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Fear of fatness and drive for thinness in predicting smoking status in college women[☆]

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Abstract

Recent research has identified fear of fatness (FF) as a related yet distinct construct from drive for thinness (DT). Whereas DT may be associated with need for approval and an “approach” tendency, FF may be more strongly related to avoidance of disapproval and an avoidant problem-solving style. Although no research has directly compared the influence of FF vs. DT with regard to smoking behavior, FF and DT might represent distinct motivations for smoking. We predicted that both FF and DT would be significantly associated with cigarette smoking, but that FF would be a stronger predictor of smoking behavior, even after controlling for variables such as body mass index (BMI) and nicotine dependence. Participants ($N=289$) were female college undergraduate students. Daily smokers had the highest scores on measures of DT and FF, followed sequentially by infrequent smokers, “triers,” and never smokers. More frequent smokers also reported greater levels of body dissatisfaction and eating pathology than less frequent and never-smokers. Hierarchical regression analyses showed that greater DT predicted higher likelihood of smoking on a daily basis; however, higher FF predicted fewer cigarettes smoked per day. FF and DT may each play a role in the relationship between eating pathology and smoking, but they might be differentially related to specific smoking patterns. Both FF and DT and their coinciding coping styles should be further researched in the role of smoking initiation and maintenance.

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Contributors

Amy Copeland, Claire Spears and Lauren Baillie designed the study and wrote the protocol. Megan McVay assisted with data collection. Amy Copeland conducted statistical analyses. All authors contributed to writing the manuscript have approved the final manuscript.

Conflict of interest

None of the authors have any conflict(s) of interest that may inappropriately impact or influence the research and interpretation of the findings.

Keywords

Fear of fatness; Drive for thinness; Eating disorders and smoking; Smoking

1. Introduction

Drive for thinness (DT) refers to an excessive concern with dieting, preoccupation with weight, and desire to become thinner (Garner, 2004). Fear of fatness (FF), a construct related to but distinct from DT, refers to an intense fear of gaining weight or becoming fat.

Although a large body of research has investigated how internalization of the thin ideal in Western society creates risk for DT and associated body image concerns (Grabe, Ward, & Hyde, 2008), much less research has directly compared the influence of DT vs. FF. Although these concepts are clearly related, there may be important differences. For example, DT and FF may be associated with approach versus avoidance motivational orientations, respectively (Levitt, 2003), and DT and FF have shown distinct associations with specific aspects of eating disorder pathology (Williamson et al., 2002). Although no research has directly compared the influence of FF vs. DT with regard to smoking behavior, FF and DT might represent distinct motivations for smoking. Potential associations with smoking behavior are of particular interest, as a great deal of evidence has shown that smoking behavior is often motivated by beliefs that smoking helps to control eating and weight (e.g., Bush et al., 2009; Clark et al., 2006; Nademin et al., 2010).

In a factor analytic study, Williamson et al. (2002) identified FF and DT as two of three primary latent constructs underlying eating disorder symptoms (the third was binge eating). Whereas the DT factor was characterized by refusal to maintain appropriate weight, FF was associated with feeling fat (even when not overweight) and engaging in compensatory behaviors. Williamson et al. found that while FF was positively related to binge eating, DT was not. Participants with Anorexia Nervosa (AN) scored higher on DT than those with Bulimia Nervosa (BN). The AN and BN participant groups both scored higher on FF than those with binge eating disorder or no clinical eating disorder. These results emphasize that FF and DT are related but distinct factors that might be differentially related to eating pathology.

Levitt (2003, 2004) outlined several subtle but important conceptual distinctions between FF and DT. For example, Levitt (2004) posited that whereas DT is related to higher motivation to gain social approval, FF seems to be more strongly associated with fear of social exclusion. In addition, whereas DT may represent a general approach tendency, FF may reflect a tendency for avoidant behavior (Levitt, 2003). Similarly, DT and FF appear consistent with concepts of positive and negative reinforcement, respectively (Levitt, 2004). Levitt (2003, 2004) argued that these specific motivations underlying pathological eating behavior need to be considered in tailoring treatment for each individual.

