

Food Preferences and Dark-side Personality Traits

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Abstract

This study investigated the association between a variety of taste preferences and the Dark Triad personality traits. We noted over twenty studies that linked personality to taste/beverage preference and experience. In this study just under 200 participants completed a personality and food preference questionnaire. Results demonstrated that dark side traits accounted for around ten percent of the variance in tastes, including bitter and sweet as well as alcohol and coffee strength preferences. For a number of the taste preference measures sensation seeking and harm aversive personality traits were particularly influential in determining taste preferences. Limitations and directions for future research are discussed.

Keywords: taste preferences; dark side traits; power; sweet and sour

Introduction

Eating and drinking satisfies the basic human need of sustenance from consumption (Sagioglou & Greitemeyer, 2016). Being able to distinguish and find essential nutrients and exclude potentially harmful items was critical for human's survival, especially hunter-gatherer communities for whom acquiring sufficient calories was a challenging reality (Bradbury, 2004; Reed, Tanaka & McDaniel, 2006; Spence 2017). A natural craving for 'sweet' tastes usually ensures sufficient caloric uptake from food and drink sources high in sugar and carbohydrates, while the perception of 'salty' incentivises consumption of foods with sodium chloride, essential for metabolic processes. Salty foods are inherently attractive also because they signal protein (Bartoshuk, 1991). In contrast, the perception of 'sour' signals an item's acidity, a cue that it is unripe or has spoiled, and similarly the perception of 'bitter' highlights the possible presence of toxins or harmful compounds (Desor, Maller & Andrews, 1975).

Taste partly dictates our food and drink preferences (Glanz et al., 1998). Neonates demonstrate a 'hard-wired' preference for sweet tastes, and an aversion to those which are bitter or sour (Steiner et al., 2001). However, as we develop into adulthood, a variety of preferences for different taste sensations are formed. These personal, idiosyncratic and 'acquired tastes' appear to be shaped by cultural and social factors (Higgs, 2015; Rozin, Haidt & Fincher, 2009; Ulrich-Lai et al., 2010). They are also shaped by individual differences like personality. However, the relationship between personality traits and taste preference has received relatively little attention until recently (Ardebili, & Rickertsen, 2020; Bedwell et al., 2019; Saliba, Wragg & Richardson, 2009; Samat & Seo, 2019ab). Most recent studies have also explored situational determinants of taste (Zushi et al., 2021).

Personality and Taste Preferences

There are various reasons to assume a link between personality and taste preference. Both the earlier Freudians and later psychometricians linked food preferences to personality (Furnham, 2008). Thus it was argued that as a function of weaning two types of oral personalities arose: the orally *optimistic* and others orally *pessimistic*. Optimists find the mouth and all oral activities a source of pleasure (even eroticism): eating, drinking, talking, singing, smoking is a joy, as is playing wind instruments and kissing. On the other hand, oral pessimists use the mouth to spit venom, give biting comments, return ideas well chewed over. Oral pessimists like hot, biting food: a meat Madras, preserved ginger, sherbet. The gregarious oral optimists like rice pudding, milk, and mashed potato.

Personality trait psychologists suggested a greater preference for sweet tastes was found in individuals with greater prosocial personality traits (Meier et al., 2012), Agreeableness (Meier et al., 2012), Neuroticism (Keller & Seigrist, 2015), and lower levels Openness (Saliba et al., 2009). Similarly, it has been found that highly disinhibited groups have a greater preference for sweet foods (Haynes, Lee & Yeomans, 2003), in particular sweet chocolate (Lattimore & Maxwell, 2004). Additionally, individuals with higher levels of trait Sensation-Seeking demonstrate dietary and taste preferences towards spicy foods (Byrnes & Hayes, 2013), caffeinated beverages (Mattes, 1994) and alcoholic drinks (Magid, MacLean & Colder, 2007). The relationship between sensation seeking and bitter taste could be attributed to simply seeking intense sensations regardless of valence. There is also a known relationship between sensation seeking and testosterone (Bègue, et al., 2015)

Similarly, the experience of taste appears to exert psychological effects upon the individual. For example, individuals subjected to a sweet taste experience subsequently report greater intention to help others (Meier et

al., 2012), and decreased death anxiety (Hirshberger & Ein-Dor, 2005). Conversely people demonstrate harsher moral judgement (Eskine, Kacinik & Prinz, 2011) and interpersonal hostility (Sagioglou & Greitemeyer, 2014) following exposure to bitter tastes. Batra et al. (2017) found across three studies that those who typically consume spicy food exhibit higher levels of trait aggression.

