Orthorexia nervosa: Assessment and correlates with gender, BMI, and personality

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This study investigated whether orthorexia nervosa (ON; characterized by an obsessive fixation on eating healthy) may be predicted from the demographics variables of gender and BMI, and from the personality variables of self-esteem, narcissism, and perfectionism. Participants were 459 college students, who completed several online questionnaires that assessed these variables. A principal components analysis confirmed that the Eating Habits Questionnaire (Gleaves, Graham, & Ambwani, 2013) assesses three internally-consistent ON components: healthy eating behaviors, problems resulting from those behaviors, and positive feelings associated with those behaviors. A MANOVA and its tests of between subjects effects then revealed significant interactions between gender and BMI, such that for men but not women, a higher BMI was associated with greater symptomatology for all ON components. Partial correlation analyses, after controlling for gender and BMI, revealed that both narcissism and perfectionism were positively correlated with all aspects of ON symptomatology.

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1. Introduction

The benefits of healthy eating on physical and mental health are seemingly endless. In particular, eating a healthy vegetarian or semi-vegetarian diet (i.e., a nutrient-rich diet that consists largely of fruits and vegetables) may decrease one's risk of such life-threatening diseases as cancer and cardiovascular disease (Bazzano, 2006; Trichopoulou et al., 2003; Van Duyn & Pivonka, 2000). Moreover, this kind of diet is also associated with an enhanced quality of life with greater life satisfaction (Blanchflower, Oswald, & Stewart-Brown, 2012; Grant, Wardle, & Steptoe, 2009; Lengyel, Tate, & Obirek-Blatz, 2009), greater happiness (Blanchflower et al., 2012; Piqueras, Kuhne, Vera-Villarroel, van Straten, & Cuijpers, 2011; White, Horwath, & Conner, 2013), greater self-esteem (Brug, Lechner, & De Vries, 1995; Elfhag, Tholin, & Rasmussen, 2008; Steptoe et al., 2003), greater optimism (Boehm, Williams, Rimm, Ryff, & Kubzansky, 2013; Gilay, Geleijnse, Zitman, Bijlsma, & Kromhout, 2007; Kelloniemi, Ek, & Laitinen, 2005), and a lower incidence of depression (Jacka et al., 2010; Kulkarni, Swinburn, & Utter, 2015; McMartin, Jacka, & Colman, 2013). Ironically, however, healthy eating may become unhealthy for select individuals who develop orthorexia nervosa (ON), and the aforementioned benefits become replaced with a host of negative physical and mental health consequences.

1.1. What is ON?

ON, characterized by obsessive fixation on eating healthy, was first introduced by Steven Bratman (1997), an M.D. with practices in alternative medicine and occupational medicine. According to Bratman and Knight (2000), ON begins innocently, often with a desire to treat or prevent an illness (e.g., asthma, arthritis, cancer, heart disease, diabetes), to lose weight, or to simply break free from some of the bad habits of the typical American diet that often includes foods high in sugar, fat, and various artificial preservatives and chemicals. Over time, however, this healthy eating may transform itself into an unhealthy obsession for some individuals, whereby the time spent planning, purchasing, preparing, and eating their meals becomes extensive, consumes them, and interferes with other aspects of their life. These select individuals will self-praise successful resisting of temptation, often feeling superior to others, and any dietary lapses will be followed by extreme feelings of guilt and self-condemnation. Quality of life will diminish as they forego both intimate and larger social gatherings that involve food, socially isolating themselves and experiencing

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corresponding feelings of depression and anxiety. At an extreme, if they become too restrictive in the types of foods that they allow themselves to consume, malnutrition and even death may result. Past research on ON has largely focused on its association with disordered eating, obsession, and lifestyle. Regarding disordered eating, multiple studies reveal that increased ON symptomatology corresponds to higher scores on questionnaires assessing disordered eating behaviors that include items related to calorie restriction and preoccupation with weight (Asil & Surucuoglu, 2015; Fidan, Ertekin, Isikay, & Kirpilä, 2010; Gleaves, Graham, & Ambwani, 2013; McInerney-Ernst, 2011; Segura-Garcia, Papaïanni, et al., 2012; Segura-Garcia, Ramacciotti, et al., 2015). Although these findings suggest that ON is similar to anorexia nervosa (AN), the reasons for such eating behaviors may differ, with AN individuals trying to overcome a negative body image and ON individuals trying to lose excess weight that is associated with negative health risks. Regarding obsession, studies reveal that increased ON symptomatology corresponds to greater obsessive-compulsive tendencies (Arusoglu, Kabacık, Koksal, & Merdol, 2008; Asil & Surucuoglu, 2015; Gezer & Kabaran, 2013; Gleaves et al., 2013; Kven & Senbomatsu, 2013). These findings are expected, considering the ON individuals’ obsession with healthy eating that extended to what, when, and how they eat. Regarding lifestyle, consistent with ON individuals’ pursuit of good physical health, research reveals that increased ON symptomatology corresponds to increased exercise frequency (Eriksson, Baigi, Marklund, & Lindgren, 2008) and sport participation (Segura-Garcia, Papaïanni, et al., 2012; Varga, Thege, Dukay-Szabo, Tury, & van Furth, 2014), and is not associated with cigarette smoking or alcohol use (Aksoydan & Camci, 2009; McInerney-Ernst, 2011; Varga et al., 2014).

