

Online Appendix to:
Caught in the Bulimic Trap?
Socioeconomic Status, State Dependence, and Unobserved Heterogeneity

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Abstract

This supplement contains alternative specifications of the model presented in sections 4 and 5 of the main text “Caught in the Bulimic Trap: Socioeconomic Status, State Dependence, and Unobserved Heterogeneity.”

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1 Additional Static Specifications

We begin with static Ordered Probit, LPM, and Probit models for the incidence of BN. In estimating the Tobit and linear regression models in section 4, we treat the sum of the answers to the ED-BN index questions as a quantitative variable for which the difference between the values of 2 and 3, say, is the same as the difference between the values of 7 and 8, say. Alternatively, we could consider a model where the ED-BN index takes on 21 ordinal values determined by

$$y_{it} = \begin{cases} 0 & \text{if } y_{it}^* \leq 0 \\ 1 & \text{if } 0 < y_{it}^* \leq \alpha_1 \\ k & \text{if } \alpha_{k-1} < y_{it}^* \leq \alpha_k \quad k = 2, \dots, 20 \\ 21 & \text{if } \alpha_{20} < y_{it}^*. \end{cases} \quad (\text{B1})$$

While (B1) is very flexible, it also involves estimating 20 α parameters, in addition to the parameters in equation (1) in the main text, which we think would be too many to identify using our data. Instead we estimate an Ordered Probit model (with estimated limit points) as an informal specification test of the Tobit model. In the Ordered Probit model the dependent variable takes the form: $z_{it} = 0$ if the ED-BN index equals 0, $z_{it} = 1$ if the index is in $[1, 5]$, $z_{it} = 2$ if the index is in $[6, 10]$, and $z_{it} = 3$ if the index is greater than 10. Our statistical model is

$$z_{it}^* = \gamma_0 + \gamma_1 X_{it} + \tilde{b}_t + \theta_i + e_{it}, \quad (\text{B2})$$

where the sum $(\sigma_\theta^2 + \sigma_e^2)$ is normalized to 1, and

$$z_{it} = \begin{cases} 0 & \text{if } z_{it}^* \leq 0 \\ 1 & \text{if } 0 < z_{it}^* \leq \delta_{L2} \\ 2 & \text{if } \delta_{L2} < z_{it}^* \leq \delta_{U2} \\ 3 & \text{if } z_{it}^* > \delta_{U2}. \end{cases} \quad (\text{B3})$$

In this approach we estimate the parameters in (B2) and the two δ cutoff terms by maximizing the quasi-likelihood based on the period-by-period likelihood function and cluster the standard errors by individual. In Table B1 we compare the sign and significance of the Tobit and Ordered Probit estimates; the coefficients are not directly comparable because the variance must be normalized to 1 for the Ordered Probit model with estimated limit points. The Ordered Probit estimated coefficients are very similar in significance and sign to those from the Tobit coefficients, but as one would expect the Tobit coefficients are significant at higher confidence levels (since they are based on less-aggregated data).

Table B1: Comparison of Coefficients from Linear, Tobit and Ordered Probit Models

	ED-BN Index		
	Linear Model	Tobit	Ordered Probit
White	-0.243*** (0.088)	-0.676*** (0.240)	-0.108*** (0.041)
Age	-0.132*** (0.011)	-0.318*** (0.029)	-0.051*** (0.005)
Parents Some College	-0.198* (0.113)	-0.321 (0.280)	-0.042 (0.047)
Parents Bachelor Degree or More	-0.313*** (0.116)	-0.703** (0.316)	-0.100* (0.053)
Income in [\$20000, \$40000]	-0.377*** (0.112)	-1.029*** (0.287)	-0.174*** (0.048)
Income more than \$40,000	-0.488*** (0.107)	-1.278*** (0.295)	-0.209*** (0.050)
Constant	3.975*** (0.227)	3.871*** (0.518)	
Year Dummies Included			
White	-0.227*** (0.088)	-0.629*** (0.240)	-0.100** (0.041)
Age	0.010 (0.060)	0.122 (0.174)	0.024 (0.030)
Parents Some College	-0.193* (0.113)	-0.311 (0.279)	-0.040 (0.047)
Parents Bachelor Degree or More	-0.299*** (0.116)	-0.657** (0.316)	-0.093* (0.053)
Income in [\$20000, \$40000]	-0.384*** (0.112)	-1.050*** (0.286)	-0.178*** (0.048)
Income more than \$40,000	-0.500*** (0.106)	-1.314*** (0.294)	-0.216*** (0.050)
Constant	1.362 (1.169)	-4.348 (3.355)	
Sample Size	9591	9591	9591

Notes: Standard errors robust to heteroskedasticity and intra-individual correlation are in parenthesis in column (1). Standard errors robust to intra-individual correlation are in parenthesis in (2) and (3). * indicates significant at the 10% level; ** at 5%; *** at 1%.