In a very recent and important review, Esposito et al. (2021) noted many studies which showed that personality traits influenced dietary choices and the type of diet. Certain personality traits, such as Neuroticism and Alexithymia, were associated with unhealthy diet habits: low consumption of fruit and vegetables, increased consumption of sugar and saturated fats. Further, they reported studies which show that personality seems to play a role in food selection and in the propensity to change diets.

The Dark Side of Personality

The above findings are consistent with the notion that individuals described as 'bitter' or 'sour' possess some negative personality trait (Meier et al., 2012); quite literally, they elicit the same negative response in individuals around them that an adverse or bitter taste would. Very few studies have explored the possible relationship between dark side personality traits and taste preferences. In one study, the sensory liking for sweet and fat was negatively associated with histrionic personality traits (Mihaela & Bianca (2018). However, Sagioglou and Greitemeyer (2016) found that bitter taste preferences were positively correlated with Psychopathy, Everyday Sadism, Machiavellianism and Narcissism. Sour preferences were positively correlated with Everyday Sadism, and salty preferences were negatively correlated with Everyday Sadism. These four traits comprise a 'Dark tetrad' of negative personality traits (Chabrol et al., 2009), with the addition of 'Everyday Sadism' marking its difference to the predominant 'Dark Triad' model (Psychopathy, Machiavellianism and Narcissism) of hostile personality (Paulhus & Williams, 2002).

This study has not been fully replicated (Waymire, 2017). More importantly, in a test of 78 individuals, Mahmut and Banzer (2020)

found contrary to previous findings, higher psychopathic traits were not associated with higher liking ratings for bitter stimuli, but instead higher disgust ratings of bitter stimuli. Also higher psychopathic traits were associated with higher taste intensity ratings, suggesting psychopathy may be associated with increased taste sensitivity. They argued that their findings suggest that the chemical senses may be another confirmatory method for differentiating those with low and high psychopathic traits.

In another recent and relevant study, Sariyska et al., (2019) showed higher scores on Machiavellianism, Narcissism and Psychopathy for the omnivores compared to vegans/vegetarians, though those effects got weaker or disappeared after the sex of participants was added to the model.

The current study

The existing body of research literature is summarised in Table 1. The existing research suggests a relationship between taste preferences and an individual's perceived ability to influence interpersonal relationships and an ability to exert control over others' attitudes, opinions and behaviours as well as their own (e.g Meier et al., 2012; Haynes et al., 2003; Byrnes & Hayes, 2013). These are all manifestations of the individual's sense of power (Anderson, John & Keltner, 2012). Additionally, sensation-seeking and risk-seeking traits are also conceptually and empirically linked to the individual's sense of power (Dholakia et al., 2006; Idson, Liberman & Higgins, 2000; Hmielski & Baron, 2008). As such, perceived power as a specific facet of personality appears to demonstrate a variety of relationships with taste preferences.

Based on the available evidence, this exploratory study attempts to address two primary research questions: Is there a relationship between personality individual difference measures, as manifestations of individual trait power, and taste preferences? Is there a relationship between dark side personality traits and taste preferences for foods and beverages?

