Supplementary material:

Do Eating Behaviour Traits predict EI and BMI? A Systematic Review and Meta-analysis

Authors:

1. Clarissa Dakin[1]
2. James Stubbs[1]
3. Graham Finlayson[1]
4. Mark Hopkins[2]
5. Kristine Beulieu[1]
6. Catherine Gibbons[1]

Address:

[1]Appetite Control and Energy Balance Research Group (ACEB), School of Psychology, Faculty of Medicine and Health, University of Leeds, Leeds, UK.

[2]School of Food Science & Nutrition, University of Leeds, Leeds, UK.

Table S1: Search strategy

Population:	NOT "child*"
Intervention (eating-related traits) AND	"overeat*" or "eating trait" or "eating-trait*" or "eating-related trait*" or "eat* behavio* trait*" or "appetit* trait*" or "eat* behavio*" or "eat* attitude*" or "undereat*" or "food approach"
Intervention (specific questionnaires) AND	"emotional eat*" or "PNEES*" or "disinhibition" or "TFEQ-D" or "restrain* eat*" or "TFEQ*" or "TFEQ hunger" or "TFEQ-H" or "binge eat*" or "BES" or "power of food" or "PFS" or "external eat*" or "food addiction" or "food craving" or "LOC-eat*" or "reward-based eating drive" or "hunger" or "intuitive eat*" or "Satiety responsiv*" or "Food responsiv*" or "TFEQ restraint" or "TFEQ-R" or "TFEQ-restraint" or "diet* restraint" or "fullness" or "desire to eat" or "urge to eat" or "reflective eat*" or "reactive eat*" or "homeostat* eat*" or "eating impulsiv*" or "eating-impulsiv*" or "self-regulation of eat*" or "eat* questionnaire*" or "appeti* questionnaire*" or "food* questionnaire*" or "DEBQ" or "mind* eat*" or "MEQ" or "IES" or "SMEQ" or "stunkard-

	messick eat* questionnaire" or "WREQ" or "weight-related eat* questionnaire" or "adult eat* behavio* questionnaire" or "AEBQ*" or "eat* satiety" or "GNQK" or "general nutrition knowledge questionnaire" or "SREBQ" or "food choice questionnaire" or "FCQ" or "food preference questionnaire*" or "FPQ" or "EAT-26" or "loss of control over eat*" or "leeds food preference questionnaire" or "LFPQ" or "Brownell stress eating questionnaire" or "MIDUS" or "stress eating items" or "PEMS" or "palatable eating motives scale" or "trait food craving questionnaire" or "FCQ-T-r" or "yale food addiction scale" or "YFAS" or "compulsive eating scale" or "CES" or "motivations to eat" or "eating attitudes test" or "EAT-40" or "multidimensional psychology of eating questionnaire" or "MPEQ" or "eating disorder diagnostic scale" or "eating disorder examination questionnaire" or "EDE-Q" or "Reward-related eating" or "RED-13"
Comparison	No comparison for systematic review For Energy Intake meta-analysis, compare high scores to low scores (for measures with defined high vs low scores)
Outcome AND	"food intake" or "energy intake" or “calori* intake” or exp energy intake/ or exp food intake/
Outcome AND	“BMI" or "body mass index" or "body composition" or exp body weights and measures/ or exp body weight/ or exp body mass index/
Limits	English language and humans

Table S2: Characteristics of included studies

Authors	Study type	Population and Participant characteristics	Inclusion Information	Eating behaviour trait measured	BMI and EI method	Results (BMI)	Results (EI)
Alger, Seagle and Ravussin [1]	Cross-sectional	N = 18 (sex not given). Age (M = 40 years, SD = 3.5) BMI not given.		BES.[2] Binge eaters were defined as scoring > 25 on the BES.	No data for how BMI was calculated. Participants ate ad libitum from two vending machines over 8 days. EI was calculated as intake over the initial 8 days.	Missing data	Mean daily EI was not significantly different between obese binge eaters (M = 2587, SD = 454) and obese non-bingers (M = 2386, SD = 201).
Anderson, Schaumberg, Anderson and Reilly [3]	Cross-sectional	N = 137 college students, 63.5% female. Age (M = 19.3 years, SD = 1.3). BMI (M = 23.0, SD = 3.8). Ethnicity = 65.7% Caucasian.		IES.[4]	Weight and height were self-reported to calculate BMI. Participants were randomly assigned to either a small (8-inch) plate condition, (N = 72), or a large (12-inch) plate condition, (N = 65) of pasta with tomato sauce. Pasta consumption was weighed by digital scale.	IES was significantly negatively correlated with self-reported BMI, ($r = –0.21$, $p < 0.05$)	Within the small plate condition, IES and pasta consumption were unrelated ($r = 0.19$). Within the large plate condition, levels of intuitive eating and pasta consumption were significantly related, ($r = 0.53$, $p < 0.001$).

