

The Role of Social Eating in the Relationship between
Appearance Orientation and Eating Disorder Related Impairment

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Abstract

Fear of negative evaluation from family, friends, and/or peers can lead to fear or avoidance of eating with others (Spoor et al., 2006; Petrie et al., 2009). These fears and behaviors can lead to impairment in multiple circles of one's life (Aderka et al., 2014). The fear of negative evaluation has been shown to be a predictor of disordered eating (Levinson & Rodebaugh, 2011). Thus, the present study attempted to analyze the effect of social eating on impairment. Research has previously shown a relationship between appearance orientation (AO) and eating disorder (ED) related impairment. The purpose of this study was to determine if the association between AO and ED related impairment is mediated by the avoidance of social eating (ASE). Participants ($N = 303$) completed measures assessing eating psychopathology, ED related impairment, and appearance orientation. Data were analyzed using the Process macro in SPSS. Results suggest that there is an association between all three variables individually (AO-ED-impairment; AO-ASE; ASE-ED-impairment) as well as a partial mediation pathway (indirect effect = 0.0990, CI (95%) = 0.0488, 0.1452) when controlling for both sex and BMI.

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The expectation that others will judge one negatively is defined as the fear of negative evaluation. Previous research has been done that indicates that fear of negative evaluation is a transdiagnostic feature in both maintaining and developing eating disorders, specifically those that endorse weight and shape concerns (Trompeter et al., 2018). Research has also indicated that fear of negative evaluation can lead to impairing behaviors around fears such as avoiding eating in front of others (Spoor et al., 2006; Petrie et al., 2009). Fear of negative evaluation has been shown to be a core feature of social anxiety disorder and appears to be common in eating disorders (ED) (Smith et al., 2018). Appearance orientation is defined as the extent that one is invested in their appearance as well as how much they care about their looks (Cash, et al., 2000). Avoidance of social eating is related to appearance orientation in that those who score high on appearance orientation measures likely pay attention to how they look while eating due to frequent grooming and more attention paid to their looks (Zarychata et al., 2017). Items that are used in measuring appearance orientation reference importance placed on always looking their best, which could include while eating. Thus, avoiding social eating situations can eliminate the perceived judgement on an individual. As the fear of negative evaluation has been shown to be a risk factor in various eating disorder symptoms (e.g., body dissatisfaction and dietary restraint), there is an association between the fear of negative evaluation and various impairments surrounding eating behaviors such as impacting personal relationships (Utschig et al., 2010; Levinson & Rodebaugh, 2012; Aderka et al., 2014).

Research has previously linked appearance orientation to ED related impairment, however, no studies to my knowledge analyzed the association between appearance orientation, ED related impairment, and avoidance of social eating. Petrie et al. (2009) found that female college athletes were more likely to pay attention to how they appear to others in all situations of their lives. Researchers in this study also found that those who endorse high appearance orientation also report higher levels of disordered eating to their peers (Petrie et al., 2009). Higher levels of appearance orientation scores have been associated with higher levels of dietary restraint and other eating concerns (Spoor et al., 2006). This indicates that although Petrie et al. analyzed female athletes, the results are likely generalizable to non-athletes as well. A higher level of focus on one's appearance in all situations regarding how others perceive them can lead to avoiding social eating scenarios. Therefore, the current study seeks to determine whether the relationship between appearance orientation and ED related impairment is mediated by the avoidance of social eating. ED symptoms have been shown to lead to higher levels of impairment in those endorsing them (Jenkins et al., 2015). ED related impairment as it relates to social eating could involve ceasing to go out with others, interfere with eating meals with family and friends, and generally affecting relationships with others. If someone is to avoid eating out with others or eating in secret due to a fear of negative evaluation or general concerns over one's appearance, impairment is likely. A mediating variable of avoidance of social eating can explain (at least partially) the relationship that exists between appearance orientation and ED related impairment. The knowledge that appearance orientation can lead to the avoidance of social eating indicates that the avoidance of social eating is responsible for the relationship that exists between appearance orientation and ED related impairment. Thus, a mediation analyses was used to test the hypothesis that the relationship between appearance orientation and ED related impairment is due to the role

of the avoidance of social eating. It is expected that there will be significant relationships between appearance orientation and both avoidance of social eating and ED related impairment. Along with the relationship between appearance orientation and other variables, it is also expected that avoidance of social eating will be associated with ED related impairment. If relationships between each variable exist, mediation analyses will allow to test the hypothesis that avoidance of social eating is responsible for the relationship between appearance orientation and ED related impairment.