Citation	Key Findings
Rozin, Haidt & Fincher (2009)	Disgust to morally repugnant behaviour is a development from our physiological gustatory responses to bitter tastes
Ulrich-Lai et al. (2010)	Emotional stress is alleviated by physiological response to experiencing sweet tastes
Saliba, Wragg & Richardson (2009)	Sweet taste preferences are associated with greater impulsiveness but lower openness
Kikuchi & Watanabe (2000)	Sweet and salty taste preferences are associated with greater neuroticism
Meier, Moeller, Reimer-Peltz & Robinson (2012)	Sweet taste preferences are associated with greater prosocial personality traits and agreeableness
Keller & Siegrist (2015)	Sweet taste preferences are associated with greater neuroticism
Haynes, Lee & Yeomans (2003)	Sweet taste preferences are associated with greater disinhibition
Lattimore & Maxwell (2004)	Sweet taste preferences are associated with greater disinhibition
Byrnes & Hayes (2013)	Spicy taste preferences are associated with greater sensation-seeking
Mattes (1994)	Caffeinated beverage preference is associated with greater sensation-seeking
Magid, Maclean & Colder (2007)	Alcoholic beverage preference is associated with is associated with greater sensation-seeking
Eskine, Kacinik & Prinz (2011)	Bitter taste experience is associated with increased harsh moral judgement
Sagioglou & Greitemeyer (2014)	Bitter taste experience is associated with increased interpersonal hostility

Sagioglou & Greitemeyer (2016)	Bitter taste preferences associated with greater Psychopathy, Narcissism, Machiavellianism and Sadism. Sour taste preferences are associated with greater Sadism. Salty taste preferences are associated with lower Sadism.
Ufer, Lin & Ortega (2019)	Extraversion and Conscientiousness increases, and agency decreases, willingness to pay for cooperative-grown coffee
Lara, Antonioli, Frozi, Schneider & Ottoni (2011)	Coffee intake is moderately related to personality traits (reward dependence). Tea consumption is associated with more mature and adaptive traits (harm avoidance, persistence). Coca Cola drink consumption and smoking is associated with more immature and maladaptive personality profiles (novelty seeking)
Mihaela & Bianca (2018)	Sensory liking for sweet and fat foods is negatively associated with histrionic personality traits
Bedwell, Spencer, Chirino & O'Donnell (2019)	No Big Five personality factors were found to be related to hedonic ratings of the Sweet Taste Test (STT). Hedonic slope was larger for those high in Flight-Freeze-Avoidance System
Sena-Esteves, Mota & Malfeito-Ferreira (2018)	Those low in Extraversion preferred a sweeter sample of wine. Female novices preferred sweeter wine samples when compared to experienced male consumers
Samant & Seo (2018)	Extraversion and Neuroticism modulate predictions of liking and preference of tastes
Harmon, Gauvain, Reisz, Arthur & Story (2018)	Openness to experience and Neuroticism predicts water preference. The positive relationship with Openness was moderated by gender; females preferred bottled water
Waymire (2017)	Replication of Sagioglou & Greitemeyer's 2016 study. Failed to support link between psychopathy and bitter taste preference. Negative correlation between Extraversion and perceived sucrose intensity, and Agreeableness and perceived quinine intensity
Higgins, Bakke & Hayes (2020)	Liking and intake of pale ales positively related to sensation seeking.
Ardebili & Rickertson (2020)	Personality influences preference for GM soybean oil, salmon and GM-fed salmon. Conscientiousness reduced, and Agreeableness increased, aversion toward GM-fed and GM salmon.
Elfhag & Erlanson-Albertsson (2006)	Strong sweet taste preference associated with neuroticism, particularly lack of assertiveness.

Table 1 Literature review of studies investigating personality traits and taste preferences

Method

Participants

The participant sample was composed of 120 females and 78 males; mean age 42.27 ($SD = 13.90$); 168 participants indicated their ethnicity as 'White', 12 as 'Black', and 14 people indicated they were 'Other/ Not Specified'.

Taste Preference measures

Participants were asked "Which of the following foods, drinks and condiments do you like the taste of?", and were presented with 5 items for each of the tastes: sweet, sour, bitter and salty (Meier et al., 2012). They then indicated their liking for the item presented on 6 point liking likert scale, of 1 'Dislike Strongly' to 6 'Like Strongly'. Cronbach's alpha values were .695 for Sweet taste items, .713 for Sour, .614 for Bitter, and .569 for Salty. A preference for spice was measured using Brynes & Hayes (2013) questionnaire (Cronbach's Alpha score of .907) for the statement items used. They were also asked "Which of the following types of chocolate do you enjoy the taste of?", presented with items of 'Dark Chocolate (35% Cocoa)' and 'Milk Chocolate (10% Cocoa)'; based on the distinctions outlined by Andrews (2009).

