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Internalized weight stigma and the progression of food addiction over time

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Abstract

Food addiction is associated with elevated levels of eating pathology, body image concerns, and internalized weight stigma. The role of internalized weight stigma in the progression of addictive-like eating has not been explored. This longitudinal study explored the relative contributions of weight-related self-devaluation and fear of being stigmatized by others in predicting changes in addictive-like eating behavior over time. 305 young adults ($M_{\text{age}} = 18.7$ years, $SD = 1.1$, range 18–28, $M_{\text{BMI}} = 21.9 \text{ kg/m}^2$, $SD = 3.7 \text{ kg/m}^2$, range 13.7–38.9 kg/m^2) completed online measures of “food addiction,” weight-related self-devaluation, and fear of stigma from others at two time points (follow-up $M = 280$ days, $SD = 30$, range 155–474). At baseline, 7.9% exhibited clinically relevant addictive-like eating behavior, 40.3% self-classified as being “addicted to food”, and 51.8% neither. Using cross-lagged modelling, fear of being stigmatized, but not self-devaluation, was a predictor of worsening “food addiction” status over time. Fear of weight stigma, rather than weight-related self-devaluation *per se*, may be an important predictor of problematic eating behavior. As weight stigma is prevalent in Western populations, these findings have potential implications for the development of problem eating behaviors in non-clinical samples.

Keywords: eating behavior, food addiction, social stigma, body image, longitudinal study

1. Introduction

1.1 Food addiction

The concept of “food addiction” is highly controversial within scientific and medical communities (Long, Blundell, & Finlayson, 2015; Ziauddeen & Fletcher, 2013). Nevertheless, the Yale Food Addiction Scale – a diagnostic instrument developed in line with DSM-IV-TR criteria for substance dependence and intended to identify individuals exhibiting addictive-like patterns of eating behavior (Gearhardt, Corbin, & Brownell, 2009) has proved useful in identifying a clinically relevant population of individuals with disordered eating habits distinct from those diagnosed with binge eating disorder, although there are a number of overlapping symptoms between the two conditions and they do sometimes co-occur (Gearhardt, Boswell, & White, 2014; Ivezaj, White, & Grilo, 2016). Additionally, a YFAS-positive (YFAS+) classification is associated with greater rates of eating disorder psychopathology, psychological morbidity, and impaired quality of life in both clinical and community samples (Brunault et al., 2016; Davis et al., 2011).

In contrast, within lay populations, the existence of “food addiction” is widely accepted (Barry, Brescoll, Brownell, & Schlesinger, 2009; Ruddock et al., 2016). We have proposed that “self-perceived food addiction” (SPFA) represents an intermediate stage in the development of clinically relevant “food addiction”, and identified a graded pattern of symptom severity on measures of disordered eating behavior, body image concerns, and weight stigma in both student and community samples, with YFAS+ individuals scoring highest, followed by SPFA+ individuals, and those not identified as “addicted to food” by either the YFAS or self-

classification having the lowest scores. This continuum was present despite no differences in BMI between individuals in the three categories (Meadows, Nolan, & Higgs, 2017).

1.2 Internalized weight stigma

Internalized weight stigma (IWS) is the phenomenon whereby a higher-weight individual devalues themselves because of their weight. In order for this to occur, four distinct processes must occur (Corrigan & Watson, 2002). The individual must first be aware of the negative societal stereotypes and judgments of higher-weight individuals, for example, that they are greedy and lazy. Next, they must accept the validity of these negative judgments. Third, they must identify as a member of the stigmatized group and apply those negative attributes to themselves. Finally, they must experience decrements in self-worth as a result.

