72 |

AE Affective Empathy; CE Cognitive; SE standard error. a_i direct effects of the independent variable on the mediator ($X \rightarrow M$)

association with men benefiting more from use of aggressive humour (Dyck & Holtzman, 2013). Study 3 therefore also aims to explore whether individuals high on dark personality traits use aggressive humour to alleviate perceived stress and whether or not gender further moderates this association, which may have implications regarding the purpose of aggressive forms of humour, such as sexist humour, in relation to mental wellbeing. Dark Triad traits were used instead of Dark Tetrad traits since Dark Triad traits are measured by the same scale and generate a composite score whereas Dark Tetrad traits would require separate scales. For the purpose of examining whether dark personality traits generally predict aggressive humour and as a first step, Dark Triad traits as a whole only were investigated for now.

The previously cleaned and screened data from Study 2 was used for analyses. Reliability indices for the measures were adequate and zero-order correlations were as expected (see Table 11 for reliability indices, item means and zero-order correlations amongst variables). Bootstrapping was used to test for indirect effects between the independent and dependent variables with mediators, where a significant mediation is present when the 95% confidence interval does not include zero (Preacher & Hayes, 2008).

Results from the moderated mediation model are displayed in Table 12, which indicates that the relationship between Dark Triad traits and use of aggressive humour was mediated by perceived stress given the unstandardized regression coefficients between Dark Triad traits and use of aggressive humour as well as between perceived stress and use of aggressive humour were significant. Additionally, a moderated mediation was observed as the index of moderated mediation (IMM) value using 5000 bootstrapped samples with 95% bias-corrected confidence intervals did not include zero (IMM = 0.16, SE = 0.05; bootCI: 0.08, 0.24). The interaction between Dark Triad traits and gender was

significant ($b = 0.33$; $SE = 0.10$, CI: 0.22, 0.45, $p < 0.001$), suggesting that the positive correlation between Dark Triad traits on perceived stress varied by gender. The interaction was evaluated with individuals of female and male genders. The Dark Triad and perceived stress correlation was stronger for males ($b = 0.28$, $SE = 0.05$, 95% BCa CI = [0.23, 0.33]) compared females ($b = 0.21$, $SE = 0.03$, 95% BCa CI = [0.15, 0.29]). These findings can all be observed in Table 12. Overall, these results suggest that dark personality traits predict use of aggressive humour, that this relationship was partially mediated by perceived stress, and that the interaction between gender and dark personality traits predicted greater perceived stress and subsequently greater use of aggressive humor in males compared to females.

Discussion

Bivariate correlations revealed that psychopathy, Machiavellianism, and sadism are associated with finding sexist jokes to be humorous and entertaining and rating sexist jokes as to be taken less seriously, drawing a newfound link between these traits and appreciation for sexist humour. Regardless of gender, it has been suggested that individuals appreciate sexist humour to the degree to which they possess negative (often sexist) attitudes toward women (Butland & Ivy, 1990; Moore et al., 1987). As such, the significant moderate positive associations between psychopathy, Machiavellianism and sadism, and appreciating sexist humour suggest that those higher on these traits hold sexist prejudice towards women. Interestingly, it has also been suggested that those who appreciate sexist jokes more are also more likely to tell sexist jokes to the degree to which they scored high on hostile sexism (Thomas & Esses, 2004). Consequently, those high on psychopathy, Machiavellianism and sadism who appreciate sexist humour, may also be more likely to use sexist humour.

In contrast, the associations between psychopathy, Machiavellianism, and sadism and finding neutral jokes to be humorous, entertaining, and not to be taken seriously were negligible, indicating the relation between these traits and appreciation for neutral jokes is insignificant.

Correlations between narcissism and sexist humour were also negligible. Previous studies found narcissism is associated with positive affiliative humour style (Veselka et al., 2010), while sexist humour could be a form of aggressive humour as psychopathy and Machiavellianism tend to be associated with an aggressive humour style (Veselka et al., 2010). It is also possible that there is a difference in sexist humour appreciation depending on the type of narcissism (e.g., grandiose narcissist versus vulnerable) that pushes one to appreciate sexist humour (Dickinson & Pincus, 2003).

Table 7 Direct and indirect effects of Dark Tetrad traits on sexist jokes/statements/events ratings through cognitive and affective empathy for female sample (Study 2)