We also included a scale measure of general preference for coffee strength, from zero (preference for weaker coffee) to 30 (preference for stronger coffee). Alcohol preference was measured on a scale measure

of general preference for alcohol strength in common beverages, from zero (weak alcohol strength preference) to 12 (strong alcohol strength preference).

Personality measures

1. *Personal Sense of Power*: this comprised of 8 statements relating to participants' self-reported power in their relationships (Anderson, John & Keltner, 2012). Cronbach's Alpha was .920 for the 8 items.
2. A Sexual Dominance (Sanchez, Phelan, Moss-Racusin & Good, 2012) and *Sexual Submissiveness* scale (Sanchez, Kiefer & Ybarra, 2006). Cronbach's Alpha was .892 and .852 for the items of sexual dominance and submissiveness respectively.
3. *Promotion Orientation* comprising of 7 items was employed (Hamstra, Sassenberg, Van Yperen & Wisse, 2014). Cronbach's Alpha was .782.
4. *The Dark Triad* was measured using the Dirty Dozen questionnaire (Jonason & Webster, 2010) which had three overall scores of Machiavellianism, Psychopathy and Narcissism. Cronbach's Alpha was .881, .772 and .865; for Machiavellianism, Psychopathy and Narcissism, respectively.
5. *Dark Tetrad* trait of everyday Sadism was assessed using the Short Sadistic Impulse Scale (SSIS; O'Meara, Davies & Hammond, 2011). The Cronbach's Alpha was .861.

Procedure

Amazon Mechanical Turk (MTurk) is an online platform commonly used in psychological research to recruit participants (Buhrmester, Kwang & Gosling, 2011). Ethics permission was sought and granted (CEHP/514/2017)

Results

Preliminary Analyses

The basic data is shown in Table 2. Sweet taste preferences were negatively correlated with everyday Sadism, $r = -.230$, $p < .01$, and Psychopathy, $r = -.197$, $p < .01$. Sour taste preferences were not correlated with any personality measures. Bitter taste preferences were positively correlated with promotion regulatory focus, $r = .151$. Salty

taste preferences were positively correlated with promotion regulatory focus, $r = .158$, and negatively correlated with Psychopathy, $r = -.172$. Spice sensation preference was positively correlated with personal sense of power, $r = .196$, promotion regulatory focus, $r = .275$, and Narcissism, $r = .185$.

Dark chocolate preference was positively correlated with personal sense of power, $r = .180$. Milk chocolate preference was negatively correlated with everyday Sadism, $r = -.297$, and Psychopathy, $r = -.216$. Coffee strength preference was positively correlated with promotion regulatory focus, $r = .178$. Lastly, alcohol strength preference was positively correlated with personal sense of power, $r = .202$, promotion regulatory focus, $r = .217$, sexual dominance, $r = .214$, Machiavellianism, $r = .161$ and Narcissism, $r = .237$.