Although IWS is emerging as an important predictor of disordered eating behavior (for a review, see Pearl & Puhl, 2018), it remains under-explored in the context of “food addiction,” particularly in non-clinical populations. Cross-sectional studies in clinical populations have identified an association between IWS and “food addiction” as measured by the YFAS (Baldofski et al., 2016; Burmeister, Hinman, Koball, Hoffmann, & Carels, 2013); however, in the absence of longitudinal studies, the role of IWS in the progression of addictive-like eating has not been examined. Nevertheless, evidence from the wider stigma literature suggests that self-stigma may play a role in driving the development of negative downstream outcomes. In a systematic review of studies of internalized mental health stigma, findings from longitudinal studies suggested that baseline levels of self-stigma were negatively associated with both affective (e.g., self-esteem, depressive symptom severity, emotional discomfort) and behavioral (e.g., service utilization, medication adherence) outcomes at follow-up (Livingston & Boyd,

2010). Thus, given the link between IWS and maladaptive coping strategies (Pearl & Puhl, 2018), it is possible that IWS would be associated with, at the very least, maintenance, and possibly progression, of problematic eating behaviors and attitudes.

1.3 *The present study*

The aim of the present study was to determine whether weight-related self-stigma predicted worsening “food addiction” over time using a cross-lagged design. Importantly, measures of weight-related self-stigma tend to operationalize the construct somewhat differently and may lack conceptual clarity (Meadows & Higgs, 2019). The Weight Self-Stigma Questionnaire (WSSQ; Lillis et al., 2010) identifies two facets of intrapersonal weight stigma: weight-related self-devaluation and fear of weight-related stigma from others. Self-devaluation captures perhaps the ‘purest’ operationalisation of IWS, as outlined above: when members of a marginalized group accept the devalued status of their group and devalue *themselves* as a result. However, fear of stigma is also a self-originating cognition in that it represents an individual’s thoughts, beliefs, and expectations regarding how *others*’ view, judge, or treat them because of their weight, what Link and colleagues (2015) term “symbolic interaction stigma.” As such, fear of being stigmatized and/or anticipated stigma may be incorporated into the operationalization of IWS, as is the case with the WSSQ; however, while it does require that individuals be aware of their devalued status in society, it does not necessarily require that the targets endorse that devalued status (Link, Wells, Phelan, & Yang, 2015). Although the two subscales of the WSSQ are highly correlated, some evidence suggests differential influences on eating behavior, psychological wellbeing, and health-related quality of life (Almenara et al., 2017; Farhangi, Emam-Alizadeh, Hamed, & Jahangiri, 2017; Lillis et al., 2010). In the only longitudinal study using this measure conducted to date, Lillis and colleagues (2017) found that fear of being stigmatized due to

weight, rather than weight-related self-devaluation, predicted less weight loss in a 3-month online weight-loss intervention. Thus, we hypothesized that fear of being stigmatized, rather than weight-related self-devaluation, would predict worsening eating pathology at follow-up. Additionally, while little is known about the pathways via which internalized weight stigma develops, findings from the wider stigma literature suggest that anticipation or expectations of stigma significantly predict stigma internalization (Hing & Russell, 2017; Link et al., 2015; Quinn, Williams, & Weisz, 2015). However, the cross-sectional nature of these studies precludes determination of causal effects. It is possible that fear of stigma, which necessitates awareness of the stigmatized status of one's group, could result in an individual coming to accept their devalued status as deserved; that is, fear of stigma may be linked to future self-devaluation. But the reverse pathway is also plausible; that believing oneself to be less worthy because of one's weight may result in an individual expecting others to feel the same way. While societal devaluation of a group must always precede the development of stigmatized identities, once a devalued status has become culturally entrenched, it is likely that a two-way relationship exists – that is, a vicious circle. Thus, we predicted reciprocal relationships between self-devaluation and fear of stigma over time.

2. Methods

2.1 Design

This study used a prospective longitudinal design to determine the relative roles of weight-related self-devaluation versus fear of weight-related stigma from others in predicting worsening eating pathology over time in young adults. The present paper analyzes data collected as part of a larger study on food addiction in student and community samples (Meadows et al., 2017). The study was carried out using the survey platform Qualtrics (qualtrics.com) and all measures are

self-report data.² The main findings from this study have been reported elsewhere (Meadows et al., 2017). The study was approved by the University of Birmingham Ethical Review Committee, and informed consent was obtained from all participants.

