Supplemental Material for:

Does Knowing Hurt? Self-Perceived Overweight Predicts Future Physical Health and Well-Being

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Section 1: Self-perceived weight (continuous) and subsequent health analyses.

Section 2: Additional analyses testing the impact of controlling for baseline physiological dysregulation on the mediation pathway from perceived overweight to dysregulation through weigh gain.

Section 1: Self-perceived weight (continuous) and subsequent health analyses.

We examined whether the same pattern of associations between perceived overweight (dichotomous indicator) and health outcomes were observed when a continuous measure of perceived weight was utilized. Self-perceived weight was assessed at baseline where participants rated their perceived weight on the following scale: 1 = *very underweight*, 2 = *slightly underweight*, 3 = *about the right weight*, 4 = *slightly overweight*, and 5 = *very overweight*. Because those who rate their weight as 'very underweight' are likely to experience weight bias (e.g. stereotyped as depressed, undereating, teased about weight: Lundgren, Anderson, Thompson, Shapiro, & Paulosky, 2004; Tantleff-Dunn, Hayes, & Braun, 2009) and health problems we remove this group (1.1% of the sample/39 participants) from the analyses.

The continuous measure of perceived weight (N = 3,543) therefore ranged from 'slightly underweight' to 'very overweight' and was found to predict all health outcomes, as shown in Table S1. Each one-point increase in perceived weight was associated with a .13 *SD* decrease in self-rated health, a .06 *SD* increase in depressive symptoms and raised physiological dysregulation levels (.13 *SD* higher). The decrease in the linkages between perceived weight and the health outcomes attributable to weight gain was of a similar magnitude to that observed using the dichotomous perceived overweight predictor. For example, the same portion (46%) of the association between perceived weight and dysregulation was explained by weight gain when a dichotomous or continuous measure of perceived weight was used.

We therefore conclude that there is little evidence that the pattern of relationships observed between perceived weight and health outcomes differs markedly depending on whether a dichotomous vs. a continuous measure of perceived weight is utilized.

Table S1. *Self-Perceived Weight Predicting Subsequent Physiological Dysregulation and Changes in Self-rated Health and Depressive Symptoms.*

	Physiological Dysregulation (z-score)		Self-rated health (z-score)		Depressive symptoms (z-score)	
		+ Weight gain[a]		+ Weight gain[a]		+ Weight gain[a]
Perceived weight[b]	.13***	.07**	-.13***	-.11***	.06*	.06*
	(.03)	(.02)	(.03)	(.03)	(.03)	(.03)
Self-rated health	–	–	.39***	.38***	–	–
			(.02)	(.02)		
Depressive symptoms	–	–	–	–	.09***	.09***
					(.00)	(.00)

Note. Analyses are adjusted for age, sex (female), ethnicity (white), education, income, the presence of a long-standing illness, and baseline BMI There were 3,543 participants, 2,001 women & 1,542 men. Standard errors are included in parentheses.

[a] Weight gain is BMI at baseline subtracted from BMI at follow-up.

[b] Ranging from 1 = slightly underweight to 4 = very overweight.

* p < .05. ** p < 0.01. *** p < .001.

Section references:

Lundgren, J. D., Anderson, D. A., Thompson, J. K., Shapiro, J. R., & Paulosky, C. A. (2004). Perception of teasing in underweight persons: A modification of the perception of teasing scale. *Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity, 9*, 139-146.

Tantleff-Dunn, S., Hayes, S., & Braun, C. P. (2009). How did you get so thin? The effect of attribution on perceptions of underweight females. *Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity, 14*, 38-44.

Section 2: Additional analyses testing the impact of controlling for baseline physiological dysregulation on the mediation pathway from perceived overweight to dysregulation through weigh gain.

We identified a close relationship between perceived overweight at baseline and physiological dysregulation at follow-up (d = .24). Yet it is possible that baseline dysregulation (which was not assessed in Add Health) led to both initial perceptions of weight and subsequent dysregulation explaining the association between these two variables. Unfortunately, we cannot assess this possibility directly in Add Health or other datasets that we are aware of.

However, our mediation analyses show that self-identifying as overweight at baseline predicts weight gain over 7-years (path a) and that this in turn predicts physiological dysregulation (path b), as illustrated in Figure 1. Together these paths produce a mediation channel which explains 46% of the link between perceived overweight and subsequent dysregulation (indirect effect, path a×b: B = .11, 95% BCa CI: .07, .14). Using additional data it is possible to evaluate whether the two path that make up this channel are likely to be affected by confounding by baseline physiological dysregulation.

The influence of baseline dysregulation on path 'a' can be tested in the British National Child Development Study (NCDS) where perceived overweight and physiological dysregulation are measured at baseline (age 42-44) and weight gain is assessed over an 11-year period (from age 44 to 55). Further, the contribution of initial dysregulation to the association between weight gain (over 4 years) and follow-up physiological dysregulation (path b) can be examined in the English Longitudinal Study of Ageing (ELSA).

As shown in Table S2 and Table S3 including initial dysregulation in the regression models did not markedly diminish the strength of either path 'a' or path 'b' in Figure 1. In

fact, the estimates derived from these analyses suggest that controlling for initial physiological dysregulation may marginally increase (by approximately 12%) the strength of the mediation effect observed. These analyses provide indirect evidence to suggest that the portion of the link between perceived overweight and follow-up dysregulation that is due to weight gain may not be attributable to unobserved variation in baseline physiological dysregulation.

