



## Evaluating the roles of anxiety and dimensions of perfectionism in dieting and binge eating using weekly diary methodology

Ellen E. Fitzsimmons-Craft, Anna M. Bardone-Cone <sup>\*</sup>, Lisa M. Brownstone, Megan B. Harney

University of North Carolina at Chapel Hill, Department of Psychology, Chapel Hill, NC, United States

### ARTICLE INFO

#### Article history:

Received 16 March 2012

Received in revised form 3 June 2012

Accepted 20 June 2012

Available online 29 August 2012

#### Keywords:

Anxiety  
Perfectionism  
Dieting  
Binge eating  
Diary study

### ABSTRACT

This study examined the relations between weekly reports of anxiety, dimensions of trait perfectionism, and dieting and binge eating over the course of 11 weeks. Participants were 406 college women who completed a battery of questionnaires at Time 1 that assessed trait-like characteristics (e.g., self-oriented and socially prescribed perfectionism). For 11 weeks following that, participants filled out a short questionnaire packet that assessed their weekly anxiety, dieting, and binge eating. Using multilevel modeling, results indicated that on average, both within- and between-person levels of anxiety predicted increased binge eating, while only between-person levels of anxiety predicted increased dieting. Higher levels of self-oriented perfectionism also predicted increased dieting and binge eating, while higher levels of socially prescribed perfectionism predicted increased binge eating only (not increased dieting). The relation between weekly anxiety and disordered eating was not moderated by either dimension of perfectionism. Results provide support for the notion that dieting is generally affected by trait-like characteristics, while binge eating is generally affected by both trait- and state-like characteristics; these findings have significant clinical implications.

© 2012 Elsevier Ltd. All rights reserved.

### 1. Introduction

In many ways, anxiety and disordered eating are closely linked (Pallister & Waller, 2008). However, previous research has been limited by examining only *trait* anxiety's relation to eating pathology, rather than also considering the role of fluctuating state-like levels of anxiety. The current study investigated how weekly reports of anxiety may differentially relate to weekly reports of two forms of disordered eating, dieting and binge eating, and whether dimensions of perfectionism may moderate these associations. Elucidating specific pathways to dieting and binge eating will inform prevention and intervention efforts targeted at these behaviors.

Conceptual models of disordered eating suggest that emotional states may trigger maladaptive eating in an effort to gain a sense of control (e.g., via dieting) and/or to escape the experience of negative affect (e.g., via binge eating; Heatherton & Baumeister, 1991). Although prior research has investigated the role of certain emotions (e.g., anger – Engel et al., 2007) as antecedents of disordered eating, research has yet to investigate the relation between more momentarily assessed anxiety and disordered eating. Additionally, despite the strong association between anxiety and disordered eating, not all individuals with elevated anxiety exhibit disordered eating, suggesting the need to

identify moderators. In the current study, perfectionism, which has ties with disordered eating (Bardone-Cone, 2007), was examined in interaction with anxiety to predict disordered eating. We examined perfectionism from a multidimensional perspective, since different types of perfectionism may differentially relate to various disordered eating behaviors; for example, both self-oriented (i.e., very high personal standards) and socially prescribed (i.e., perception that others have very high standards for oneself) perfectionism appear to be associated with dieting, while only socially prescribed perfectionism is associated with binge eating (Hewitt, Flett, & Ediger, 1995).

We hypothesized that:

1. Weekly reports of anxiety will be related to disordered eating both within- and between persons.
2. Self-oriented and socially prescribed perfectionism will be associated with dieting, and socially prescribed perfectionism will be associated with binge eating.
3. Perfectionism will moderate the anxiety–disordered eating relationship. Individuals with high levels of either perfectionism will be more likely to display a significant association between anxiety and dieting than participants with lower levels of perfectionism. Individuals with high levels of socially prescribed perfectionism will be more likely to display a significant association between anxiety and binge eating than participants with lower levels of socially prescribed perfectionism.

We also explored whether the effects of weekly anxiety and/or perfectionism on dieting/binge eating changed over the course of the study.

<sup>\*</sup> Corresponding author at: University of North Carolina at Chapel Hill, Department of Psychology, CB#3270-Davie Hall, Chapel Hill, NC 27599, United States. Tel.: +1 919 962 5989; fax: +1 919 962 2537.