2.2 *Participants*

Participants were 308 first-year psychology students at the University of Birmingham, who participated in an online study entitled “Easy online eating survey” for course credit at two time points. Baseline data were collected between January 2013 and November 2014, and follow-up data between October 2013 and December 2014. All eligible students participated at both time points. Three students filled out the follow-up questionnaire less than seven days after completing the baseline questionnaire and their data were excluded from the analyses, giving a final follow-up sample of 305.³ Mean age at baseline was 18.7 years ($SD = 1.1$, range 18–28). The majority of the sample identified as female (91.5%) and White (80%; 8.2% South Asian, 10.8% Other ethnicities, 1.0% missing), and had a BMI in the “normal weight” category (70.5%; $M = 21.9 \text{ kg/m}^2$, $SD = 3.7 \text{ kg/m}^2$, range = 13.7–38.9 kg/m^2). Length of follow-up ranged from 155 to 474 days ($M = 280$, $SD = 30$ days), and did not differ by food addiction status, Kruskal-Wallis $H(2) = 4.03$, $p = .13$.

2.3 *Measures*

2.3.1 *Food addiction*

Self-perceived food addiction (SPFA) was assessed with a single yes/no question: “Do you feel that you are addicted to some foods?” Clinically relevant “food addiction” was assessed with the

² Additional assessed constructs collected in the student sample but not included in the present analysis: dietary restraint, eating self-efficacy, eating pathology, current dieting, and overweight preoccupation.

³ These 305 students are the same sample as those in Study 1b and a subset of those in Study 1a in Meadows et al., 2017. The results presented herein have not been previously reported.

Yale Food Addiction Scale (YFAS), a 25-item scale measuring addictive behaviors with respect to certain foods (Gearhardt et al., 2009). The YFAS can produce a continuous symptom count score as well as a clinical “diagnosis” of food addiction. In line with the DSM-IV-TR scoring criteria for substance dependence, a positive “diagnosis” requires endorsement of at least three of the seven symptoms plus experience of clinically significant distress or impairment. The YFAS has been extensively validated has good internal and test-retest reliability (Gearhardt et al., 2009; Gearhardt, Corbin, & Brownell, 2016; Meule, Vögele, & Kübler, 2012). Kuder-Richardson's α was .82 in this sample. Participants who received a positive “diagnosis” on the YFAS were classified as YFAS+; participants who did not receive a YFAS+ “diagnosis” but who considered themselves addicted to foods were classified SPFA+. The remainder were classified NFA (“no food addiction”).

2.3.2 *Internalized weight stigma*

Internalized weight stigma was assessed using the 12-item Weight Self-Stigma Questionnaire (WSSQ; Lillis et al., 2010), which has two subscales. The Self-devaluation subscale focuses on respondents’ own negative thoughts and feelings about their weight, in particular, shame and self-blame. Sample items are, “I feel guilty because of my weight problems,” and “I became overweight because I’m a weak person.” The Fear of Enacted Stigma subscale is focused more on others’ opinions. It assesses worries about being stigmatized by others because of their weight and perceptions that *others* devalue them. Sample items are, “Others are ashamed to be around me because of my weight,” and “Others will think I lack self-control because of my weight problems.” Items are scored on a five-point Likert scale from 1 (completely disagree) to 5 (completely agree). Sum scores are calculated with a possible range from 6 to 30 for each subscale. Higher scores are indicative of increased self-stigma. The WSSQ has been validated in

clinical and non-clinical, male and female, higher-weight samples (Lillis et al., 2010).

Cronbach's α s for Self-devaluation and Fear of Enacted Stigma subscales in the present sample were .93 and .85, respectively.

2.3.3 Demographics and anthropometrics

Participants were asked to provide age, gender, and ethnicity, and to self-reported height and weight, which were used to calculate BMI.