For the static LPM the dependent variable is $w_{it} = 0$ if the ED-BN index is less than or equal to 10 and $w_{it} = 1$ otherwise; we cluster the standard errors to allow for heteroskedasticity and correlation across individuals. We estimate a static Probit model by maximizing the quasi-likelihood and clustering the standard errors by individuals. The Probit partial effects and LPM results are given in Table B2 and are relatively similar to each other. They also have the same signs as the Tobit results. However fewer estimated coefficients are statistically significant in the Probit and LPM, and those that are significant occur at lower confidence levels. The fact that we have substantially fewer significant coefficients in the Probit and LPM estimates is again expected, since they use much less information per person than the other methods. Indeed, our estimates illustrate the importance of not simply focusing on whether an individual has a clinical case of BN for understanding the determinants of this disorder.

Table B.2: Partial Effects of Demographic Variables and Personality Indices on Clinical Bulimia

	Linear Probability Estimates				Probit Estimates		
	(1)	(2)	(3)	(4)	(1)	(2)	(3)
White	-0.004 (0.005)	-0.005 (0.005)			-0.0054* (0.0030)	-0.0065** (0.0027)	
Age	-0.002*** (0.001)	-0.003*** (0.001)			-0.0016*** (0.0005)	-0.0019*** (0.0004)	
Parents Some College	-0.005 (0.006)	-0.005 (0.006)			-0.0030 (0.0028)	-0.0029 (0.0026)	
Parents Bachelor Degree or More	-0.001 (0.007)	-0.000 (0.007)			-0.0010 (0.0035)	-0.0009 (0.0033)	
Income in [\$20000, \$40000]	-0.001 (0.006)	-0.001 (0.006)			-0.0001 (0.0031)	-0.0004 (0.0029)	
Income more than \$40,000	-0.008 (0.006)	-0.008 (0.006)			-0.0046 (0.0032)	-0.0047 (0.0030)	
Distrust Index	-0.001 (0.001)	-0.001 (0.001)	-0.002* (0.001)	-0.002** (0.001)	-0.0000 (0.0003)	-0.0000 (0.0003)	-0.0003 (0.0002)
Ineffectiveness Index	0.010*** (0.001)	0.010*** (0.001)	0.009*** (0.002)	0.008*** (0.001)	0.0028*** (0.0003)	0.0023*** (0.0003)	0.0008*** (0.0002)
Perfectionism Index	0.005*** (0.001)	0.005*** (0.001)	0.005*** (0.002)	0.004*** (0.001)	0.002*** (0.0003)	0.0018*** (0.0003)	0.0007*** (0.0002)
Body Dissatisfaction Index		0.001** (0.000)	0.002* (0.001)	0.001*** (0.000)		0.0006*** (0.0001)	0.0003*** (0.0001)
Constant	0.008 (0.014)	0.011 (0.014)	-0.002 (0.004)	0.006 (0.014)			
First Difference	No	No	Yes	No	NA	NA	NA
Chamberlain/Wooldridge Fixed Effects	No	No	No	Yes	No	No	Yes
Sample size	6308	6291	2624	6291	6308	6291	6291

See notes in Table 5.

2 Additional Dynamic Specifications

We now turn to the dynamic models. For the LPM, we proceed in a manner analogous to the linear regression model, and for the Probit we proceed in a manner analogous to the Tobit. The dynamic LPM and Probit model estimates are in Tables B3 and B4, respectively. These results suggest that the dynamic model is too rich for the zero-one data, since the IV regression coefficient on the lagged dependent variable is only significant if we difference the data and use the AB approach. Further, the Probit partial effects for the lagged incidence of BN are not significant once we include the fixed effects. The insignificant partial effects on the lagged incidence of BN in columns (4) and (5) have large confidence intervals; in other words they are imprecisely estimated ‘zero’ coefficients.