E-mail addresses: [fitzsimmons@unc.edu](mailto:fitzsimmons@unc.edu) (E.E. Fitzsimmons-Craft), [bardone@unc.edu](mailto:bardone@unc.edu) (A.M. Bardone-Cone), [lisa.brownstone@unc.edu](mailto:lisa.brownstone@unc.edu) (L.M. Brownstone), [harney@unc.edu](mailto:harney@unc.edu) (M.B. Harney).

## 2. Method

### 2.1. Participants and procedure

Participants were 406 female undergraduates at a Midwestern university enrolled in introductory psychology courses who ranged in age from 17 to 25 ( $M=18.60$  years,  $SD=0.97$  years), with the majority identifying as Caucasian (92.4%). At Time 1 (T1), participants completed questionnaires in a group setting, including a measure of perfectionism. For the subsequent 10 weeks, participants reported on anxiety, dieting, and binge eating over the past week by dropping off packets with these reports on pre-arranged dates spaced weekly. One week after the tenth packet was submitted, participants completed the same T1 questionnaires again, which included questions about the prior week's anxiety, dieting, and binge eating. Thus, dimensions of perfectionism were measured as traits at T1, and anxiety, dieting, and binge eating were measured weekly for 11 weeks after T1. The 11-week period was chosen to allow data to be collected within one college semester to enhance retention. This study was approved by the university's Institutional Review Board.

### 2.2. Measures

#### 2.2.1. Perfectionism

Perfectionism was measured at T1 using the self-oriented (SOP; 15 items) and socially prescribed (SPP; 15 items) perfectionism subscales of the Multidimensional Perfectionism Scale (MPS; Hewitt & Flett, 1991). Items are rated on a 1 (*disagree*) to 7 (*agree*) scale. Coefficient alpha was .91 for SOP and .88 for SPP.

#### 2.2.2. Anxiety

Weekly anxiety was assessed using the 20-item trait anxiety scale of the Spielberger State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, & Lushene, 1970) but with instructions to report on the past week's experiences. Items are rated on a 1 (*almost never*) to 4 (*almost always*) scale. Coefficient alpha ranged from .93 to .95 across the 11 weeks.

#### 2.2.3. Dieting

Dieting was measured weekly with the 21-item Cognitive Restraint subscale of the Three Factor Eating Questionnaire (TFEQ-R; Stunkard & Messick, 1985), but with instructions to report on the past week's experiences. Coefficient alpha ranged from .91 to .93 across the 11 weeks.

#### 2.2.4. Binge eating

Binge eating was measured weekly using the 7-item Bulimia subscale of the Eating Disorder Inventory (EDI; Garner, Olmsted, & Polivy, 1983), which emphasizes binge eating behaviors and attitudes (rather than purging), but with instructions to report on the past week's experiences. Items are rated on a 1 (*never*) to 6 (*always*) scale. The subscale was scored by summing item responses, as is often and validly done in nonclinical samples (Schoemaker, van Strien, & van der Staak, 1994). Coefficient alpha ranged from .68 to .78 across the 11 weeks.

### 2.3. Analytic strategy

Multilevel modeling techniques were used to examine the influences of (a) time (i.e., week), (b) weekly reports of anxiety, (c) trait-level perfectionism, and (d) their interactions upon dieting and binge eating over the 11-week period. These models assume that repeated weekly observations are nested within persons. Analyses were performed using a two-level multilevel model with a first-order autoregressive structure for the residuals, AR(1). Level 1 observations represented weekly reports of anxiety and disordered eating. Level 2 observations represented individual participants and their corresponding perfectionism scores. In order to evaluate whether the effect of anxiety on disordered eating

differed within- versus between-persons, both the person-mean centered levels of anxiety and individuals' mean levels of anxiety were entered into the models. SAS Version 9.2 was used.

## 3. Results

### 3.1. Multilevel models

#### 3.1.1. Dieting

Results of the two analyses for dieting (each using a different perfectionism dimension) are presented in Table 1. Results indicated that dieting remained stable over the course of the study on average, SOP model:  $\gamma=.00$ ,  $t(388)=-.15$ ,  $p=.879$ , SPP model:  $\gamma=.00$ ,  $t(389)=-.11$ ,  $p=.909$ . However, results also indicated that there were significant individual differences in dieting at the beginning of the study, SOP model:  $\tau_{00}=26.84$ ,  $Z=13.18$ ,  $p<.001$ , SPP model:  $\tau_{00}=29.22$ ,  $Z=13.27$ ,  $p<.001$ , and in changes in dieting during the course of the study, SOP:  $\tau_{11}=.04$ ,  $Z=5.59$ ,  $p<.001$ , SPP model:  $\tau_{11}=.04$ ,  $Z=5.58$ ,  $p<.001$ .