Woud, Anschutz, Van Strien, and Becker (2011) developed an innovative technique for more objective measurement of the approach and avoidance biases proposed by Levitt (2003). In a stimulus response compatibility task, female participants were asked to move a manikin figure toward or away from pictures of thin and chubby models. Response time was

measured as a way to assess approach biases toward thin models and avoidance biases against chubby models. Results suggest that these biases are related; faster reaction times for approaching thin models were positively correlated with faster reaction times for avoiding chubby models. However, the avoidance bias was particularly related to greater body dissatisfaction, restrained eating, and body mass index. These findings provide further support for FF and DT as related but distinct concepts.

Additional research has examined DT and FF as reflecting approach vs. avoidance motivations, respectively. For example, Dalley and Buunk (2009) compared the influence of DT (termed “thinspiration”) vs. FF with regard to weight loss dieting among women. Whereas favorable ratings of a thin prototype (“thinspiration”) were not related to weight loss dieting, more unfavorable ratings of an over-fat prototype (FF) were associated with frequent weight loss dieting, particularly when participants perceived themselves to be similar to the over-fat prototype. Dalley and Buunk (2009) concluded that the avoidance motivation associated with FF may play an important role in weight loss dieting. In support of this hypothesis, Latner (2008) found that FF was associated with avoidance behaviors in a sample of adults receiving behavioral weight loss treatment.

In a similar vein, Mussap (2007) drew on Gray’s Reinforcement Sensitivity Theory (Gray, 1970) to theorize that FF reflects greater sensitivity to punishment than reward. In a sample of adult women, Mussap found that self-reported sensitivity to punishment was a stronger predictor of BN symptoms than sensitivity to reward. Mussap conjectured that sensitivity to punishment associated with being overweight (i.e., FF) and corresponding avoidance behaviors may play a larger role in certain types of eating pathology than DT and approach strategies.

Although the aforementioned research begins to shed light on differences between DT and FF with regard to eating behavior, no known research has directly compared the influence of DT vs. FF on smoking. Smoking behavior among certain populations (e.g., particularly among female smokers) has been shown to be motivated by beliefs that it helps to control eating and weight (Bush et al., 2009; Clark et al., 2006; Nademin et al., 2010). Among smokers, those who are concerned about post-cessation weight gain are less likely to intend to quit, more likely to drop out of smoking cessation treatment, and less likely to maintain abstinence (Copeland, Martin, Geiselman, Rash, & Kendzor, 2006; Jeffery, Hennrikus, Lando, Murray, & Liu, 2000; Weekley, Klesges, & Reylea, 1992). Smokers may exhibit higher rates of eating pathology and body dissatisfaction than non-smokers (Kendzor, Adams, Stewart, Baillie, & Copeland, 2009), and those who smoke specifically to control weight and shape are especially likely to have higher levels of disordered eating (Fairweather-Schmidt & Wade, 2014). Beliefs that smoking will help to control appetite and weight are associated with higher smoking frequency and nicotine dependence (Adams, Baillie, & Copeland, 2011; Copeland, Brandon, & Quinn, 1995; Copeland & Carney, 2003; Rash & Copeland, 2008). Furthermore, appetite and weight control beliefs about smoking have been found to mediate the relationship between dietary restriction and smoking among female college students (Copeland & Carney, 2003).

Other studies have examined the construct of DT with regard to smoking. Research suggests that greater DT is associated with higher smoking frequency (Granner, Black, & Abood, 2002). In addition, Voorhees, Schreiber, Schumann, Biro, and Crawford (2002) found that higher DT among girls at ages 11–12 predicted greater likelihood of smoking at ages 18–19. Among adolescents, DT has been supported as a mediator of the relationship between media exposure (i.e., fashion, entertainment, and gossip magazines) and smoking (Carson, Rodriguez, & Audrain-McGovern, 2005).

Although existing literature does not allow for conclusions about gender comparisons in the relevance of FF vs. DT (because most of these studies have been conducted with women), there is reason to believe that FF might be particularly salient for female smokers. For example, fears of gaining weight upon smoking cessation are common (Bush et al., 2009), and women often report smoking to control their appetite and weight (i.e., not weight *loss* per se). In addition, whereas DT is uniquely associated with AN, FF is associated with binge eating and compensatory behaviors (symptomatic of BN; Williamson et al., 2002), and smoking also tends to be more strongly related to BN than AN pathology (Anzengruber et al., 2006; Kendzor et al., 2009). Finally, FF might reflect a tendency for avoidant behavior (Levitt, 2003), and an avoidant coping style has been associated with smoking and other substance use (Bricker, Schiff, & Comstock, 2011; Erskine, Georgiou, & Kvavilashvili, 2010; Hasking, Lyvers, & Carpio, 2011; Pirkle & Richter, 2006).