Method

Participants

A total of 305 undergraduate students from the University of North Dakota (UND) participated for credit towards a course requirement. Eight participants did not complete all measures associated with variables of interest and were not included in demographic analysis. Participants were an average (SD) of 19.44 (1.396) years. The majority of participants self-identified as female (82.8%) and non-Hispanic white (89.2%). Other races/ethnicities represented in the sample include black (non-Hispanic; 2.0%), Hispanic (1.3%), Asian (3.0%), and Native American (2.3%), with the other 1.7% reporting other ethnicities or not disclosing. The average body mass index was in the normal range (M_{BMI} (SD) 23.64 (3.70) kg/m²).

Participants reported to a research lab on the UND campus where data were collected by undergraduate research assistants. After informed consent was obtained, participants completed a self-report questionnaire that included the measures of interest (appearance orientation, ED related impairment, and avoidance of social eating). Participants also completed procedures

beyond the scope of the present study. Course credit was then awarded for participation in the study.

Participant sex was included as a covariate in analyses due to evidence of gender effects on questionnaire responses in extant literature (Dahlgren, Stedal, Rø, 2017; Gillen & Lefkowitz, 2006; Latner, Knight, & Illingworth, 2011; Miller et al., 2000). Body mass index was also included as a covariate due to those with lower body mass indexes often endorsing lower quality eating companion relationships (Mötteli, Siegrist, & Keller, 2017).

Measures

Multidimensional Body-Self Relations Questionnaire- Appearance Scales (MBSRQ-AS; Cash, et al., 2000)

The MBSRQ-AS is a 34-item self-report questionnaire. It evaluates several components of one's body image. This study analyzed a section of the MBSRQ-AS that evaluate appearance orientation (the appearance orientation scale). Other constructs evaluated in this questionnaire but not used in data analysis include the appearance evaluation scale and the body area satisfaction scale. Appearance orientation analyzes the extent of investment in one's appearance where higher scores indicate high investment and lower scores indicate low investment. Twelve items (three of which are reverse scored) on the MBSRQ-AS assess appearance orientation and are assessed on a 5-point scale ranging from 1 (*definitely disagree*) to 5 (*definitely agree*). These items include; "before going out in public, I always notice how I look", "before going out, I usually spend a lot of time getting ready", and "it is important that I always look good". The reverse scored items

includes, “I don’t care what people think about my appearance”. Internal consistency reliability for appearance orientation measure in this sample was acceptable ($\alpha = 0.79$).

Clinical Impairment Assessment (CIA; Bohn et al., 2008)

The CIA is a self-report measure consisting of 16 items. It is designed to provide an index of ED related impairment. The CIA emphasizes the severity of impairment across important domains of functioning that occurs as a *direct* consequence of an individual’s eating disorder psychopathology. Each item is asked following the statement; “over the past 28 days, to what extent have your ...eating habits...exercising...or feelings about your eating, shape, or weight...”. Examples of items in this questionnaire include; “...stopped you going out with others?”, “...interfered with meals with family or friends?”, and “made it difficult to eat out with others?”. Internal consistency reliability in this sample was excellent ($\alpha = 0.95$).

Eating Disorder Examination-Questionnaire (EDE-Q; Version 6.0; Fairburn & Beglin, 2008)

The EDE-Q is a self-report measure of eating psychopathology that is made up of 28 items. There are four subscales that make up the EDE-Q; dietary restraint, eating concern, weight concern, and shape concern. A global score on the EDE-Q can be calculated but was not for the purposes of this study. Two of the 28 items were used for this study because they assess social eating. Participants responded to questions that read “over the past 28 days, on how many of those days have you eaten in secret (i.e., furtively)?” and “over the past 28 days how concerned have you been about other people seeing you eat?”. Both questions are followed by “do not count episodes of binge eating”. The definition of “binge eating” was given before the questions as

“eating what others would regard as an unusually large amount of food for the circumstances, accompanied by a sense of having lost control over eating”. The first item concerning eating in secret was measured on a 7-point scale ranging from 0 (*no days*) to 6 (*every day*) where there are intervals of days for each number in between. The second item was measured on a 7-point scale ranging from 0 (*not at all*) to 6 (*markedly*). The internal consistency reliability for this sample was low ($\alpha = .546$), which is likely due to the use of only two items.