Table B.3: Linear Probability Estimates of the Persistence of Clinical Bulimia

Variables				Two Stage Least Squares				Arellano-Bond	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Lagged Clinical Bulimia	0.196*** (0.043)	0.150*** (0.041)	0.149*** (0.041)	0.034 (0.090)	0.005 (0.062)	0.017 (0.089)	-0.008 (0.060)	0.093** (0.050)	0.093** (0.051)
White		-0.005 (0.005)	-0.005 (0.005)	-0.007 (0.008)	-0.004 (0.004)	-0.009 (0.008)	-0.005 (0.004)	-0.017** (0.008)	-0.019** (0.008)
Age		-0.002** (0.001)	-0.003** (0.001)	-0.002 (0.002)	-0.003*** (0.001)	-0.002 (0.002)	-0.003*** (0.001)		
Parents Some College		0.001 (0.006)	0.001 (0.006)	-0.004 (0.010)	-0.005 (0.005)	-0.004 (0.010)	-0.005 (0.005)		
Parents Bachelor Degree or More		0.006 (0.007)	0.006 (0.007)	0.002 (0.011)	-0.001 (0.006)	0.002 (0.011)	-0.001 (0.006)		
Income in [\$20000, \$40000]		-0.007 (0.007)	-0.007 (0.007)	-0.009 (0.010)	-0.008* (0.005)	-0.010 (0.010)	-0.009* (0.005)		
Income more than \$40,000		-0.009 (0.006)	-0.009 (0.006)	-0.010 (0.010)	-0.012** (0.005)	-0.011 (0.011)	-0.012** (0.005)		
Distrust Index		-0.001 (0.001)	-0.001 (0.001)	-0.002* (0.001)	-0.001 (0.001)	-0.002* (0.001)	-0.000 (0.001)	-0.002** (0.001)	-0.002** (0.001)
Ineffectiveness Index		0.008*** (0.001)	0.008*** (0.002)	0.011*** (0.001)	0.008*** (0.001)	0.010*** (0.001)	0.008*** (0.001)	0.006** (0.002)	0.006** (0.002)
Perfectionism Index		0.003*** (0.001)	0.003*** (0.001)	0.005*** (0.001)	0.004*** (0.001)	0.005*** (0.001)	0.004*** (0.001)	0.003*** (0.001)	0.003*** (0.001)
Body Dissatisfaction Index			0.001 (0.000)			0.001** (0.001)	0.001** (0.000)		
Constant	0.016*** (0.002)	0.023 (0.020)	0.024 (0.020)	0.010 (0.026)	0.031* (0.017)	0.011 (0.027)	0.033* (0.017)	0.027* (0.016)	0.028* (0.016)
Interpolated Indices	No	No	No	No	No	Yes	Yes	Yes	Yes
First Difference	No	No	No	No	No	No	No	Yes	Yes
Sample Size	4151	3938	3928	2285	2273	5426	5384	3437	3411

Notes: Standard errors robust to heteroskedasticity and intra-group correlation are reported in parenthesis. NA denotes not applicable; * indicates significant at 10%; ** significant at 5%; *** significant at 1%. Instruments are one-period lags of: all personality indices in columns (5) and (7); all indices excluding body image in columns (4) and (6). Columns (6)- (9) use interpolated values of personality indices in wave 7.

Table B4: Probit Partial Effects for the Persistence of Clinical Bulimia

Variables	(1)	(2)	(3)	(4)	(5)
Lagged Clinical Bulimia	0.196*** (0.044)	0.074*** (0.025)	0.070*** (0.024)	0.017 (0.016)	0.017 (0.016)
White		-0.009** (0.004)	-0.011*** (0.004)	-0.005 (0.003)	-0.006* (0.003)
Age		-0.003*** (0.001)	-0.003*** (0.001)	-0.002** (0.001)	-0.002*** (0.001)
Parents Some College		0.001 (0.005)	0.000 (0.005)	0.001 (0.004)	0.000 (0.004)
Parents Bachelor Degree or More		0.006 (0.007)	0.005 (0.007)	0.005 (0.005)	0.004 (0.005)
Income in [\$20000, \$40000]		-0.007 (0.004)	-0.007 (0.004)	-0.005 (0.003)	-0.005 (0.003)
Income more than \$40,000		-0.008* (0.004)	-0.008* (0.004)	-0.004 (0.003)	-0.005 (0.003)
Distrust Index		-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)
Ineffectiveness Index		0.003*** (0.000)	0.003*** (0.001)	0.002*** (0.001)	0.002*** (0.001)
Perfectionism Index		0.002*** (0.001)	0.002*** (0.001)	0.001** (0.001)	0.001** (0.001)
Body Dissatisfaction Index			0.001*** (0.001)	(0.007)	0.001 (0.001)
Chamberlain/Wooldridge Fixed Effects	No	No	No	Yes	Yes
Constant	-2.137*** (0.050)	-0.653* (0.385)	-1.500*** (0.429)	-1.437*** (0.442)	-1.812*** (0.576)
Sample Size	4151	3938	3938	3938	3928

Notes: Standard errors robust to intra-individual correlation are in parenthesis. * indicates significant at the 10% level; ** at 5%; *** at 1%.