| Independent variable | Mediator | Direct effect (b_i) | | | Indirect effect ($a_i b_i$) | | | | | |
|--|----------|-------------------------|-----|----------|-------------------------------|---------|-------|-------|-------|--|
| | | Coefficient | SE | <i>p</i> | Coefficient | Boot SE | Lower | Upper | power | |
| Rating Sexist Jokes as “humorous” (<i>Y</i>) | | | | | | | | | | |
| Psychopathy | AE | −.39 | .10 | <.001 | −.28 | .10 | −.46 | −.11 | .81 | |
| | CE | −.17 | .13 | .19 | .01 | .13 | −.28 | .33 | .09 | |
| Machiavellianism | AE | −.39 | .10 | <.001 | −.32 | .10 | −.54 | −.07 | .71 | |
| | CE | −.17 | .13 | .19 | −.10 | .13 | −.33 | .14 | .07 | |
| Sadism | AE | −.39 | .10 | <.001 | −.17 | .10 | −.45 | −.05 | .72 | |
| | CE | −.17 | .13 | .19 | −.09 | .13 | −.33 | .29 | .09 | |
| Narcissism | AE | −.39 | .10 | <.001 | −.33 | .10 | −.53 | −.08 | .62 | |
| | CE | −.17 | .13 | .19 | −.17 | .13 | −.39 | .09 | .01 | |
| Rating Sexist Jokes as “entertaining” (<i>Y</i>) | | | | | | | | | | |
| Psychopathy | AE | −.36 | .10 | <.01 | −.20 | .10 | −.49 | .06 | .55 | |
| | CE | −.11 | .13 | .28 | .01 | .13 | −.33 | .32 | .13 | |
| Machiavellianism | AE | −.36 | .10 | <.01 | −.21 | .10 | −.46 | .03 | .47 | |
| | CE | −.11 | .13 | .28 | −.05 | .13 | −.33 | .29 | .04 | |
| Sadism | AE | −.36 | .10 | <.01 | −.16 | .10 | −.51 | .10 | .39 | |
| | CE | −.11 | .13 | .28 | −.05 | .10 | −.34 | .28 | .07 | |
| Narcissism | AE | −.36 | .10 | <.01 | −.21 | .13 | −.51 | −.06 | .41 | |
| | CE | −.11 | .13 | .28 | −.11 | .10 | −.42 | .19 | .02 | |
| Rating Sexist Jokes as “a situation to be taken seriously” | | | | | | | | | | |
| Psychopathy | AE | .62 | .16 | <.001 | .52 | .16 | .31 | .81 | .94 | |
| | CE | .31 | .21 | <.01 | .21 | .20 | −.34 | .52 | .07 | |
| Machiavellianism | AE | .62 | .16 | <.001 | .51 | .16 | .29 | .77 | .82 | |
| | CE | .31 | .21 | <.01 | .19 | .21 | −.09 | .65 | .08 | |
| Sadism | AE | .62 | .16 | <.001 | .52 | .16 | .28 | .73 | .83 | |
| | CE | .31 | .21 | <.01 | .19 | .20 | −.11 | .69 | .11 | |
| Narcissism | AE | .62 | .16 | <.001 | .54 | .16 | .41 | .87 | .69 | |
| | CE | .31 | .21 | <.01 | .31 | .21 | .05 | .69 | .00 | |
| Rating Sexist Statement as “humorous” | | | | | | | | | | |
| Psychopathy | AE | −.08 | .04 | .37 | −.02 | .04 | −.18 | .06 | .08 | |
| | CE | −.16 | .07 | <.01 | −.14 | .07 | −.36 | −.03 | .74 | |
| Machiavellianism | AE | −.08 | .04 | .37 | −.04 | .04 | −.13 | .09 | .08 | |
| | CE | −.16 | .07 | <.01 | −.11 | .07 | −.38 | −.06 | .49 | |
| Sadism | AE | −.08 | .04 | .37 | −.02 | .04 | −.11 | .11 | .07 | |
| | CE | −.16 | .07 | <.01 | −.12 | .07 | −.35 | −.05 | .68 | |
| Narcissism | AE | −.08 | .04 | .37 | −.05 | .04 | −.19 | .10 | .02 | |
| | CE | −.16 | .07 | <.01 | −.16 | .07 | −.32 | −.09 | .06 | |
| Rating Sexist Statement as “entertaining” | | | | | | | | | | |
| Psychopathy | AE | −.15 | .08 | .11 | −.12 | .08 | −.29 | .05 | .17 | |
| | CE | −.32 | .11 | <.01 | −.27 | .11 | −.51 | −.14 | .81 | |
| Machiavellianism | AE | −.15 | .08 | .11 | −.11 | .08 | −.08 | .12 | .06 | |
| | CE | −.32 | .11 | <.01 | −.26 | .11 | −.42 | −.13 | .47 | |
| Sadism | AE | −.15 | .08 | .11 | −.11 | .08 | −.28 | .07 | .11 | |
| | CE | −.32 | .11 | <.01 | −.26 | .11 | −.38 | −.06 | .57 | |
| Narcissism | AE | −.15 | .08 | .11 | −.12 | .08 | −.24 | .05 | .04 | |
| | CE | −.32 | .11 | <.01 | −.32 | .11 | −.41 | −.13 | .05 | |
| Rating Sexist Statement as “a situation to be taken seriously” | | | | | | | | | | |
| Psychopathy | AE | .44 | .17 | <.01 | .38 | .17 | .07 | .74 | .43 | |
| | CE | .86 | .22 | <.001 | .67 | .22 | .31 | 1.09 | .87 | |