1.2. Personality and ON

Research on the personality correlates of ON is limited to two studies that investigated the relation between ON and the big five personality factors, and both found that increased ON symptomatology corresponded to higher levels of neuroticism (Forester, 2014; Gleaves et al., 2013). Neuroticism is a trait with a tendency toward a negative emotional state that encompasses feelings of depression, anxiety, and anger. Consistent with the finding above, increased ON symptomatology has been found to correspond to increased depression, negative affect, and suicidal thinking (Gleaves et al., 2013). Given that ON becomes an unhealthy time-consuming obsession that interferes with other aspects of their life and leads to social isolation along with feelings of guilt and self-condemnation for dietary lapses, feelings of depression are not surprising.

The present research further explores the personality correlates of ON, by investigating self-esteem, perfectionism, and narcissism. Gatward (2007) proposed that food restriction in AN is a response to perceived threats of social exclusion, and the same may be true for at least the initial food restriction in ON. Given the uncommonly thin ideals that are glamorized in mass media, individuals who are low in self-esteem may feel extra pressure to become thin and conform to the culture’s ideals of beauty. Supporting this statement is research revealing that individuals with AN also suffer from lower self-esteem than controls (Brockmeyer et al., 2013; Hartman, Thomas, Greenberg, Matheny, & Wilhelm, 2014). Furthermore, in an attempt to overcome their low self-esteem and vulnerable ego, some may pursue perfection and create a deceptive allure of self-assurance, consistent with the finding that individuals with AN score higher than controls on measures of both perfectionism and narcissism (Steiger, Jabalpurwala, Champagne, & Stotland, 1997; Waller, Sines, Meyer, Foster, & Skelton, 2007). These studies have shown that losing weight causes AN sufferers to feel power and superiority, causing the continuation of the disorder. Similar findings would be expected in ON individuals who take pride in their self-control, resisting temptation, and eating foods that they believe are superior to others’ diets.

1.3. Gender, BMI, and ON

Two demographic variables that have been repeatedly linked to disordered eating, and should thus be considered in the present research too, are gender and body-mass index (BMI). Regarding gender differences in disordered eating, past research reveals that women outnumber men in prevalence of AN with an average ratio of 9:1 (Fisher et al., 2014; Forman et al., 2014; Nicely, Lane-Loney, Masciulli, Hollenbeck, & Ornstein, 2014; Norris et al., 2014). Any gender differences in ON are more difficult to detect, partially due to the lack of research on clinically diagnosed individuals, with ON not being recognized as a disorder in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5; American Psychiatric Association, 2013). The existing research typically compares men and women on the basis of their scores on a single ON questionnaire. Three of these studies found that ON symptomatology was significantly greater in women than men (Arusoglu et al., 2008; Keller & Konradsen, 2013; Kven & Senbomatsu, 2013), two studies found that ON symptomatology was significantly greater in men than women (Donini, Marsili, Graziani, Imbrale, & Cannella, 2004; Fidan et al., 2010), and seven studies found no significant gender differences in ON symptomatology (Aksoydan & Camci, 2009; Bosi, Gamur, & Guler, 2007; Brytek-Matera, Donini, Krupa, PoggioGalle, & Hay, 2015; Lewis, 2012; McInerney-Ernst, 2011; Ramacciotti et al., 2011; Valera, Ruiz, Valdespino, & Vidioli, 2014). Taken together, these findings may suggest no or minimal gender differences, which is in contrast to AN. However, given the mixed results, further research is needed to clarify any potential differences.

Regarding BMI, part of being physically healthy is maintaining an appropriate body weight. Two studies have found that increased ON symptomatology corresponds to greater BMI (Asil & Surucuoglu, 2015; Fidan et al., 2010). Although others studies found no significant relationship, the trend of increased ON symptomatology corresponding to greater BMI held (Aksoydan & Camci, 2009; Donini et al., 2004; McInerney-Ernst, 2011; Ramacciotti et al., 2011; Varga et al., 2014). Perhaps ON first develops out of an attempt by overweight individuals to lose weight, such that these individuals have an accurate rather than distorted body image and turn to healthy eating in an attempt to achieve and maintain an ideal weight for proper physical health. As with gender, these mixed findings create the need for further research into the impact of BMI on ON. Nevertheless, the fact that no study has found a negative correlation between BMI and ON suggests that ON is distinct from AN, which is marked by an excessively low BMI.

1.4. Assessment of ON

The vast majority of research studies have assessed ON with the ORTO–15 (Donini Marsili, Graziani, Imbrale, & Cannella, 2005). Donini et al. first diagnosed participants as ON or non-ON on the basis of an extensive battery of the healthy foods they ate, the unhealthy foods they avoided, and their obsessive-compulsive personality. Participants then completed the ORTO–15, a 15-item questionnaire based off of the self-test proposed by Bittman and Knight (2000), with lower scores representing greater ON symptomatology. This questionnaire demonstrated the greatest predictive capability with a threshold of 40, such that a score below 40 would indicate the presence of ON. However, this predictive
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