2.4 Statistical analysis

Cross-lagged path analysis was used to explore the longer-term effects of weight-related self-devaluation and fear of being stigmatized by others on “food addiction”. Separate models were tested for each of the “food addiction” variables, namely “food addiction” status and YFAS symptom counts over time. Consistent with previous findings of a continuum of severity of scores on measures of disordered eating and body image concern across “food addiction” categories – no “food addiction” with the lowest scores, followed by SPFA, and then YFAS+ individuals with the highest scores (Meadows et al., 2017), “food addiction” status, was treated as an ordinal variable. Cross-lagged pathways from baseline “food addiction” variables to weight-stigma variables at follow-up were included in the models to determine whether a reciprocal relationship existed, whereby initial “food addiction” also led to worsening weight-stigma outcomes over time, controlling for length of follow-up and changes in BMI between the two time points. Analyses were conducted in MPlus 8 (Muthén & Muthén, 2017).

3. Results

At baseline, “food addiction” classification was 7.9% YFAS+, 40.3% SPFA+, and 51.8% NFA. Mean YFAS symptom count and scores on the WSSQ subscales were significantly different

between the three categories (Table 1). Post-hoc tests indicated that symptom count, self-stigma, and fear of enacted stigma scores in all categories were significantly different from each other (fear of stigma in YFAS+ vs SPFA+, $p = .015$; all other tests $p < .001$).

Table 1

Baseline Characteristics by “Food Addiction” Status

	YFAS+		SPFA+		NFA		Welch's <i>F</i>
	<i>n</i> = 24		<i>n</i> = 123		<i>n</i> = 158		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
YFAS symptom count	5.00	1.47	2.30	1.53	1.39	1.05	74.3***
Self-stigma	19.96	4.32	13.92	5.96	11.45	5.53	37.6***
Fear of enacted stigma	16.75	5.15	13.72	5.11	11.43	4.52	15.9***

Note. Symptom count scores can range from 0 to 7. Self-devaluation and Fear of enacted stigma both scored 6–30.

*** $p < .001$

Thirty-five participants (11.5%) progressed to a “worse” “food addiction” category over the follow-up period. Fear of being stigmatized by others, but not self-devaluation, was a predictor of worsening “food addiction” status over time, even after controlling for baseline “food addiction” status (Figure 1). No reciprocal relationships were observed; that is, “food addiction” status at baseline did not predict changes in IWS at follow-up. Self-devaluation at baseline predicted fear of stigma at follow-up, but, contrary to expectations, the reverse was not true. Length of follow-up had a small but statistically significant independent effect on fear of stigma only (path not-shown; unstandardized coefficient = .016, $SE = .008$, $p = .044$); changes in BMI did not have a significant independent effect on outcomes at follow-up. Overall, the model explained 35.6% of the variance in “food addiction” status at follow-up, 4.5% of which was accounted for by the effect of baseline weight-stigma variables. The analysis was repeated with

YFAS symptom count as the outcome of interest; however, no significant cross-lagged effects were found.