Between-person levels of anxiety were a significant predictor of dieting, SOP model:  $\gamma=.07$ ,  $t(403)=2.63$ ,  $p=.009$ , SPP model:  $\gamma=.07$ ,  $t(404)=2.37$ ,  $p=.018$ , with the individual with higher anxiety having higher levels of dieting. Results also indicated that self-oriented perfectionism was a significant predictor of dieting,  $\gamma=.10$ ,  $t(402)=6.05$ ,  $p<.001$ , with the individual with higher self-oriented perfectionism having higher levels of dieting, but that socially prescribed perfectionism was not,  $\gamma=.03$ ,  $t(406)=1.57$ ,  $p=.118$ .

Weekly fluctuations in anxiety and the interactions between study week and perfectionism, study week and weekly anxiety, and weekly anxiety and perfectionism did not predict dieting. The non-significant study week  $\times$  predictor interactions indicate that there was no change in how weekly anxiety and perfectionism affected dieting across time. However, results indicated that the random effect of anxiety was significant in both models, SOP model:  $\tau_{22}=.01$ ,  $Z=3.34$ ,  $p<.001$ , SPP model:  $\tau_{22}=.01$ ,  $Z=3.28$ ,  $p=.001$ . So, on average, within-person changes in anxiety neither intensified nor attenuated dieting behavior; rather, anxiety likely increased dieting for some and decreased dieting for others.

#### 3.1.2. Binge eating

The results of the two analyses for binge eating are presented in Table 2. Results indicated that binge eating decreased slightly over the course of the study on average, SOP model:  $\gamma=-.12$ ,  $t(390)=-10.92$ ,  $p<.001$ , SPP model:  $\gamma=-.12$ ,  $t(389)=-10.97$ ,  $p<.001$ . Results also indicated that there were significant individual differences in binge eating at the beginning of the study, SOP model:  $\tau_{00}=6.99$ ,  $Z=12.39$ ,  $p<.001$ , SPP model:  $\tau_{00}=6.95$ ,  $Z=12.44$ ,  $p<.001$ , and in changes in binge eating during the course of the study, SOP model:  $\tau_{11}=.03$ ,  $Z=6.66$ ,  $p<.001$ , SPP model:  $\tau_{11}=.03$ ,  $Z=6.61$ ,  $p<.001$ .

As with dieting, between-person levels of anxiety were a significant predictor of binge eating, SOP model:  $\gamma=.07$ ,  $t(417)=6.64$ ,  $p<.001$ , SPP model:  $\gamma=.07$ ,  $t(418)=5.86$ ,  $p<.001$ . In contrast to the analyses for dieting, results indicated that on average, there was a significant within-person effect of anxiety on binge eating, SOP model:  $\gamma=.06$ ,  $t(848)=6.49$ ,  $p<.001$ , SPP model:  $\gamma=.06$ ,  $t(810)=6.51$ ,  $p<.001$ . At Week 1, for a one point increase in a person's anxiety, her binge eating behaviors would be expected to increase by .06 points. There were also significant individual differences in the effect of anxiety on binge eating, SOP model:  $\tau_{22}=.003$ ,  $Z=3.86$ ,  $p<.001$ , SPP model:  $\tau_{22}=.003$ ,  $Z=3.86$ ,  $p<.001$ . So, on average, within-person increases in anxiety intensified binge eating, but this effect was also found to vary across people (i.e., anxiety likely increased binge eating for some, decreased it for others). Results also indicated that both self-oriented,  $\gamma=.03$ ,  $t(396)=2.82$ ,  $p=.005$ , and socially prescribed perfectionism,  $\gamma=.03$ ,  $t(428)=3.10$ ,  $p=.002$ , were significant predictors of binge eating, whereby individuals with higher perfectionism had higher levels of binge eating.