Table 7 (continued)

| Independent variable | Mediator | Direct effect (b_i) | | | Indirect effect ($a_i b_i$) | | | | |
|--|----------|-------------------------|-----|-------|-------------------------------|---------|-------|-------|-------|
| | | Coefficient | SE | p | Coefficient | Boot SE | Lower | Upper | power |
| Machiavellianism | AE | .44 | .17 | <.00 | .44 | .17 | .16 | .65 | .34 |
| | CE | .86 | .22 | <.001 | .77 | .22 | .43 | 1.12 | .67 |
| Sadism | AE | .44 | .17 | <.00 | .40 | .17 | .16 | .68 | .41 |
| | CE | .86 | .22 | <.001 | .75 | .22 | .39 | 1.07 | .86 |
| Narcissism | AE | .44 | .17 | <.00 | .44 | .17 | .12 | .78 | .32 |
| | CE | .86 | .22 | <.001 | .86 | .22 | .45 | 1.23 | .02 |
| Rating Sexist Event as “humorous” | | | | | | | | | |
| Psychopathy | AE | −.19 | .08 | <.05 | −.09 | .08 | −.31 | .05 | .20 |
| | CE | −.26 | .09 | <.01 | −.21 | .10 | −.41 | −.08 | .75 |
| Machiavellianism | AE | −.19 | .08 | <.05 | −.23 | .09 | −.25 | .03 | .16 |
| | CE | −.26 | .09 | <.01 | −.10 | .09 | −.39 | −.08 | .51 |
| Sadism | AE | −.19 | .08 | <.05 | −.10 | .09 | −.27 | .02 | .07 |
| | CE | −.26 | .09 | <.01 | −.23 | .09 | −.42 | −.09 | .68 |
| Narcissism | AE | −.19 | .08 | <.05 | −.16 | .08 | −.24 | .04 | .12 |
| | CE | −.26 | .09 | <.01 | −.26 | .09 | −.48 | −.17 | .04 |
| Rating Sexist Event as “entertaining” | | | | | | | | | |
| Psychopathy | AE | −.10 | .07 | .19 | −.06 | .07 | −.23 | .14 | .08 |
| | CE | −.34 | .10 | <.01 | −.20 | .10 | −.45 | −.01 | .53 |
| Machiavellianism | AE | −.10 | .07 | .19 | −.05 | .07 | −.26 | .12 | .06 |
| | CE | −.34 | .10 | <.01 | −.28 | .10 | −.42 | −.03 | .43 |
| Sadism | AE | −.10 | .07 | .19 | −.09 | .07 | −.28 | .08 | .08 |
| | CE | −.34 | .10 | <.01 | −.29 | .10 | −.44 | −.07 | .56 |
| Narcissism | AE | −.10 | .07 | .19 | −.09 | .07 | −.22 | .09 | .02 |
| | CE | −.34 | .10 | <.01 | −.34 | .10 | −.41 | −.07 | .01 |
| Rating Sexist Event as “a situation to be taken seriously” | | | | | | | | | |
| Psychopathy | AE | .62 | .17 | <.001 | .48 | .17 | .17 | .81 | .58 |
| | CE | .69 | .19 | <.001 | .55 | .19 | .14 | .90 | .60 |
| Machiavellianism | AE | .62 | .17 | <.001 | .53 | .17 | .21 | .83 | .43 |
| | CE | .69 | .19 | <.001 | .61 | .19 | .32 | 1.13 | .58 |
| Sadism | AE | .62 | .17 | <.001 | .58 | .16 | .11 | .74 | .39 |
| | CE | .69 | .19 | <.001 | .60 | .19 | .23 | .97 | .62 |
| Narcissism | AE | .62 | .17 | <.001 | .55 | .17 | .21 | .83 | .48 |
| | CE | .69 | .19 | <.001 | .70 | .19 | .39 | 1.21 | .05 |

AE Affective Empathy; CE Cognitive; SE standard error

As such, it is possible narcissism is only associated with appreciation for sexist humour when there is an ego threat.

Next, although those higher on psychopathy, Machiavellianism, and sadism did not rate sexist statements and events as humorous and entertaining (the opposite is true for sexist jokes), they interestingly rated that these should not be interpreted in a serious manner. This suggests that these individuals do not take sexist statements and events seriously as they may avoid rating blatant expressions of sexism (e.g., sexist actions and words) as funny and entertaining to follow social norms and to avoid scrutiny from defying them. Correspondingly, since sexist humour provides a channel

in which expressions of malicious attitudes can travel in a socially acceptable manner (Ford & Ferguson, 2004; Freud, 1960; Martineau, 1972) and appreciation for sexist humour predicts actual use of sexist humour in those already high in hostile sexism (Thomas & Esses, 2004), it is possible that those who score higher on psychopathy, Machiavellianism, and sadism may have a proclivity to using sexist humour as an antisocial interpersonal tactic that allows them to express their sexist attitudes in a way that is more socially acceptable than when communicated in the form of a sexist statement or action. As such, sexist humour may be used by these individuals to hurt and harm others, while minimizing the