Research is needed to examine unique associations between FF (which may be associated with avoidance of punishment as in negative reinforcement) and DT (which may be more associated with approaching/seeking reward, as in positive reinforcement) with behavioral outcomes. In the present study we sought to identify the relationship between cognitive constructs of weight- and eating-related problems (FF and DT) with cigarette smoking and to determine which of these constructs better predicts cigarette smoking among college women. We expected to find that FF (versus DT) would be more strongly associated with whether women smoked daily, and if so, with daily smoking rate/cigarettes per day (CPD) for three primary reasons: 1) Female smokers often experience fears about post-cessation weight gain (Bush et al., 2009); 2) FF appears more strongly related to symptoms of BN than AN (Williamson et al., 2002), and smoking is more associated with BN than AN (Anzengruber et al., 2006; Kendzor et al., 2009); and 3) FF is thought to be related to avoidant coping (Levitt, 2003), which has been associated with smoking and other substance use (Bricker et al., 2011; Erskine et al., 2010; Hasking et al., 2011; Pirkle & Richter, 2006).

2. Materials and methods

2.1. Participants

Participants were recruited through the online registration system for the psychology experiment participant pool. The study inclusion criteria listed on the registration site were that participants must be: (a) female; (b) currently enrolled as an undergraduate student at the university at which the study was being conducted; and (c) between 18 and 24 years of age.

2.2. Procedure

This research was reviewed and approved by the Institutional Review Board of Louisiana State University. Participants were greeted by research assistants who explained the study procedures and answered any questions participants had prior to signing the study consent form. Participants agreed to take part in the study and were given a copy of the consent form for their own records. Carbon monoxide (CO) breath levels were measured using portable BreathCo machines with disposable mouthpieces in order to verify participant self-reported smoking status. Participants were then administered the self-report measures described below. The research assistants then weighed the participant and measured her height. These data were later used to calculate body mass index (BMI). All participants were given a list of resources for educational and treatment contacts for eating-related psychological problems, regardless of their scores on the clinical assessments. When participants completed the study requirements outlined above, they were compensated with extra credit points toward their psychology course(s). Sessions were held in small groups (5–6 participants), and participants were taken into a separate room individually to be weighed and measured. Sessions were approximately 45 min to 1 h in duration.

2.3. Measures

2.3.1. Biological verification of smoking status: carbon monoxide (CO) measurement—We used a BreathCo monitor (Vitalograph Inc.) and used a cutoff level of 8 ppm (>8 ppm for daily smokers, and <8 ppm for nonsmokers, triers, and infrequent smokers) to verify self-reported smoking status. In general, 8–10 ppm has been established as an optimal cutoff point to distinguish smokers from non-smokers (Society for Research on Nicotine & Tobacco (SRNT) Subcommittee on Biochemical Verification, 2002).

2.3.2. Body mass index—Members of the research team weighed and measured participants to obtain their current weight and height. Height and weight were then converted into body mass index (BMI) in kg/m².

2.3.3. Smoking status questionnaire—This form included demographic questions, such as age and ethnicity, and smoking-related variables, such as current and past smoking patterns and previous smoking cessation attempts. It included the Fagerström Test for Nicotine Dependence (FTND; Heatherton, Kozlowski, Frecker, & Fagerström, 1991) to assess nicotine dependence level in daily smokers. The FTND was administered to daily smokers only in the present study.

2.3.4. Eating Attitudes Test (EAT-26; Garner, Olmsted, Bohr, & Garfinkel, 1982)—The EAT-26 is a self-report measure used to assess the presence of eating disorder symptoms (questions on this 26-item questionnaire assess three factors: (a) dieting; (b) bulimia and food preoccupation; and (c) oral control). The EAT-26 has been shown to be reliable and valid. Scores of 20 and greater have been associated with diagnoses of Anorexia Nervosa, as well the presence of other eating disorders (Garner et al., 1982). For those participants with scores consistent with clinical eating disorders (EAT ≥ 20), we provided feedback regarding their assessment scores and meaning and specifically recommend they seek treatment at one of the resource facilities listed.