Variables	Means	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
1. Sweet taste preference	23.6	4.41																		
2. Sour taste preference	15.78	5.44	.221**																	
3. Bitter taste preference	15.18	5.36	0.101	.590**																
4. Salty taste preference	20.03	4.84	.484**	.237**	.333**															
5. Spice sensation preference	4.43	2.03	0.02	.279**	.376**	.262**														
6. Dark chocolate preference	5.91	1.35	0.106	.259**	.249**	0.032	.168*													
7. Milk chocolate preference	12.7	6.04	.264**	0.02	-.159*	0.032	-0.096	-.160*												
8. Coffee strength preference	12.38	11.02	0.029	.226**	.398**	0.156*	.279**	0.122	-0.058											
9. Alcohol strength preference	5.72	3.95	-0.04	0.049	.335**	0.120	.315**	0.079	0.003	.234**										
10. Personal Sense of Power	38.39	10.2	0.089	0.123	0.075	0.061	.196**	.180**	0.107	-0.021	.202**									
11. Promotion Regulatory Focus	13.45	4.15	0.139	0.130	0.151*	0.158*	.275**	0.115	0.045	0.178*	.217**	.239**								
12. Sexual Dominance	17.74	11.01	-0.068	-0.086	-0.059	0.011	0.070	-0.097	0.041	0.068	.214**	0.106	0.081							
13. Sexual Submissiveness	11.06	7.06	0.028	-0.052	-0.073	0.036	0.056	-0.097	0.018	0.088	0.120	-0.132	-.145*	.289**						
14. Everyday Sadism	9.1	5.93	-.230**	-0.019	0.080	-0.125	.093	-0.072	-.297**	0.074	0.044	-0.136	0.037	0.035	0.008					
15. Machiavellianism	14.19	7.96	-0.097	-0.017	0.063	-0.045	0.12	-0.066	-0.125	0.084	0.161*	0.083	0.115	.162*	0.125	0.455**				
16. Psychopathy	13.52	5.34	-.197**	0.085	0.127	-.172*	0.073	-0.037	-.216**	0.132	0.134	-0.083	0.089	0.091	0.155*	0.511**	0.686**			
17. Narcissism	15.09	6.2	0.046	0.061	0.112	0.004	.185**	-0.013	0.068	0.051	.237**	.265**	.272**	0.092	-0.048	0.172*	0.520**	0.339**		

Table 2 Bivariate correlations between variables

Step-wise regression

Taste preferences were independently analysed through a series of step-wise regressions controlling for age, gender and ethnicity. Unlike Sagioglou and Greitemeyer (2016), we have treated personality characteristics as predictors of the taste preferences of interest as the former are more stable than the latter. The demographic variables were controlled as prior research suggests these factors influence taste preferences. Ethnicity was categorised as either ‘White’, ‘Black’ or ‘Other’, and these were treated as dummy variables.

The final stage of the step-wise regressions performed for each of our taste preference measures is summarized in Table 3. For the step-wise regression of sweet taste preference, Psychopathy was not included as a significant predictor despite an initial negative correlation with sweet taste preference. The resulting model explained 7.6% of the variance for sweet taste preferences, $F(6,191) = 3.682$, using promotion regulatory focus, $\beta = .149$, everyday Sadism, $\beta = -.204$, and ethnicity (other), $\beta = -.223$, as the most significant predictor variables.

Table 3: Step-wise regression model summaries				
Variables entered	Dependent Variables			
	Sweet Taste preference			
	<i>F</i> (6,191)	<i>Adj. R</i> ²	β	<i>t</i>
	3.682*	.076		
<i>Promotion Regulatory Focus</i>			.149*	2.159
<i>Everyday Sadism</i>			-.204**	-2.831
<i>Ethnicity (Other)</i>			-.223**	-2.096
	Bitter Taste Preference			
	<i>F</i> (5,192)	<i>Adj. R</i> ²	β	<i>t</i>
	5.557***	.104		
<i>Promotion Regulatory Focus</i>			.152*	2.236
<i>Age</i>			.208**	3.001
<i>Gender</i>			-.184*	-2.668
	Salty Taste Preference			
	<i>F</i> (7,190)	<i>Adj. R</i> ²	β	<i>t</i>
	4.089***	.099		
<i>Promotion Regulatory Focus</i>			.210**	3.018
<i>Psychopathy</i>			-.231***	-3.229
<i>Sexual Submissiveness</i>			.200*	2.649
<i>Gender</i>			-.237**	-3.187
	Spice Sensation Preference			
	<i>F</i> (7,190)	<i>Adj. R</i> ²	β	<i>t</i>
	4.121***	.100		
<i>Promotion Regulatory Focus</i>			.253***	3.568
<i>Personal Sense of Power</i>			.171*	2.381
<i>Sexual Submissiveness</i>			.162*	2.191
<i>Gender</i>			-.169*	-2.310
	Dark Chocolate Preference			
	<i>F</i> (5,192)	<i>Adj. R</i> ²	β	<i>t</i>
	4.989***	.092		
<i>Personal Sense of Power</i>			.152*	2.199
<i>Age</i>			.164*	2.345
	Milk Chocolate Preference			
	<i>F</i> (5,192)	<i>Adj. R</i> ²	β	<i>t</i>
	4.275***	.077		
<i>Sadism</i>			-.310***	-4.314
	Coffee Strength Preference			
	<i>F</i> (6,191)	<i>Adj. R</i> ²	β	<i>t</i>
	3.350**	.067		
<i>Promotion Regulatory Focus</i>			.204*	2.901
<i>Sexual Submissiveness</i>			.188*	2.502
<i>Gender</i>			-.234*	-3.149
	Alcohol Strength Preference			
	<i>F</i> (7,190)	<i>Adj. R</i> ²	β	<i>t</i>
	4.121***	.100		
<i>Promotion Regulatory Focus</i>			.161*	2.259
<i>Narcissism</i>			.190*	2.650
<i>Sexual Dominance</i>			.183*	2.661
*** <i>p</i> < .001 ** <i>p</i> < .01 * <i>p</i> < .05				