**Table 1**  
Multilevel modeling analyses for the outcome variable of dieting.

For the model involving the predictor variable of self-oriented perfectionism					
Covariance parameter estimates	Coefficient	SE	Z	p	
1. Intercept	26.84	2.04	13.18	<.001	
2. Time (study week)	.04	.01	5.59	<.001	
3. Anxiety	.01	.00	3.34	<.001	
COV (2,1)	.07	.09	.80	.421	
COV (3,1)	-.04	.04	-.93	.354	
COV (3,2)	.00	.00	1.66	.097	
AR(1)	.26	.02	11.49	<.001	
Residual	4.00	.13	30.08	<.001	
Fixed effects					
	Coefficient	SE	t	df	p
<i>Outcome variable: dieting, N<sub>Level 1</sub> = 4466, N<sub>Level 2</sub> = 406</i>					
Intercept	5.98	1.05	5.68	404	<.001
Time (study week)	.00	.02	-.15	388	.879
Self-oriented perfectionism (grand-mean centered)	.10	.02	6.05	402	<.001
Anxiety (person-mean centered)	.00	.01	.27	787	.786
Anxiety (person means)	.07	.03	2.63	403	.009
Time × self-oriented perfectionism	.00	.00	-.64	386	.520
Time × anxiety (person-mean centered)	.00	.00	.88	2906	.379
Anxiety (person-mean centered) × self-oriented perfectionism	.00	.00	-.36	180	.716
For the model involving the predictor variable of socially prescribed perfectionism					
Covariance parameter estimates	Coefficient	SE	Z	p	
1. Intercept	29.22	2.20	13.27	<.001	
2. Time (study week)	.04	.01	5.58	<.001	
3. Anxiety	.01	.00	3.28	.001	
COV (2,1)	.06	.09	.65	.516	
COV (3,1)	-.04	.04	-.90	.370	
COV (3,2)	.00	.00	1.73	.084	
AR(1)	.26	.02	11.49	<.001	
Residual	4.00	.13	30.12	<.001	
Fixed effects					
	Coefficient	SE	t	df	p
<i>Outcome variable: dieting, N<sub>Level 1</sub> = 4466, N<sub>Level 2</sub> = 406</i>					
Intercept	5.98	1.17	5.13	404	<.001
Time (study week)	.00	.02	-.11	389	.909
Socially prescribed perfectionism (grand-mean centered)	.03	.02	1.57	406	.118
Anxiety (person-mean centered)	.01	.01	.43	741	.668
Anxiety (person means)	.07	.03	2.37	404	.018
Time × socially prescribed perfectionism	.00	.00	-.42	394	.677
Time × anxiety (person-mean centered)	.00	.00	.84	2831	.401
Anxiety (person-mean centered) × socially prescribed perfectionism	.00	.00	-1.48	177	.140

Note. The grand mean of all weekly anxiety scores ( $n = 4445$ ) was 38.05 ( $SD = 11.22$ ) with a range from 20 to 78. The mean of all Multidimensional Perfectionism Scale scores ( $N = 406$ ) was 70.49 ( $SD = 15.57$ ) for self-oriented perfectionism with a range from 26 to 105 and 47.77 ( $SD = 13.88$ ) for socially prescribed perfectionism with a range from 16 to 90. Dieting scores ranged from 0 to 21 with a mean of 8.64 ( $SD = 6.01$ ).

Results indicated that the effects of anxiety and perfectionism changed over time; there were significant interactions between study week and weekly anxiety, SOP model:  $\gamma = -.003$ ,  $t(2643) = -2.23$ ,  $p = .026$ , SPP model:  $\gamma = -.003$ ,  $t(2629) = -2.21$ ,  $p = .027$ , and study week and perfectionism, SOP model:  $\gamma = -.002$ ,  $t(388) = -3.03$ ,  $p = .003$ , SPP model:  $\gamma = -.003$ ,  $t(396) = -3.34$ ,  $p = .001$ . Thus, the effects of anxiety and perfectionism on binge eating became less pronounced over the course of the study. The interactions between weekly anxiety and perfectionism were not significant.

#### 4. Discussion

Results of this study highlight the importance of decomposing the within- and between-person effects of anxiety on eating pathology. While it appears that anxious college women diet and binge eat at higher rates than those with low levels of anxiety, fluctuations of anxiety across weeks seem to influence binge eating but not dieting. Contrary to hypotheses, both self-oriented and socially prescribed perfectionism predicted increases in binge eating across 11 weeks, while only self-oriented perfectionism predicted increased dieting.

These findings contribute to research on the relations between multidimensional perfectionism and disordered eating and extend this literature by using a more frequent assessment approach for disordered eating. While we did not find support for an anxiety × perfectionism interaction predicting disordered eating, perhaps these variables would interact to predict disordered eating for certain groups (e.g., individuals with eating disorders). Additionally, results indicated that levels of dieting were fairly stable but that binge eating decreased over the 11 weeks. Further, the effects of anxiety, self-oriented perfectionism, and socially prescribed perfectionism on binge eating became less pronounced over the course of the study.