Table 8 Total and direct effects of the Dark Tetrad traits on sexist joke/statement/event ratings for male sample (Study 2)

| Outcome (Y) | Total Effect (c) | | | Direct Effect (c') | | | |
|--|------------------|-----|-------|--------------------|-----|-------|-------|
| | Coefficient | SE | p | Coefficient | SE | p | power |
| Psychopathy (X) | | | | | | | |
| Rating Sexist Jokes as “humorous” | .86 | .14 | <.001 | .77 | .14 | <.001 | .64 |
| Rating Sexist Jokes as “entertaining” | .63 | .21 | <.001 | .62 | .21 | <.001 | .51 |
| Rating Sexist Jokes as “a situation to be taken seriously” | −.81 | .15 | <.001 | −.58 | .15 | .00 | .50 |
| Rating Sexist Statement as “Humorous” | .20 | .11 | .05 | .08 | .11 | .24 | .62 |
| Rating Sexist Statement as “Entertaining” | .11 | .09 | .47 | −.03 | .09 | .81 | .35 |
| Rating Sexist Statement as “a situation to be taken seriously” | −.73 | .24 | <.001 | −.58 | .24 | .05 | .27 |
| Rating Sexist Event as “Humorous” | .32 | .07 | <.05 | .12 | .07 | .19 | .34 |
| Rating Sexist Event as “Entertaining” | .28 | .13 | <.05 | .25 | .13 | .21 | .44 |
| Rating Sexist Event as “a situation to be taken seriously” | −.94 | .25 | <.001 | −.74 | .25 | <.05 | .12 |
| Machiavellianism (X) | | | | | | | |
| Rating Sexist Jokes as “humorous” | .72 | .21 | <.001 | .61 | .21 | <.001 | .59 |
| Rating Sexist Jokes as “entertaining” | .49 | .16 | <.001 | .49 | .16 | <.001 | .37 |
| Rating Sexist Jokes as “a situation to be taken seriously” | −.68 | .18 | <.001 | −.65 | .18 | <.001 | .49 |
| Rating Sexist Statement as “Humorous” | .13 | .09 | .12 | .09 | .09 | .28 | .34 |
| Rating Sexist Statement as “Entertaining” | .07 | .06 | .41 | .04 | .06 | .65 | .09 |
| Rating Sexist Statement as “a situation to be taken seriously” | −.48 | .20 | .06 | −.32 | .20 | .06 | .16 |
| Rating Sexist Event as “Humorous” | .21 | .08 | .08 | .15 | .08 | <.01 | .17 |
| Rating Sexist Event as “Entertaining” | .28 | .12 | <.05 | .21 | .12 | .08 | .16 |
| Rating Sexist Event as “a situation to be taken seriously” | −.74 | .15 | <.01 | −.52 | .15 | <.01 | .08 |
| Sadism (X) | | | | | | | |
| Rating Sexist Jokes as “humorous” | .71 | .18 | <.001 | .57 | .18 | <.001 | .54 |
| Rating Sexist Jokes as “entertaining” | .56 | .14 | <.001 | .53 | .14 | <.001 | .38 |
| Rating Sexist Jokes as “a situation to be taken seriously” | −.48 | .19 | <.001 | −.39 | .19 | <.05 | .69 |
| Rating Sexist Statement as “Humorous” | .17 | .10 | <.05 | .15 | .10 | .09 | .32 |
| Rating Sexist Statement as “Entertaining” | .14 | .09 | .32 | .08 | .08 | .64 | .18 |
| Rating Sexist Statement as “a situation to be taken seriously” | −.48 | .18 | <.01 | −.40 | .18 | .06 | .12 |
| Rating Sexist Event as “Humorous” | .27 | .06 | <.01 | .15 | .06 | <.05 | .19 |
| Rating Sexist Event as “Entertaining” | .23 | .11 | <.05 | .18 | .11 | .18 | .22 |
| Rating Sexist Event as “a situation to be taken seriously” | −.81 | .21 | <.001 | −.65 | .21 | <.001 | .07 |
| Narcissism (X) | | | | | | | |
| Rating Sexist Jokes as “humorous” | .44 | .15 | <.01 | .37 | .15 | <.01 | .47 |
| Rating Sexist Jokes as “entertaining” | .28 | .19 | .07 | .22 | .19 | .15 | .34 |
| Rating Sexist Jokes as “a situation to be taken seriously” | −.34 | .16 | <.01 | −.33 | .16 | <.05 | .59 |
| Rating Sexist Statement as “Humorous” | .51 | .13 | .41 | .48 | .13 | .39 | .10 |
| Rating Sexist Statement as “Entertaining” | .10 | .09 | .80 | .06 | .09 | .73 | .09 |
| Rating Sexist Statement as “a situation to be taken seriously” | −.36 | .19 | <.05 | −.27 | .19 | .08 | .14 |
| Rating Sexist Event as “Humorous” | .07 | .09 | .32 | .06 | .09 | .31 | .09 |
| Rating Sexist Event as “Entertaining” | .29 | .11 | <.05 | .25 | .11 | <.05 | .07 |
| Rating Sexist Event as “a situation to be taken seriously” | −.28 | .18 | .07 | −.29 | .18 | .11 | .31 |

AE Affective Empathy; CE Cognitive; SE standard error

potential backlash from others from defying the social norms of acceptance of women’s rights, subsequently allowing for more denigration to follow-through. This idea is further instilled by the present finding that the relationship between

Dark Tetrad traits (not including narcissism) and finding sexist humour to be funny and not to be taken seriously was partially mediated by less affective empathy while cognitive empathy remained intact. This indicates that those high on