The step-wise regression of *bitter taste preference* the resulting model explained 10.4% of the variance, $F(5,192) = 5.557$, using promotion regulatory focus, $\beta = .15$, $p < .05$, Age, $\beta = .21$, and gender, $\beta = -.18$, as the most significant predictor variables.

The results for the salty taste preference, showed sexual submissiveness was included as a significant predictor despite no initial correlation with sweet taste preference. The resulting model explained 9.9% of the variance for salty taste preferences, $F(7,190) = 4.089$, using promotion regulatory focus, $\beta = .21$, Psychopathy, $\beta = -.23$, sexual submissiveness, $\beta = .20$, and gender, $\beta = -.24$, as the most significant predictor variables.

The results for *spice sensation preference*, showed Narcissism was not included as a significant predictor despite an initial positive correlation with spice taste preference, whereas sexual submissiveness was included despite no initial correlation. The resulting model explained 10% of the variance for spice sensation preferences, $F(7,190) = 4.121$, using promotion regulatory focus, $\beta = .25$, personal sense of power, $\beta = .17$, sexual submissiveness, $\beta = .16$, and gender, $\beta = -.17$, as the most significant predictor variables.

The results for *dark chocolate preference* explained 9.2% of the variance, $F(5,192) = 4.989$, using personal sense of power, $\beta = .15$, and age, $\beta = .16$, as the most significant predictor variables. The results for milk chocolate preference, explained 7.7% of the variance, $F(5,192) = 4.275$, using everyday Sadism, $\beta = -.31$, as the only significant predictor variable.

The results for coffee strength preference, explained 6.7% of the variance $F(6,191) = 3.350$, using promotion regulatory focus, $\beta = .20$, sexual submissiveness, $\beta = .19$, and gender, $\beta = -.23$, as the most significant predictor variables. The results for *alcohol strength preference*, explained 10% of the variance for coffee strength preference, $F(7,190) = 4.121$, using promotion regulatory focus, $\beta = .16$, Narcissism, $\beta = .19$, and sexual dominance, $\beta = .18$ as the most significant predictor variables.

Discussion

Like other studies our results do not support some of the findings of Sagioglou and Greitemeyer (2016), as we found no significant associations between sour taste preferences and any personality traits. Bitter taste preferences were found not to significantly correlate with dark side traits and everyday Sadism. Instead, our results found that bitter taste preferences were associated with promotion regulatory focus. This is unexpected, as previous literature suggests that individuals with a promotion orientation of regulatory focus should be sensation-seeking and harm-avoiding (Higgins, 1987); and as bitter tastes are naturally aversive (Desor, Maller & Andrews, 1975).

The associations between age and bitter taste preferences may offer some explanation for this novel finding, as with greater exposure to certain food and drink stimuli we develop an acquired taste for initially noxious and unpleasant stimuli (Higgs, 2015). In this sense you acquire a sense of taste. In some cultures and societies initially naturally repugnant tastes from bitter food and drinks may become more enjoyable and palatable with age, and as such may be sought out by individuals with a greater sensation seeking promotion regulatory focus. This is famous with the Marmite which is a sticky, dark brown paste with a highly distinctive, salty, flavour that polarises opinion such that it is used in conversation to suggest bipolar opinions: you love it or hate it.