Statistical Analyses

Prior to analyses, eight participants were excluded due to not completing measures associated with variables of interest including covariates ($n = 297$). By excluding participants that did not complete measures of interest, results would be consistent with associations without missing data being the reason. After examining missing data, central tendencies and dispersion were analyzed (Table 1). The PROCESS macro (Hayes, 2013) in SPSS was used for mediation analyses to test the main hypothesis that avoidance of social eating mediates the relationship between AO and ED related impairment. No significant relationship was found between BMI and sex and any of the variables of interest, however, they were still included as covariates in main regression analyses (Table 2). AO was entered as the independent variable and ED related impairment was used as the dependent variable.

Results

The majority of participants scored at the low end of the scale on the EDE-Q (0) for items of secret eating and concern of others seeing one eat (Table 1). After recoding variables of the MBSRQ-AS that were reverse scored and computing the overall AO score, participants scored towards the middle of the scale (Table 1). Similar to the calculated avoidance of social eating

score, the majority of participants scored on the lower end of the CIA as well (Table 1). Bivariate correlation analyses were computed to assess if variables were related (Table 2). Results indicate that the only significant relationships are between appearance orientation and ED related impairment, appearance orientation and avoidance of social eating, and avoidance of social eating and ED related impairment which is consistent with hypotheses (Table 2).

Results of mediation analyses indicate significant pathways between all variables of interest (Figure 1). These results are consistent with previous research linking each variable (appearance orientation, avoidance of social eating, and ED related impairment) which are indicated with the *a*, *b*, and *c* pathways (Figure 1). A partial mediation pathway was also confirmed in analyses (indirect effect = 0.0990, CI (95%) = 0.0488, 0.1452). Results show that avoidance of social eating is responsible (in part) for the relationship that exists between appearance orientation and ED related impairment. Rather than a direct causal factor present in the relationship, the association between ED related impairment and appearance orientation is partially explained by the avoidance of social eating.

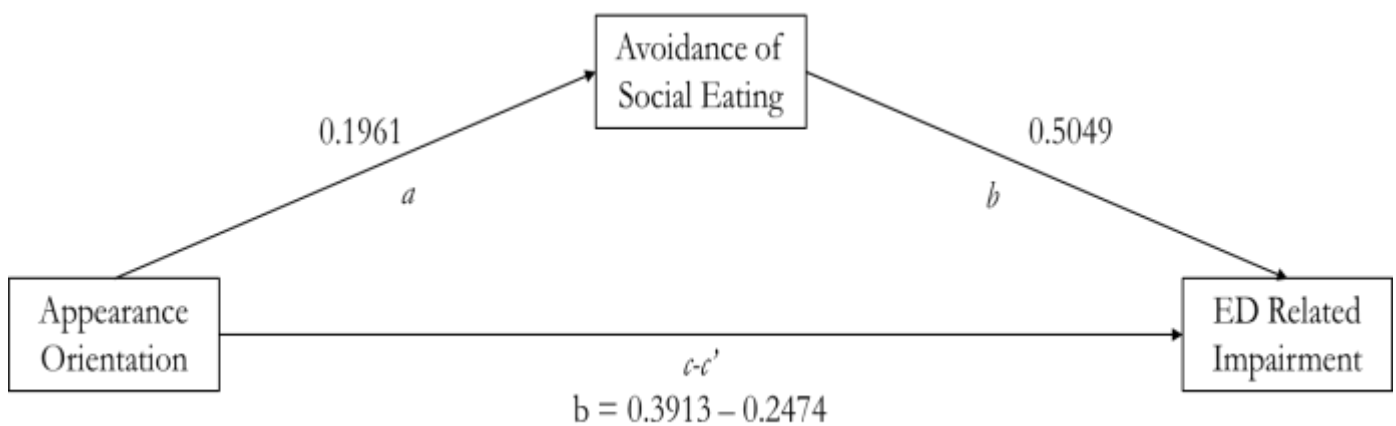
Table 1. Means and Standard Deviations for the avoidance of social eating, appearance orientation, and ED related impairment.

	Mean	Std. Deviation
Appearance Orientation	3.3729	.3739
Avoidance of Social Eating	.3939	.7904
ED Related Impairment	.4986	.5435

Table 2. Bivariate analyses of variables including the covariates of BMI and Sex

		AO	ASE	ED Related Impairment	BMI	Sex
Appearance orientation	Pearson Correlation	1	.195	.270	.028	-.041
	Sig. (2-tailed)		.001	<.001	.630	.477
	<i>N</i>	297	297	297	297	297
Avoidance of Social Eating	Pearson Correlation			.539	.032	.029
	Sig. (2-tailed)			<.001	.580	.615
	<i>N</i>			297	297	297
ED related impairment	Pearson Correlation				.054	-.007
	Sig. (2-tailed)				.351	.910
	<i>N</i>				297	297

Figure 1. Proposed mediation model. All pathways are significant at $p < .01$.