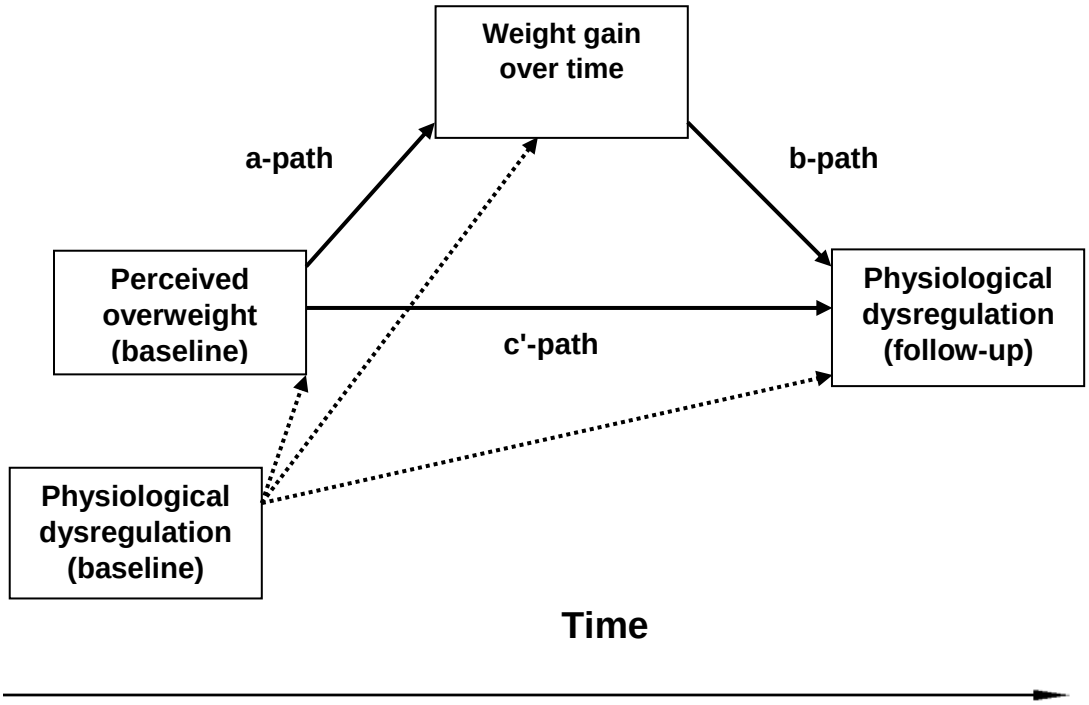

Figure S1. Conceptual Diagram of the Mediation Channel from Self-Perceived Overweight to Subsequent Physiological Dysregulation through Weight Gain.

Note: Unobserved baseline dysregulation may act as a 'third variable' (see dashed lines) influencing weight perceptions, weight gain, and subsequent physiological dysregulation and explaining why each of these variables are linked.

Table S2. *Impact of Baseline Physiological Dysregulation on the Association between Self-Perceived Overweight and Weight Gain 11 years later in the NCDS (N = 4,924).*

	Weight gain (kg/m^2)	
	B	SE
Model 1		
Perceived overweight	.670***	.120
Model 2 (+ baseline physiological dysregulation)		
Perceived overweight	.662***	.120

Note. All participants were born in the same week in March, 1958. Analyses are adjusted for sex (female), ethnicity (white), and social background (derived from the father's occupation: I = professional occupations, II = managerial or technical occupations, III = skilled workers, IV = semiskilled workers, and V = unskilled) and initial BMI levels (objectively recorded).

[a] Physiological dysregulation was gauged using a composite measure of systolic and diastolic blood pressure, C-reactive protein, waist circumference, total blood cholesterol to high-density lipoprotein cholesterol, total triglycerides, and glycated hemoglobin (HbA1c) levels. As in the main manuscript all biomarkers were converted to deciles then summed and standardized to have a mean of 0 and standard deviation of 1.

* $p < .05$. ** $p < 0.01$. *** $p < .001$.

Table S3. *Impact of Baseline Physiological Dysregulation on the Association between Weight Gain (from 2004/2005 to 2008/2009) and Follow-up Physiological Dysregulation in ELSA (N = 2,468).*

	Physiological dysregulation (follow-up)	
	B	SE
Model 1		
Weight gain (between baseline and follow-up: kg/m^2)	.096***	.007
Model 2 (+ baseline physiological dysregulation)		
Weight gain (between baseline and follow-up: kg/m^2)	109.***	.005

Note. Analyses are adjusted for age, sex (female), educational attainment, and wealth (gauged using an extensive measure of benefit unit non-pension wealth) and initial BMI levels (objectively recorded).

[a] Physiological dysregulation was gauged using a composite measure of systolic and diastolic blood pressure, C-reactive protein, waist circumference, total blood cholesterol to high-density lipoprotein cholesterol, total triglycerides, and glycated hemoglobin (HbA1c) levels. As in the main manuscript all biomarkers were converted to deciles then summed and standardized to have a mean of 0 and standard deviation of 1.

* $p < .05$. ** $p < 0.01$. *** $p < .001$.