The results of this study have clinical implications, especially for binge eating. For example, clinicians working with undergraduate females may want to focus on negative affect associated with the transition to a new college semester, as binge eating appears to be most prevalent early in the semester and during periods of anxiety. Given the within-person effect of anxiety on binge eating, helping young women track their anxiety levels in connection with binge eating may be a useful intervention.

Strengths of this study include the separate examination of binge eating and dieting, multidimensional assessment of perfectionism, large

**Table 2**  
Multilevel modeling analyses for the outcome variable of binge eating.

For the model involving the predictor variable of self-oriented perfectionism					
Covariance parameter estimates	Coefficient	SE	Z	p	
1. Intercept	6.99	.56	12.39	<.001	
2. Time (study week)	.03	.00	6.66	<.001	
3. Anxiety	.003	.00	3.86	<.001	
COV (2,1)	-.24	.04	-6.44	<.001	
COV (3,1)	.10	.01	6.68	<.001	
COV (3,2)	-.003	.00	-3.39	.001	
AR(1)	.21	.02	9.77	<.001	
Residual	1.96	.06	32.98	<.001	
Fixed effects					
Coefficient	SE	t	df	p	
<i>Outcome variable: binge eating, N<sub>Level 1</sub> = 4466, N<sub>Level 2</sub> = 406</i>					
Intercept	7.33	.44	16.56	452	<.001
Time (study week)	-.12	.01	-10.92	390	<.001
Self-oriented perfectionism (grand-mean centered)	.03	.01	2.82	396	.005
Anxiety (person-mean centered)	.06	.01	6.49	848	<.001
Anxiety (person means)	.07	.01	6.64	417	<.001
Time × self-oriented perfectionism	-.002	.00	-3.03	388	.003
Time × anxiety (person-mean centered)	-.003	.00	-2.23	2643	.026
Anxiety (person-mean centered) × self-oriented perfectionism	.00	.00	.57	199	.568
For the model involving the predictor variable of socially prescribed perfectionism					
Covariance parameter estimates	Coefficient	SE	Z	p	
1. Intercept	6.95	.56	12.44	<.001	
2. Time (study week)	.03	.00	6.61	<.001	
3. Anxiety	.003	.00	3.86	<.001	
COV (2,1)	-.24	.04	-6.41	<.001	
COV (3,1)	.10	.01	6.68	<.001	
COV (3,2)	-.003	.00	-3.31	.001	
AR(1)	.21	.02	9.79	<.001	
Residual	1.95	.06	33.02	<.001	
Fixed effects					
Coefficient	SE	t	df	p	
<i>Outcome variable: binge eating, N<sub>Level 1</sub> = 4466, N<sub>Level 2</sub> = 406</i>					
Intercept	7.49	.47	15.99	449	<.001
Time (study week)	-.12	.01	-10.97	389	<.001
Socially prescribed perfectionism (grand-mean centered)	.03	.01	3.10	428	.002
Anxiety (person-mean centered)	.06	.01	6.51	810	<.001
Anxiety (person means)	.07	.01	5.86	418	<.001
Time × socially prescribed perfectionism	-.003	.00	-3.34	396	.001
Time × anxiety (person-mean centered)	-.003	.00	-2.21	2629	.027
Anxiety (person-mean centered) × socially prescribed perfectionism	.00	.00	1.01	197	.312

Note. The grand mean of all weekly anxiety scores ( $n = 4445$ ) was 38.05 ( $SD = 11.22$ ) with a range from 20 to 78. The mean of all Multidimensional Perfectionism Scale scores ( $N = 406$ ) was 70.49 ( $SD = 15.57$ ) for self-oriented perfectionism with a range from 26 to 105 and 47.77 ( $SD = 13.88$ ) for socially prescribed perfectionism with a range from 16 to 90. Binge eating scores ranged from 7 to 29 with a mean of 9.49 ( $SD = 2.92$ ).

sample size, high retention rate, weekly assessment of anxiety, and sophisticated analyses. In terms of limitations, while the presence of a more state-like assessment element via weekly reports was a strength, more data collection time points (e.g., daily reports) would have further increased the momentary quality of the data.