Table 9 Direct effects of psychopathy, Machiavellianism, Sadism and Narcissism on affective and cognitive empathy for male sample (Study 2)

| Independent variable | Mediator | Direct effect (a_i) | | |
|----------------------|----------|-------------------------|-----|-------|
| | | Coefficient | SE | p |
| Psychopathy | AE | -.37 | .11 | <.001 |
| | CE | -.29 | .08 | <.001 |
| Machiavellianism | AE | -.25 | .10 | <.01 |
| | CE | -.17 | .04 | <.01 |
| Sadism | AE | -.38 | .09 | <.001 |
| | CE | -.19 | .06 | <.01 |
| Narcissism | AE | -.22 | .05 | <.05 |
| | CE | .04 | .06 | .78 |

AE Affective Empathy; CE Cognitive; SE standard error. a_i direct effects of the independent variable on the mediator ($X \rightarrow M$)

the Dark Tetrad traits who can find humour and a lack of seriousness in sexist jokes tend to be insensitive to others' feelings (i.e., low affective empathy) while retaining their ability to assess others' emotions (i.e., intact cognitive empathy). This also makes the perfect combination that enables someone to be both tactful and manipulative without feeling the consequences that their behaviours may inflict (Dadds et al., 2009).

On the other hand, those high on psychopathy, Machiavellianism, and sadism who rated sexist statements and events as situations not to be taken seriously were found to have difficulties with discerning others' emotional states (i.e., impaired cognitive empathy) as well as difficulties feeling others' emotions (i.e., lack of affective empathy), with less cognitive empathy playing a greater role in these relationships. As such, those who choose to blatantly express their sexist attitudes have difficulties understanding that sexism is harmful in the first place and can therefore proclaim their appreciation for sexist events and statements without detecting the potential scrutiny from others that may follow. One can argue that such individuals are not tactful in their approach to conveying their sexist attitudes.

Alternatively, cognitive empathy is often described as perspective-taking or Theory of Mind, the latter defined as one's ability to understand another's mental state in order to predict their actions (Baron-Cohen, 2006). Interestingly, Theory of Mind is needed to understand a joke, as one must be able to take on another's perspective in order to both realize that the intention of the joke was to produce humour and to understand the point of view of the characters in the joke. Affective empathy may also play a role in humour processing where denigrating forms of humour may not be enjoyable for someone who feels sympathetic for the target of a joke. As such, deficits in both cognitive and affective empathy may not only impair one's ability to understand that sexist

statements and events are harmful, which is conducive to rating the sexist statements and events as low on how seriously they should be interpreted but may also impair one's ability to process humour. This could explain why conversely, those high on the Dark Tetrad traits (except for narcissism) who had intact cognitive empathy enjoyed the sexist jokes while those with low cognitive (and affective) empathy did not, and even preferred sexist events and statements.

Study 2 investigated potential gender differences in appreciation for sexist humour and found similar total, direct and indirect effects as Study 1 for both males and females, although females demonstrated slightly smaller effects compared to males. Although sexist humour denigrates females, females high on specific Dark Tetrad traits may still have enjoyed this because the put-down messages were directed towards oneself and not others, further highlighting the important role lack of affective empathy plays as a mediator in this association. The smaller effect compared to males may be due to the denigration still being directed at one's general ingroup.

Findings from Study 3 suggest that dark personalities predict use of aggressive humour (not just appreciation for it), that this association was partially mediated by perceived stress, and that dark personality traits interact with gender to predict greater perceived stress which leads to greater subsequent use of aggressive humour in males compared to females. Given humour's cathartic nature, this may have implications for the benefits of aggressive humour in males in releasing perceived stress.

Importantly, Studies 2 and 3 strengthen findings from Study 1 while also accounting for gender differences.

Limitations of the present study include its correlational design, the moderately significant associations and partial mediations found, the use of a cross-sectional and homogeneous sample of university students, and the use of self-report measures and vignettes which can be subject to problems associated with common method variance. Although social desirability was controlled for in responses to the Dark Tetrad measures through describing the study as an exploration of "Individual Differences in Humour", having participants complete the surveys anonymously without physical contact with experimenters, and asking participants to reveal their reactions to the study in order to detect potential suspicion in regards to the true purpose of the study, socially desirability may continue to affect responses for this study. However, controlling completely for social desirability may not be appropriate for this study because the study hypothesis warrants that individuals with different levels of Dark Tetrad traits may act a different way and express unsocially desirable attitudes depending on whether or not they believe the context warrants behaving in a socially desirable way. Future studies could benefit from including a measure of social

Table 10 Direct and indirect effects of Dark Tetrad traits on sexist jokes/statements/events ratings through cognitive and affective empathy for male sample (Study 2)