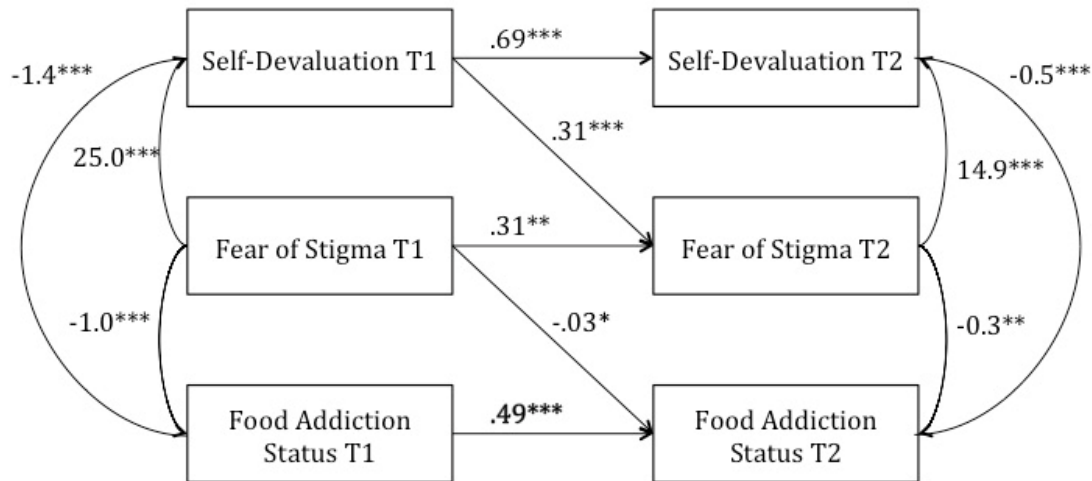


Figure 1. Cross-lagged path model between weight-related self-devaluation, fear of stigma, and “food addiction” status at baseline (T1) and follow-up (T2), controlling for length of follow-up and change in BMI (not shown). Only statistically significant pathways shown. Estimates are unstandardized coefficients and covariances. In line with the observed continuum in disordered eating behaviors and cognitions across “food addiction” categories, “food addiction” status was treated as an ordinal variable, coded 1 = YFAS+, 2 = SPFA+, 3 = NFA. Self-devaluation and fear of stigma both scored 6–30.

* $p < .05$, ** $p < .01$, *** $p < .001$

4. Discussion

This study was the first to prospectively compare the relative impact of weight-related self-devaluation and fear of weight-related stigma from others on eating pathology. Consistent with hypotheses, fear of stigma but not self-devaluation was associated with worsening “food addiction” symptomatology over time. These results align with evidence from cross-sectional (Palmeira, Pinto-Gouveia, & Cunha, 2016) and longitudinal studies (Lillis et al., 2017) that fear of stigma, rather than self-devaluation *per se*, may play an important role in the development or

maintenance of problematic eating behavior. Additionally, this is the first longitudinal study of these constructs conducted in a non-treatment-seeking population, suggesting that the findings of Lillis and colleagues may be generalizable outside a weight-loss setting.

As predicted, self-devaluation at baseline was positively associated with fear of stigma at follow-up, consistent with expecting others to have the same negative views of higher-weight individuals as oneself. Contrary to expectations, though, fear of stigma at baseline did not predict greater self-devaluation at follow-up. Whilst societal stigma must precede the development of stigmatized identities in the first instance, it is possible that individuals living within an environment where weight stigma is already pervasive (Puhl & King, 2013), may have already incorporated any potential priming effects of fear of enacted stigma on self-devaluation. Another possible explanation is that, overall, levels of both self-stigma and fear of enacted stigma expressed in this predominantly “normal-weight” student population were relatively low and there may not have been sufficient variance in the sample to capture statistically significant effects. It is theoretically plausible that a reciprocal feedback effect operates between self-stigma and fear of being stigmatized by others, and exploration in higher-weight samples might produce different results.

This study benefited from a longitudinal design with no attrition at follow up; however, the follow-up period was relatively short, with an average of just over nine months, and limited to a young, homogeneous, predominantly normal-weight, student population. Interpretation of findings was also limited by the small number of participants who experienced worsening “food addiction” over the follow-up period, and it is possible that this analysis may have been underpowered to detect an effect. However, although the longitudinal design establishes a temporal pattern, causal relationships cannot be decisively inferred from this type of study.

Experimental studies that manipulate these variables may provide further insights into the nature of any reciprocal relationship between weight stigma and eating behavior.

Additionally, the study relied on self-report measures, which may have inflated the relationship between variables due to common method bias. Finally, further studies are needed with more diverse samples, particularly in higher-weight populations who may have elevated levels of both weight-related self-devaluation and anticipation or expectation of stigma from others than were observed in this predominantly normative-weight student sample.

4.1 Conclusion

Fear of being stigmatized by others due to weight appears to predict worsening addictive-like eating behavior over time in a weight-diverse sample of young adults. In the present environment, where anti-fat attitudes are prevalent and discrimination relatively common, these findings have potential implications for the development of problem eating behaviors in non-clinical samples.

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