2.3.5. Bulimia Test — Revised (BULIT-R; Thelen, Farmer, Wonderlich, & Smith, 1991)

—This is a 36-item self report questionnaire intended to assess for symptoms of Bulimia Nervosa. It is a reliable measure, and has been validated on samples of bulimic women, as well as non-clinical college female controls (Thelen et al., 1991). It assesses symptoms using five scales: (a) bingeing and control; (b) radical weight loss and body image; (c) laxative and diuretic use; (d) vomiting; and (e) exercise. Individuals who score above 104 on the BULIT-R are likely to meet clinical criteria for BN (Thelen et al., 1991). For those participants with BULIT-R scores consistent with clinical eating disorders (>104), we provided feedback regarding their assessment scores and meaning and specifically recommend they seek treatment at one of the resource facilities listed.

2.3.6. Eating Disorders Inventory (EDI; Garner, 2004)

—The EDI is a self-report questionnaire used to assess the presence of eating disorders, (a) Anorexia Nervosa both restricting and binge-eating/purging type; (b) Bulimia Nervosa; and (c) Eating Disorder not otherwise specified, including Binge Eating Disorder (BED). Since the EDI's original development (EDI; Garner, Olmstead, & Polivy, 1983), it has been revised twice (EDI-2 and EDI-3; Garner, 1991, 2004). In its most current form, the EDI-3 was designed for use with females who are 13–53 years of age. It comprises 91 items, divided into twelve sub-scales: (1) Drive for Thinness (DT); (2) Bulimia; (3) Body Dissatisfaction; (4) Low Self-Esteem; (5) Personal Alienation; (6) Interpersonal Insecurity; (7) Interpersonal Alienation; (8) Interoceptive Deficits; (9) Emotional Dysregulation; (10) Perfectionism; (11) Asceticism; and (12) Maturity Fears. Participants are asked to rate each item using a 4-point scale, ranging from “0” (never) to “4” (always). Garner (2004) proposes that the first three scales (Drive for Thinness, Bulimia, and Body Dissatisfaction) represent a general risk for eating disorders, and the remaining nine factors represent general psychological disturbance. The EDI-3 has demonstrated strong psychometric properties, including convergent and discriminant validity (Cumella, 2006), reliable factor structure, good internal consistency, and cross-cultural validity (Clausen, Rosenvinng, Friborg, & Rokkedal, 2011). The EDI DT scale was used to operationalize drive for thinness (DT) for statistical analyses in the present study. On the DT scale, participants respond to statements regarding extreme dieting, preoccupation with weight, and the desire to be thinner (e.g., “*I think about dieting*,” “*I am preoccupied with the desire to be thinner*”).

2.3.7. Body Shape Questionnaire (BSQ; Cooper, Taylor, Cooper, & Fairburn, 1987)

—The BSQ is a 34-item self-report measure that assesses severity of body shape concerns. Participants rate the frequency of their body concerns on a 6 point Likert scale, with responses ranging from “never” to “always” (Cooper et al., 1987). Scores on the BSQ are correlated with other measures of body concern and eating attitudes and behaviors (Cooper et al., 1987; Rosen, Jones, Ramirez, & Waxman, 1996). Women who describe themselves as weight-concerned are more likely to score higher on the BSQ than women who do not experience such concern (Cooper et al., 1987). It is intended to measure the degree of psychopathology, but does not appear to be an appropriate diagnostic tool (Cooper et al., 1987). It has good reliability, and concurrent and discriminant validity of the BSQ have been demonstrated in community and clinical samples of female patients with AN and

BN (Cooper et al., 1987). The BSQ item “Have you been afraid that you might become fat (or fatter)?” was used to operationalize the construct of FF in the statistical analyses.

3. Results

3.1. Participant characteristics

Of the 344 participants initially enrolled in the study, nine participants were excluded due to reported age (seven participants’ age exceeded 24 years, and 2 participants did not provide an answer to the age question). This resulted in a total of 335 participants included in subsequent statistical analyses.

In order to provide further validation of the FF and DT constructs, we first correlated FF and DT with age, BMI, EAT-26, BULIT-R, BSQ, daily smoking status (yes/no), and CPD. Both the FF and DT constructs showed a similar pattern of strong correlations with each of these variables except age, as well as being highly correlated with each other (see Table 1).