| Independent variable | Mediator | Direct effect (b_i) | | | Indirect effect ($a_i b_i$) | | | | | |
|--|----------|-------------------------|-----|----------|-------------------------------|---------|-------|-------|-------|--|
| | | Coefficient | SE | <i>p</i> | Coefficient | Boot SE | Lower | Upper | power | |
| Rating Sexist Jokes as “humorous” (Y) | | | | | | | | | | |
| Psychopathy | AE | -.51 | .15 | <.001 | -.29 | .15 | -.67 | -.06 | .79 | |
| | CE | -.27 | .20 | .26 | .04 | .20 | -.36 | .30 | .16 | |
| Machiavellianism | AE | -.50 | .15 | <.001 | -.39 | .15 | -.62 | -.14 | .71 | |
| | CE | -.23 | .20 | .26 | -.16 | .20 | -.51 | .22 | .05 | |
| Sadism | AE | -.48 | .15 | <.001 | -.32 | .15 | -.62 | -.08 | .75 | |
| | CE | -.19 | .20 | .26 | -.08 | .20 | -.35 | .29 | .09 | |
| Narcissism | AE | -.49 | .15 | <.001 | -.40 | .15 | -.61 | -.19 | .54 | |
| | CE | -.24 | .20 | .26 | -.27 | .20 | -.55 | .17 | .01 | |
| Rating Sexist Jokes as “entertaining” (Y) | | | | | | | | | | |
| Psychopathy | AE | -.44 | .14 | <.05 | -.29 | .14 | -.51 | .05 | .60 | |
| | CE | -.18 | .17 | .41 | .04 | .17 | -.39 | .29 | .15 | |
| Machiavellianism | AE | -.41 | .14 | <.05 | -.30 | .14 | -.54 | .04 | .49 | |
| | CE | -.19 | .17 | .41 | -.09 | .17 | -.41 | .29 | .11 | |
| Sadism | AE | -.38 | .14 | <.05 | -.22 | .14 | -.45 | .10 | .33 | |
| | CE | -.13 | .17 | .41 | -.07 | .17 | -.37 | .34 | .09 | |
| Narcissism | AE | -.37 | .14 | <.05 | -.33 | .14 | -.51 | -.08 | .41 | |
| | CE | -.19 | .17 | .41 | -.19 | .17 | -.43 | .19 | .03 | |
| Rating Sexist Jokes as “a situation to be taken seriously” | | | | | | | | | | |
| Psychopathy | AE | .71 | .18 | <.001 | .60 | .18 | .28 | .82 | .92 | |
| | CE | .42 | .22 | <.01 | .34 | .22 | -.19 | .59 | .08 | |
| Machiavellianism | AE | .70 | .18 | <.001 | .58 | .18 | .33 | .88 | .76 | |
| | CE | .34 | .22 | <.01 | .25 | .22 | -.12 | .64 | .06 | |
| Sadism | AE | .69 | .18 | <.001 | .58 | .18 | .27 | .78 | .90 | |
| | CE | .33 | .22 | <.01 | .25 | .22 | -.16 | .67 | .09 | |
| Narcissism | AE | .68 | .18 | <.001 | .61 | .18 | .38 | .82 | .63 | |
| | CE | .31 | .22 | <.01 | .39 | .22 | .07 | .69 | .01 | |
| Rating Sexist Statement as “humorous” | | | | | | | | | | |
| Psychopathy | AE | -.10 | .05 | .41 | -.06 | .05 | -.20 | .12 | .07 | |
| | CE | -.23 | .09 | <.01 | -.21 | .09 | -.37 | -.10 | .72 | |
| Machiavellianism | AE | -.09 | .05 | .41 | -.08 | .05 | -.21 | .09 | .08 | |
| | CE | -.19 | .09 | <.01 | -.24 | .09 | -.39 | -.07 | .60 | |
| Sadism | AE | -.08 | .05 | .41 | -.07 | .05 | -.16 | .13 | .09 | |
| | CE | -.24 | .09 | <.01 | -.18 | .09 | -.35 | -.06 | .59 | |
| Narcissism | AE | -.09 | .05 | .41 | -.09 | .05 | -.19 | .10 | .05 | |
| | CE | -.27 | .09 | <.01 | -.26 | .09 | -.37 | -.09 | .04 | |
| Rating Sexist Statement as “entertaining” | | | | | | | | | | |
| Psychopathy | AE | -.15 | .11 | .12 | -.19 | .11 | -.33 | .04 | .18 | |
| | CE | -.33 | .14 | <.01 | -.31 | .14 | -.49 | -.12 | .80 | |
| Machiavellianism | AE | -.19 | .11 | .12 | -.15 | .11 | -.11 | .11 | .13 | |
| | CE | -.35 | .14 | <.01 | -.27 | .14 | -.46 | -.13 | .45 | |
| Sadism | AE | -.19 | .11 | .12 | -.18 | .11 | -.30 | .05 | .19 | |
| | CE | -.26 | .14 | <.01 | -.29 | .15 | -.47 | -.09 | .52 | |
| Narcissism | AE | -.17 | .11 | .12 | -.16 | .11 | -.24 | .12 | .11 | |
| | CE | -.31 | .14 | <.01 | -.28 | .14 | -.42 | -.18 | .09 | |
| Rating Sexist Statement as “a situation to be taken seriously” | | | | | | | | | | |
| Psychopathy | AE | .56 | .18 | <.001 | .44 | .18 | .10 | .72 | .41 | |
| | CE | .87 | .22 | <.001 | .76 | .22 | .33 | 1.22 | .88 | |