Promotion regulatory focus was positively associated with sweet taste preferences, while everyday Sadism was negatively associated. These results are not consistent with prior research suggested a negative

correlation between sweet taste preferences and power. However, the association between sweet taste preferences and promotion regulatory focus is consistent with the notion that individuals with a promotion orientation will seek out hedonistic sensations, as sweet tastes are naturally attractive due to the evolutionary benefit of consuming foods high in sugar (Desor et al., 1975). Furthermore, as sadism is by definition is the preference for aversive stimuli, it is not unsurprising to observe that individuals with greater trait sadism had a lower preference for sweet tastes.

Salty taste preferences were positively associated with promotion regulatory focus and sexual submissiveness. Like sweet tastes, salty tastes are naturally attractive due to presence of sodium chloride, and essential compound for metabolism (Bradbury, 2004). The positive association between salty taste preferences and sexual submissiveness is novel, and merits replication and extension. The negative association between psychopathy and salty taste preferences is somewhat unexpected, although Sagioglou and Greitemeyer did find negative associations between salty taste preferences and malevolent personality traits, most notably everyday Sadism (2016).

The association between spice sensation preference and promotion regulatory focus supports previous research findings that sensation-seeking individuals enjoy spice sensation and spicy food items (Byrnes & Hayes, 2013). Furthermore, the positive association of spice sensation preference with personal sense of power and gender is may be due to impression management by men as it has been suggested that females are attracted to males who exhibit preferences for potentially harmful food types as this signals a strong immune system (Al-Shawaf, Lewis, Alley & Buss, 2015). Interestingly, spice sensation also displayed a positive relationship with sexual submissiveness, for which there is no previous literature to provide an explanation.

Dark chocolate preferences were found to be positively associated with personal sense of power and age. Previous research has suggested that milk chocolate varieties are preferred by individuals with lower power and greater disinhibition (Lattimore & Maxwell, 2005). Thus stronger varieties of chocolate may be expected to be preferred by individuals with greater personal power. However we found milk chocolate preferences were not associated with lower personal sense of power, though it was strongly associated with lower Everyday Sadism, which supports our previous finding of sweet taste preference being negatively correlated with Sadism.

Coffee strength preferences have been reported to be positively correlated with sensation-seeking in individuals (Mattes, 1984), and thus it is unsurprising that we find a similar positive correlation with promotion regulatory focus.

Alcohol strength preferences have also been found to positively correlate with sensation seeking in individuals, but also dark side traits (Magid, MacLean & Colder, 2007). The correlations between coffee strength preference with promotion regulatory focus and Narcissism support prior research findings. Interestingly, a strong correlation was also observed with sexual dominance.

Promotion orientation of regulatory focus was a personality predictor for the most taste preferences. This suggests that sensation seeking and harm avoidance may be the influential aspects of personality correlated with taste, and other measures of trait sensation seeking should be used in future research to elaborate the possible relationships with taste preferences. The findings that sexual submissiveness and sexual dominance exhibited relationships with a variety of taste preferences is entirely novel.

Like all studies this small, exploratory, cross-sectional, self-report study had limitations. It would have been desirable to have a larger

population and to know more about the eating habits and history as well as data on other personality factors. This study was essentially exploratory and picked up on the rapidly expanding dark-side literature (Furnham, 2021). It was stimulated by the idea that certain taste preferences may be indicators of psychopathology. However for this field to move forward it needs some theoretical foundations to test: namely how people with certain dispositions may be attracted to eating particular foods for the physiological effects they have (like alcohol, coffee) or the impressions they many create (like spicy food). It would also be important to understand their history of the consumption of certain foods, as well as the quantity and circumstances in which they are consumed.

Data Availability:

This is obtainable from the first author upon request.

Registration:

This paper was not pre-registered with the journal.

Ethics:

This was sought and obtained (CEHP/514/2017).

Informed Consent:

Participants gave consent for their anonymised data to be analysed and published.

Conflict of interest

There is no conflict of interest.

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