We formed groups according to smoking status in order to determine whether there were differences in weight/eating-related patterns corresponding to smoking status/patterns. These groups comprised: individuals who had never tried cigarettes ($n = 99$), those who had tried a cigarette ($n = 84$), infrequent smokers ($n = 91$), and daily smokers ($n = 61$). We then conducted analyses of variance (ANOVAs) with the smoking status groups as the factor (4 levels) and demographic variables (age and BMI), eating- and weight-related variables [EAT, BULIT, BSQ total, BSQ #4 (FF), EDI-DT], and CO level. We subsequently conducted post-hoc analyses to determine between-group differences where significant differences across groups were detected. The overall ANOVAs were significant for BMI, $F(3, 331) = 2.74, p < .001$, as well as for scores on the BULIT, $F(3, 331) = 6.47, p < .001$, BSQ, $F(3, 322) = 10.69, p < .001$, EDI-DT scale, $F(3, 333) = 9.91, p < .001$, and FF, $F(3, 334) = 6.78, p < .001$, with a consistent pattern of more frequent smokers indicating more severe body dissatisfaction and eating pathology. As would be expected, the infrequent and daily smokers differed significantly in CO level, $F(3, 332) = 47.10, p < .001$. We also conducted a chi-square analysis with the smoking status groups and ethnicity as factors and found no differences across groups (see Table 2 for group means, standard deviations, and significant overall and between-group differences). We have also listed descriptive statistics for number of years smoking, CPD, and FTND for daily smokers. Because these variables were only calculated for daily smokers, there were no other groups to which to compare them.

3.2. Drive for thinness and fear of fatness as predictors of smoking

3.2.1. Prediction of daily smoking—We conducted a hierarchical logistic regression analysis with the dichotomous response (yes/no) of “*Do you smoke cigarettes daily?*” as the dependent variable, and DT and FF as the predictors. Three hundred thirty five participants were included in this analysis. On step 1, we entered DT, and on the second step, we entered FF. On step 1 the model was significant, $X^2(1) = 12.272, p < .0001$, with DT as a significant predictor, $p = .001$. On step 2 the model was significant, $X^2(2) = 12.375, p = .002$, with DT remaining a significant predictor, $p = .007$. FF was not a significant predictor (see Table 3 for standardized beta coefficients at both steps of the regression analysis).

3.2.2. Prediction of smoking rate (cigarettes per day; CPD) among daily smokers

We conducted hierarchical linear regression using the daily smokers only with daily smoking rate or cigarettes per day (CPD) as the dependent variable, and FTND, DT, and FF as the predictors. We controlled for FTND/nicotine dependence level because these were daily smokers. Sixty one participants were included in this analysis. On step 1, we entered FTND, on step 2, we entered DT, and on the third step, we entered FF. Step 1 was significant, $F(1, 60) = 86.136, p < .0001$. Step 2 was significant, $F(2, 59) = 42.973, p < .0001$, with FTND remaining a significant predictor but DT not a significant predictor. Step 3 was significant, $F(3, 58) = 31.856, p < .0001$, with FTND and FF as significant predictors (see Table 4 for standardized beta coefficients, *R*-square, adjusted *R*-square, and *R*-square change at all steps of the regression analysis).

It should be noted that because two items of the DT subscale are related to FF, all analyses were conducted again with these items removed, and the pattern of results was identical.

4. Discussion

In this sample of undergraduate women, more frequent smokers indicated greater body dissatisfaction and bulimic symptoms, as well as higher scores on the constructs of FF and DT. The group differences followed the same general pattern of daily smokers having the highest scores on measures of eating pathology, infrequent smokers having the next highest scores, triers having the next highest scores, and never smokers having the lowest scores. Therefore, women in this study were significantly more likely to have disordered eating patterns if they smoked, and daily smokers showed the highest levels of eating pathology. This is consistent with research regarding dietary restraint and weight concern, and these findings represent an initial step in the investigation of FF and DT as they relate to smoking behavior.