Table 10 (continued)

| Independent variable | Mediator | Direct effect (b_i) | | | Indirect effect ($a_i b_i$) | | | | |
|--|----------|-------------------------|-----|-------|-------------------------------|---------|-------|-------|-------|
| | | Coefficient | SE | p | Coefficient | Boot SE | Lower | Upper | power |
| Machiavellianism | AE | .53 | .18 | <.00 | .48 | .18 | .19 | .81 | .31 |
| | CE | .86 | .22 | <.001 | .81 | .22 | .45 | 1.19 | .66 |
| Sadism | AE | .48 | .18 | <.00 | .54 | .19 | .09 | .77 | .33 |
| | CE | .80 | .22 | <.001 | .78 | .22 | .34 | 1.22 | .86 |
| Narcissism | AE | .53 | .18 | <.00 | .51 | .18 | .18 | .78 | .29 |
| | CE | .77 | .22 | <.001 | .80 | .22 | .43 | 1.17 | .04 |
| Rating Sexist Event as “humorous” | | | | | | | | | |
| Psychopathy | AE | -.20 | .06 | <.05 | -.18 | .06 | -.34 | .03 | .19 |
| | CE | -.31 | .08 | <.001 | -.31 | .08 | -.49 | -.10 | .75 |
| Machiavellianism | AE | -.17 | .06 | <.05 | -.32 | .06 | -.32 | .05 | .14 |
| | CE | -.29 | .08 | <.001 | -.16 | .08 | -.43 | -.13 | .51 |
| Sadism | AE | -.19 | .06 | <.05 | -.10 | .06 | -.29 | .08 | .12 |
| | CE | -.30 | .08 | <.001 | -.21 | .08 | -.40 | -.10 | .68 |
| Narcissism | AE | -.17 | .06 | <.05 | -.17 | .06 | -.28 | .01 | .11 |
| | CE | -.26 | .08 | <.001 | -.30 | .08 | -.39 | -.14 | .08 |
| Rating Sexist Event as “entertaining” | | | | | | | | | |
| Psychopathy | AE | -.19 | .07 | .21 | -.14 | .07 | -.22 | .13 | .09 |
| | CE | -.30 | .15 | <.01 | -.28 | .15 | -.41 | -.06 | .47 |
| Machiavellianism | AE | -.15 | .07 | .21 | -.11 | .07 | -.29 | .09 | .03 |
| | CE | -.27 | .15 | <.01 | -.26 | .15 | -.35 | -.03 | .40 |
| Sadism | AE | -.11 | .07 | .21 | -.09 | .07 | -.27 | .11 | .09 |
| | CE | -.25 | .15 | <.21 | -.30 | .15 | -.33 | -.08 | .51 |
| Narcissism | AE | -.12 | .07 | .16 | -.10 | .07 | -.29 | .12 | .05 |
| | CE | -.26 | .15 | <.21 | -.25 | .15 | -.53 | -.09 | .09 |
| Rating Sexist Event as “a situation to be taken seriously” | | | | | | | | | |
| Psychopathy | AE | .61 | .17 | <.001 | .50 | .17 | .11 | .79 | .59 |
| | CE | .69 | .22 | <.001 | .66 | .22 | .14 | .97 | .61 |
| Machiavellianism | AE | .63 | .17 | <.001 | .60 | .17 | .28 | .83 | .52 |
| | CE | .77 | .22 | <.001 | .77 | .22 | .33 | 1.09 | .55 |
| Sadism | AE | .66 | .17 | <.001 | .57 | .17 | .19 | .83 | .49 |
| | CE | .80 | .22 | <.001 | .66 | .22 | .27 | 1.02 | .66 |
| Narcissism | AE | .62 | .17 | <.001 | .59 | .17 | .24 | .87 | .50 |
| | CE | .70 | .22 | <.001 | .81 | .22 | .32 | 1.18 | .08 |

AE Affective Empathy; CE Cognitive; SE standard error

Fig. 4 The relationship between Dark Triad traits and use of aggressive humour is mediated by perceived stress and moderated by gender

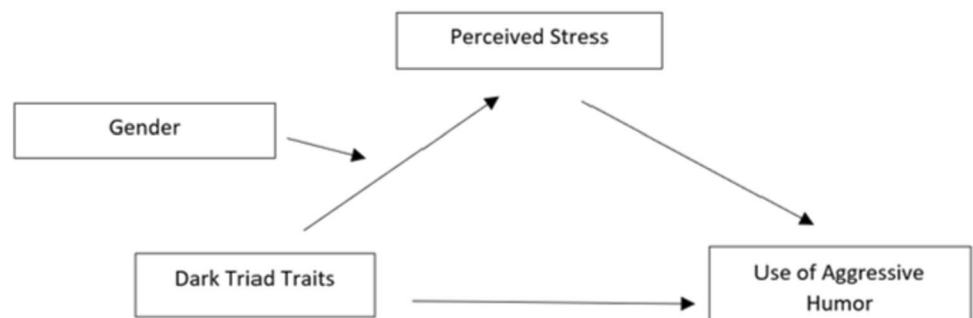


Table 11 Descriptive statistics and zero-order correlations amongst variables

| | M | SD | Cronbach's α | (1) | (2) | (3) |
|----------------------|------|------|---------------------|---------|---------|---------|
| (1) Aggressive Humor | 3.64 | .85 | .872 | | | |
| (2) Dark Triad | 2.72 | .86 | .871 | .563*** | – | |
| (3) Perceived Stress | 5.34 | 2.93 | .593 | .636*** | .642*** | .670*** |

*** $p < .001$

desirability bias simply to detect how much social desirability impacted participants' responses.