Anderson, Reilly, Schaumberg, Dmochowski and Anderson [5]	Cross-sectional	N = 125 university students, 64% female. Age (M = 19.3 years, SD = 1.3). BMI (M = 23.0, SD = 4.0). Ethnicity = 65.4% Caucasian.		IES.[4] MEQ.[6] TFEQ-R.[7] EDDS.[8]	BMI was calculated from self-reported items in the EDDS scale. Pasta/sauce consumption was weighted using a digital food scale.	TFEQ-R (r = 0.44, p < 0.05) and EDDS (r = 0.40, p < 0.05) were significantly correlated with BMI. IES (r = -0.25) and MEQ (r = 0.01) were not significantly correlated with BMI.	No EBT were significantly correlated with EI (IES, r = 0.27 MEQ, r = 0.15 TFEQ-R, r= -0.13 EDDS, r = -0.29). However, controlling for gender, hierarchical multiple regression analyses suggested that IES, MEQ and TFEQ-R total scores accounted for 8% of the total variance in EI. Only IES accounted for a significant amount of unique variance for EI.
Appelhans, Liebman, Woolf, Pagoto, Schneider and Whited [9]	Cross-sectional	N = 62 overweight adults, 100% female. Age (M = 31.0 years, SD = 7.7).		PFS.[10]	Height and weight were measured in light clothing in the laboratory. Participants consumed a	BMI and PFS were not significantly correlated (r = -0.17).	PFS was not significantly correlated with palatable food intake (r = 0.12)

		BMI (M = 31.5, SD = 3.4). Ethnicity = 37% Non-Hispanic White, 32% Black/African American.			preload (oatmeal) and then complete the taste test. The six sample foods included: crisis, peanuts, chocolate, raisins (palatable), crackers and cheerio's (bland). Food was weighed before and after consumption.		or bland food intake (r = -0.04).
Ard, Desmond, Allison and Conway [11]	Cross-sectional	N = 150 adults, 47% female. Age (M = 43 years, SD = 12.25). BMI (M = 28.9, SD = 4.90). Ethnicity = 8% non-Hispanic African Americans.		TFEQ (restraint, disinhibition and hunger).[7]	Weight and height were measured using standard techniques. Three meals over the course of one day, e.g., bread, bacon, pizza, salad, cookies. All foods consumed were recorded, and uneaten foods were returned and measured	Missing data	Restraint was negatively correlated with EI. Controlling for sex, race, and BMI, restraint was a significant predictor of energy intake (r=-0.23, p < 0.01). Disinhibition was not a significant predictor of total EI.
Arumae, Kreegipuu and Vainik [12]	Cross-sectional	N = 39, 100% female. Age (M = 25.51 years, SD = 5.99).		Binge eating subscale EDAS.[13]	Information about participant's height and weight were collected via	Binge eating was not correlated with BMI (r = 0.03)	Binge eating was significantly correlated with snack food intake

		BMI (M = 22.51, SD = 3.58).			an online form. EI was measured as the intake of snack foods (waffles, peanuts, raisins, and pretzels).		(r = 0.40, p < 0.05).
Bellisle, Dalix, Airinei, Hercberg and Péneau [14]	Cross-sectional	N = 40, 100% female. Age (M = 26.15 years, SD = 7.59). BMI (M = 21.95, SD = 2.85)	Condition 1,3 and 5 are included because they act as controls (eating alone, eating alone with a neutral TV program on, eating alone whilst listening to a radio detective story).	TFEQ restraint.[7] Participants are categorised into high (>10) and low (≤5) restraint levels.	The laboratory physician measured participants height and weight. Test meals included ground beef and mashed potatoes, fruit sherbets, plain water. Leftovers were weight to calculate EI.	Participants with high levels of restraint did not have significantly different BMI's (M = 22.4, SEM = 0.5) compared to participants with low levels of restraint (M = 21.5, SEM = 0.4), p = 0.18.	There were no differences in EI depending on level of restraint.
Bellisle and Dalix [15]	Cross-sectional	N = 41, 100% female. Age (M = 35 years, SD = 9). BMI (M = 21.3, SD = 1.9).		TFEQ.[7] DEBQ.[16]	No information for how BMI was calculated. Four identical lunch meals scheduled on the same day of the week with ≥1 week between tests. Meals consisted of casserole of ground beef and	Total TFEQ score did not significantly correlate with BMI (r = 0.18)	TFEQ and DEBQ were not significantly correlated with EI.