In addition to examining associations between FF and DT with smoking status, we investigated FF versus DT as predictors of indices of smoking behavior—namely, whether participants smoked daily and their daily smoking rate/CPD. We expected to find that FF (versus DT) would be more strongly associated with cigarette smoking for three reasons. First, fears about post-cessation weight gain are common among female smokers (Bush et al., 2009; Clark et al., 2006). Second, whereas DT is associated with AN pathology, FF is related to binge eating and compensatory behaviors (symptomatic of BN; Williamson et al., 2002), and smoking behavior is more associated with BN than AN (Anzengruber et al., 2006; Kendzor et al., 2009). Third, avoidant coping has been associated with smoking and other substance use (Bricker et al., 2011; Erskine et al., 2010; Hasking et al., 2011; Pirkle & Richter, 2006), and FF is thought to be related to avoidant coping (Levitt, 2003). However, our findings suggest that DT was significantly related to higher likelihood that participants smoked on a daily basis, and DT continued to significantly predict daily smoking even when FF was entered as a predictor in the regression equation. The finding that DT (versus FF) predicted daily smoking was unexpected. This finding suggests that among women with eating disorders and subclinical eating disorder pathology, smoking daily may be viewed as a weight loss strategy rather than a method to maintain one's weight or defend against weight gain, as hypothesized. Although we had hypothesized that negative reinforcement

motives (i.e., motives to avoid “fatness”) would play a stronger role in smoking for weight control, positive reinforcement may be an important factor as well. If future research supports DT as a primary motive for daily smoking, interventions aimed at preventing smoking might focus on restructuring maladaptive thoughts about smoking as a means to achieve the “thin ideal.”

In a separate regression analysis, FF significantly predicted number of cigarettes smoked per day (or daily smoking rate). However, contrary to hypothesis, the relationship was negative in direction, whereby higher FF predicted fewer cigarettes smoked per day. This unexpected finding may still be consistent with the overall prediction that FF was associated with smoking-related fear of weight gain (versus the expectation that smoking would promote weight loss). For example, female smokers with high levels of FF may continue smoking in order to avoid postcessation weight gain; however, the amount of smoking (i.e., CPD) per se wouldn't necessarily need to be high. Rather, participants high in FF would be motivated to maintain their smoking rate (regardless of level) in order to avoid cessation (and associated weight gain). It may also be that women with higher FF are engaging in other pathological eating behaviors, such as dietary restraint, which has been found to be associated with overall smoking behavior but lower daily smoking rate among daily women smokers (Copeland & Carney, 2003). Perhaps alternate measures of self-administration, such as smoking topography, could reveal more about how women with significant FF are using cigarettes, as the relationship appears more complex than CPD alone may indicate.

The current study is limited by its reliance on a single-item measure of FF. In future studies, the relation among eating pathology and smoking behavior/nicotine self-administration should be investigated utilizing participant responses to the Multiaxial Assessment of Eating Disorder Symptoms (MAEDS; Martin, Williamson, & Thaw, 2000), which includes a specific scale that assesses fear of fatness. In addition, future work should expand from tobacco and nicotine use to other substances, such as alcohol [e.g., using such measures as the Alcohol Use Disorder (AUDIT; Babor, Higgins-Biddle, Saunders, & Monteiro, 2001)] to determine if the relationship between eating pathology and substance varies with the pharmacodynamics properties of the substance, or whether the relationship represents a more general disruption with ingestive behavior.

In conclusion, the current study suggests that among college women, more frequent smokers experience greater levels of body dissatisfaction, eating pathology, and both FF and DT, than less frequent and never-smokers. Furthermore, this is the first known study to directly compare the unique associations of FF versus DT with smoking behavior. Results suggest that both FF and DT are related to smoking behavior but in different ways. DT appears particularly strongly linked to daily versus non-daily smoking status. Future investigation of the unique contributions of FF and DT to eating pathology and smoking behavior is warranted and could be useful for informing tailored interventions for female smokers.

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HIGHLIGHTS

- Drive for thinness (DT) may be associated with need for approval and fear of fatness (FF) may be related to avoidance of disapproval.
- FF and DT might represent distinct motivations for smoking.
- Daily smokers had the highest scores on measures of DT and FF.
- Hierarchical regression analyses showed that greater DT predicted smoking on a daily basis; however, higher FF predicted fewer cigarettes smoked per day.

Table 1

Correlations between fear of fatness (FF) and drive for thinness (DT) with eating- and weight-related variables.