Additionally, neutral jokes may correlate with the sexist statements due to a common denominator of lowered seriousness that may not have been measured. This may be because seriousness is hypothesized to be central to sense of humour, as posited by the state-trait model of cheerfulness where high cheerfulness, low seriousness, and low bad mood work together to contribute to enjoyment of humour and exhilaration (Ruch et al., 1996). It may be that individuals high on Dark Tetrad traits tend to take everything less seriously in general, including serious content. Future studies should test whether this is the case.

Future studies should also investigate other potential mediators, as the present study has only identified partial mediators. One such mediator could be that of dehumanization, the representation of other human beings as animal-like or machine-like (Bandura, 2002; Harris & Fiske, 2011). This further extends the concept of the lack of empathy from the current study, as stripping someone of their human qualities may delegitimize the harm that is caused by using sexist humour to denigrate others. Another potential mediator could be trait emotional intelligence (trait EI) which is referred to as “a constellation of emotional self-perceptions located at the lower levels of personality hierarchies and integrates the affective aspects of personality,” (Petrides et al., 2007). Low trait EI may account for the difficulties in

understanding the harm sexist humour may have on others (i.e., the lower levels of cognitive and affective empathy), resulting in greater acceptance of sexist humour.

There are also many cultural differences in humour perception and usage (for a review, see Jiang et al., 2019) that should be explored too. For example, Chinese culture does not view humour as a trait that is desirable (Yue, 2011). As such, the use of sexist humour as a means of expressing socially unacceptable attitudes may not be strategic in such a culture. It may be of interest to conduct the study in a forensic population, where Dark Tetrad traits may be more prevalent, or a population with clinical rather than sub-clinical levels of psychopathy, to see if present findings hold true and are more prominent. It may also be of interest to explore whether other forms of disparaging humor, such as subversive racial humour, are associated with Dark Tetrad traits (see Saucier et al., 2016).

Furthermore, future research studies may investigate taking non-verbal measures of emotional and neurological reactions of participants to sexist humour in addition to using self-report measures and vignettes. For instance, facial expressions measures (e.g., instances of Duchenne smiling, Facial Action Coding System or FACS, facial electromyography), psychophysiological measures that gauge emotional reactions to humour (e.g., electrocardiogram measures of transient cardiac responses), and neurophenomenological measures (e.g., functional magnetic resonance imaging measures of structures related to reward) to examine brain and body correlates could be taken to minimize the social desirability errors that come with the use of self-reports and vignettes. This may also provide a more nuanced and subtle look at people's reactions to sexist humour.

Importantly, a recent finding suggests that using subversive humour (i.e., humour that protests, raises awareness and seeks change on a matter) can work against sexism by increasing collective action for gender equality, even in a population with a weak feminist identity (Riquelme et al., 2020). Humour intervention programs are becoming increasingly popular and have shown to be effective (Ruch & McGhee, 2014). As such, the effectiveness of humour intervention programs that teach subversive humour as a tactic to deflect sexism in settings that are known to have populations with individuals with high levels of Dark Tetrad traits (e.g., investment banking firm), may be of interest. Since less

Table 12 Moderated mediation model with aggressive humour as the outcome

| | β | SE | LLCI | ULCI |
|---|---------|-----|------|------|
| Mediator variable model (Perceived Stress) | | | | |
| Dark Triad | .67** | .06 | .57 | .78 |
| Gender | .39*** | .05 | .26 | .52 |
| Dark Triad * Gender | .33*** | .10 | .22 | .45 |
| Dependent Variable Model (Use of Aggressive Humour) | | | | |
| Perceived Stress | .31*** | .04 | .21 | .43 |
| Dark Triad | .59*** | .08 | .53 | .66 |
| Conditional effects | | | | |
| Female | .21*** | .03 | .15 | .29 |
| Male | .28*** | .05 | .23 | .33 |

** $p < .01$. *** $p < .001$. Unstandardized regression coefficients were reported. Bootstrap sample size = 500. LL lower limit, CI confidence interval, UL upper limit

affective empathy partially mediated the relationship between the Dark Tetrad traits and appreciation for sexist humour, it may also be an interesting avenue to explore empathy training and whether there are methods of increasing affective empathy in these individuals and whether this may decrease their appreciation for sexist humour. Findings from Study 3 also highlight the potential for researching use of sexist humour rather than appreciation for it.

Despite the limitations, the present exploratory study is the first to examine the relationship between personality traits, specifically the Dark Tetrad traits, and appreciation for sexist humour. It also provides insight into the underlying mechanisms behind this relationship, with less affective empathy (and an intact cognitive empathy) partially contributing to the association between psychopathy, Machiavellianism and sadism and appreciation for sexist humour, while less cognitive empathy was found to be the primary mediator of the relationship between these traits and appreciation for sexist events and statements. Importantly, the findings suggest that the link between the Dark Tetrad traits and appreciation for sexist humour as well as related topics are worthy of further exploration, and help guide new directions in which future research may move towards to deepen our understanding on a personality perspective of appreciation for sexist humour.

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s12144-022-04199-0>.

Data availability The datasets generated and/or analyzed in the current study are available from the corresponding author on reasonable request.

Declarations

Conflict of interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

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