## 5. Conclusion

Overall, results of the current study indicated that dieting was rather stable and affected by trait-like characteristics, whereas binge eating changed over time and was affected by both trait-like characteristics and more state-like mood states. Yet, given that results also indicated the presence of significant person-to-person variation in the effect of anxiety on disordered eating, clinicians should be aware of the conditions under which anxiety increases or decreases disordered eating for their clients and aid them in developing strategies for adaptively managing their anxiety.

## Role of funding sources

This research was supported in part by a University of Wisconsin Advanced Level Fellowship to the second author. The University of Wisconsin did not have any role

in the study design, collection, analysis or interpretation of the data, manuscript preparation, or the decision to submit the paper for publication.

## Contributors

Anna Bardone-Cone designed the study and wrote the protocol. Ellen Fitzsimmons-Craft conducted the literature searches and statistical analyses and wrote the first draft of the manuscript. Lisa Brownstone and Megan Harney conducted additional literature searches and contributed to the first draft of the manuscript. Ellen Fitzsimmons-Craft, Anna Bardone-Cone, Lisa Brownstone, and Megan Harney contributed to draft revisions and have approved the final manuscript.

## Conflict of interest

All authors declare that they have no conflicts of interest.

## References

- Bardone-Cone, A. M. (2007). Self-oriented and socially prescribed perfectionism dimensions and their associations with disordered eating. *Behaviour Research and Therapy*, 45, 1977–1986. <http://dx.doi.org/10.1016/j.brat.2006.10.004>.
- Engel, S. G., Boseck, J. J., Crosby, R. D., Wonderlich, S. A., Mitchell, J. E., Smyth, J., et al. (2007). The relationship of momentary anger and impulsivity to bulimic behavior. *Behaviour Research and Therapy*, 45, 437–447. <http://dx.doi.org/10.1016/j.brat.2006.03.014>.
- Garner, D. M., Olmsted, M. P., & Polivy, J. (1983). Development and validation of a multidimensional eating disorder inventory for anorexia nervosa and bulimia.

- International Journal of Eating Disorders*, 2, 15–34. [http://dx.doi.org/10.1002/1098-108X\(198321\)2:2<15::AID-EAT2260020203>3.0.CO;2-6](http://dx.doi.org/10.1002/1098-108X(198321)2:2<15::AID-EAT2260020203>3.0.CO;2-6).
- Heatherton, T. F., & Baumeister, R. F. (1991). Binge eating as escape from self awareness. *Psychological Bulletin*, 110, 86–108. <http://dx.doi.org/10.1037/0033-2909.110.1.86>.
- Hewitt, P. L., & Flett, G. L. (1991). Perfectionism in the self and social contexts: Conceptualization, assessment, and association with psychopathology. *Journal of Personality and Social Psychology*, 60, 456–470. <http://dx.doi.org/10.1037/0022-3514.60.3.456>.
- Hewitt, P. L., Flett, G. L., & Ediger, E. (1995). Perfectionism traits and perfectionistic self-presentation in eating disorder attitudes, characteristics, and symptoms. *International Journal of Eating Disorders*, 18, 317–326. [http://dx.doi.org/10.1002/1098-108X\(199512\)18:4<317::AID-EAT2260180404>3.0.CO;2-2](http://dx.doi.org/10.1002/1098-108X(199512)18:4<317::AID-EAT2260180404>3.0.CO;2-2).
- Pallister, E., & Waller, G. (2008). Anxiety in the eating disorders: Understanding the overlap. *Clinical Psychology Review*, 28, 366–386. <http://dx.doi.org/10.1016/j.cpr.2007.07.001>.
- Schoemaker, C., van Strien, T., & van der Staak, C. (1994). Validation of the Eating Disorders Inventory in a nonclinical population using transformed and untransformed responses. *International Journal of Eating Disorders*, 15, 387–393. <http://dx.doi.org/10.1002/eat.2260150409>.
- Spielberger, C. D., Gorsuch, R. L., & Lushene, R. E. (1970). *STAI manual for the State–Trait Anxiety Inventory*. Palo Alto, CA: Consulting Psychologists Press.
- Stunkard, A. J., & Messick, S. (1985). The three-factor eating questionnaire to measure dietary restraint, disinhibition, and hunger. *Journal of Psychosomatic Research*, 29, 71–83. [http://dx.doi.org/10.1016/0022-3999\(85\)90010-8](http://dx.doi.org/10.1016/0022-3999(85)90010-8).