	FF	DT	Age	BMI	EAT-26	BULIT-R	BSQ-Total	Daily smoking	CPD
FF		.714**	-.144**	.356**	.525**	.561**	.816**	.183**	-.179
DT			-.058	.271**	.686**	.690**	.811**	.142**	-.061
Age				.035	-.039	.022	-.096	.031	.138
BMI					.066	.197**	.401**	.063	.008
EAT-26						.532**	.598**	-.035	.039
BULIT							.700**	.133*	.041
BSQ-Total								.197**	-.083
Daily smoking									.397**
CPD									

Note: FF = fear of fatness; DT = drive for thinness; BMI = body mass index; EAT-26 = Eating Attitudes Test — 26; BULIT-R = Bulimia Test — Revised; BSQ = Body Shape Questionnaire; CPD = cigarettes per day.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 2

Participant characteristics.

	Overall <i>N</i> = 335	Never smokers <i>n</i> = 99	Triers <i>n</i> = 84	Infrequent smokers <i>n</i> = 91	Daily smokers <i>n</i> = 61	<i>p</i>
Age	19.9 (1.5)	19.8 (1.4)	19.9 (1.5)	19.9 (1.4)	20.1 (1.7)	ns
Ethnicity						
% Caucasian	92	89	93	95	95	
% African-Amer.	7	9	6	5	5	ns
BMI	23.0 (4.1)	22.5 (3.9) _a	22.4 (3.2) _b	23.5 (4.8)	24.0 (4.2) _{ab}	.04
EAT-26	8.5 (7.8)	8.6 (8.9)	6.9 (7.0)	9.0 (7.1)	9.9 (7.8)	ns
BULIT-R	51.3 (17.2)	47.2 (17.4) _{ab}	48.3 (13.3) _{cd}	54.9 (17.6) _{ac}	56.9 (18.7) _{bd}	<.0001
BSQ Total	91.9 (35.9)	79.4 (35.4) _{ab}	85.8 (30.4) _c	101.2 (36.6) _{ac}	106.3 (34.5) _b	<.0001
EDI-3 DT	7.5 (7.1)	5.7 (6.9) _{ab}	5.7 (5.6) _{cd}	9.4 (7.1) _{ac}	10.3 (7.9) _{bd}	<.0001
BSQ #4: FF	3.7 (1.6)	3.3 (1.6) _{ab}	3.6 (1.5) _{acd}	4.1 (1.5) _c	4.1 (1.4) _{bd}	<.0001
CO (ppm)	2.1 (3.6)	1.0 (.8) _a	1.1 (.6) _b	1.3 (1.4) _c	6.3 (6.9) _{abc}	<.0001
# years smoking	2.7 (2.0)	–	–	1.7 (2.1)	2.9 (1.9)	.04
CPD	–	–	–	*	7.4 (5.3)	–
FTND	–	–	–	–	1.7 (1.7)	–

Note: BMI = body mass index; EAT-26 = Eating Attitudes Test — 26; BULIT-R = Bulimia Test — Revised; BSQ = Body Shape Questionnaire; EDI = Eating Disorders Inventory; DT = drive for thinness; FF = fear of fatness; CO = carbon monoxide; ppm = parts per million; CPD = cigarettes per day; FTND = Fagerström Test for Nicotine Dependence.

* Weekly smoking rate was calculated for the infrequent smokers ($M = 4.1$; $SD = 9.8$ cigs/week).

Table 3

Prediction of daily smoking status (yes/no) using hierarchical logistic regression analysis ($n = 335$).

	Step 1	Step 2
EDI-3 drive for thinness	.068 ^{***}	.074 ^{**}
Fear of fatness (BSQ #4)		-.044 [*]

Standardized beta coefficients are shown.

^{*}
 $p < .05$.

^{**}
 $p < .01$.

^{***}
 $p < .001$.

Table 4

Prediction of smoking rate (cigarettes per day; CPD) among daily smokers using hierarchical regression analysis ($n = 61$).

	Step 1	Step 2	Step 3
FTND	.733 ***	.733 ***	.728 ***
EDI-3 drive for thinness		-.053	.115 **
Fear of fatness (BSQ #4)			-.240 *

Standardized beta coefficients are shown.

Step 1: R -square = .538, adjusted R -square = .532, and R -square change = .538, $p < .001$.

Step 2: R -square = .541, adjusted R -square = .528, and R -square change = .003, ns .

Step 3: R -square = .570, adjusted R -square = .552, and R -square change = .030, $p = .03$.

*
 $p < .05$.

**
 $p < .01$.

 $p < .001$.