Discussion

The current study tested whether the relationship between appearance orientation and eating disorder related impairment was mediated by the avoidance of social eating. While research has previously linked each piece of the mediation model together, which was confirmed in the present study, the role that the avoidance of social eating plays on the relationship between appearance orientation and ED related impairment had not yet been examined. Consistent with hypotheses, analyses indicate that the avoidance of social eating is a mediating factor in the relationship between appearance orientation and ED related impairment. However, as with all research results should be interpreted within the context of relative strengths and weaknesses present in the study. The current project expands upon emerging literature and is the first of its kind to analyze possible mediating variables in the relationship between appearance orientation and ED related impairment. Despite maintaining a large sample size following the removal of participants not completing all measures, participants were relatively homogenous with respect to sex and racial/ethnic background.

Although sex was entered as a covariate in analyses, there is still the limitation of the demographics present in my sample. The sample was primarily comprised of women. Previous research has shown differences in appearance orientation scores when comparing women to men indicating that the amount of women in my sample could still influence the results despite being included as a covariate (Cash, 2000). Research also indicates that men and women score differently on both the EDEQ and CIA where men score lower on both sets of measures than women (Dahlgren, Stedal, Rø, 2017). The indication that men and women score differently on all variables of interest was known prior to analyses. Including sex as a covariate in the analyses allowed to control for this possible difference in responses. While research has shown that women

tend to score higher on appearance orientation measures than men (Gillen & Lefkowitz, 2006; Latner, Knight, & Illingworth, 2011; Miller et al., 2000) research on race/ethnicity has not shown a difference in reporting when comparing European American's to African Americans (Gillen & Lefkowitz, 2006). While race/ethnicity has not been reported as being impactful in the reporting of any variables of interest, those who identify as white are more represented in a clinical setting than those who identify as African American or other ethnicities (Pike et al., 2001). Due to differences in reporting not being present between race/ethnicities, it was not included as a covariate in analyses. The underrepresentation of ethnic groups and males in the present study warrants further research into the role that the avoidance of social eating plays in the relationship between appearance orientation and ED related impairment.

Another possible limitation of the present study includes violating the assumption of a mediation analyses that all variables are normally distributed. Of the variables included in the study, only appearance orientation was normal. As the majority of participants responded low to both measures of ED related impairment and the avoidance of social eating, the distribution of results is skewed. Using clinical measurement tools in a non-clinical sample, as done in this study, can lead to uneven distribution of results. For example, the majority of participants answered "0" (70%) to the avoidance of social eating measures due to not everyone having the pathology being measured by the EDEQ. As the present study violated the assumption of a mediation analysis, future research is needed to assess whether a mediation still exists when all variables are normally distributed. It is also important to note that while mediation analyses can assume causality, these results should be taken as just an explanation between the variables not any causal relations.

Despite limitations of the present study, results provide a starting point for future analyses of the relationship between appearance orientation and ED related impairment. Due to the presence of a partial mediation, further research still needs to be done to analyze this relationship further to see if other mediating factors exist. Consistent with previous research, there is a relationship between each variable. Along with this consistency, the finding that the avoidance of social eating is partially responsible for the association between appearance orientation and ED related impairment. Reduction of psychosocial impairment has been shown to be important in treatment (Bohn et al., 2008). Thus, understanding the impact that both appearance orientation and ED related impairment is essential in reducing the impact of ED symptoms. Along with possible treatment implications, there are implications for the general public. By understanding the function that avoidance of social eating plays in someone who endorses high levels of appearance orientation, decreasing the level of social impairment one faces in their life. As this sample consisted of college students, they may or may not have the behaviors of interest. However, as results indicated a relationship between appearance orientation, ED related impairment, and avoidance of social eating as well as a mediation pathway, the results are applicable to the general public. As social eating has been shown to be an important factor in the development of healthy eating habits, those who avoid eating in front of others (possibly due to high levels of appearance orientation) can experience both social and physical impairment (Mötteli, S., Siegrist, M., & Keller, C., 2017).

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