					potatoes, fruit sherbet, water. Leftover food was weighed to calculate EI.		
Bryant, Caudwell, Blundell, Hopkins and King [17]	Cross-sectional	N = 58 overweight and obese adults, 67% female. Age (M = 35.57 years, SD = 9.78). BMI (M = 31.83, SD = 4.46).		TFEQ.[7] Participants were grouped as either high or low TFEQ-D (LD vs. HD) and with high or low TFEQ-R (LR vs. HR), which generated four TFEQ-groups. For both TFEQ-R and TFEQ-D, ≥7 denoted a high score and ≤6 a low score.	Body composition was measured on probe days. Breakfast consisted of cereal, toast, butter and jam and tea or coffee. Lunch consisted of cheese, salad sandwiches, ready salted crisps, and fruit malt loaf. Dinner consisted of lasagne, peas, and raspberry yoghurt. EI was calculated by weighing food before and after consumption.	Missing data	TFEQ-H was significantly correlated with EI ($r = 0.38$, $p < 0.01$). TFEQ-R ($r = -0.15$), TFEQ-D ($r = 0.25$), TFEQ-rigid ($r = -0.26$) and TFEQ-flexible ($r = 0.001$) were not significantly correlated with EI.
Chambers and Yeomans [18]	Cross-sectional	N = 64 university students, 100% female. Age (M = 21.8 years, SD = 4.8).		TFEQ restraint and disinhibition.[7]	Participant's height and weight were recorded after the second test session. EI was calculated	BMI did not significantly differ between high and low TFEQ-D groups ($p = 0.16$) or the	Total EI (for snack foods) over the two test days did not differ significantly between high and

		BMI (M = 23.4, SD = 3.2).			over two test days. Breakfast provided on both test days included vanilla yogurt, fresh strawberries, and water. The high fat breakfast contained 61% fat; the high carbohydrate contained 80% carbohydrate content. Four snack foods were presented at the bogus taste test (Mini Cheddars, peanuts, chocolate buttons and grapes). All ingredients were weighed.	TFEQ-R groups (p = 0.70).	low TFEQ-D groups (p = 0.15) or TFEQ-R groups (p = 0.88). Intake following the HF breakfast did not differ between the high and low TFEQ-D groups (p = 0.57), but after the HC breakfast the high TFEQ-D group consumed, on average, 31% more energy than the LD group (p = 0.04).
Coelho, Polivy, Herman and Pliner [19]	Cross-sectional	N = 116, university students, 100% female. Age not given. BMI not given.	Data is included for the control condition (no-cue) only.	RS.[20] Participants were classified as restrained eaters if they scored ≤15 or (n = 57) and unrestrained eaters if they scored >15 (n = 59).	Height and weight were measured by the experimenter. The test meal included gourmet chocolate chip, oatmeal-raisin, and double-chocolate cookies.	Restrained eaters had a significantly higher BMI (M = 24.71, S.D. = 4.1) than unrestrained eaters (M = 21.71, S.D. = 3.6), p < 0.001.	The EI of restrained eaters in the control condition was significantly higher than unrestrained eaters (p < 0.03).

					Cookies were weighed before and after consumption.		
Cools, Schotte and McNally [21]	Cross-sectional	N = 91, 100% female. Age (M = 28.6 years, SD = 8.9). BMI (M = 23.8, SD = 4.5).	Data is included for the neutral film condition only.	RRS.[22]	Demographic information was obtained. EI was measured as the intake of popcorn during the film.	Missing data	Low restrained eaters ate more popcorn (M = 24.7, SD = 11.70g) than high restrained eaters (M = 14.1, SD = 13.60g).
Dalton, Blundell and Finlayson [23]	Cross-sectional	N = 50 staff and university students, 100% female. Age (M = 26.25 years, SD = 8.6). BMI (M = 26.35, SD = 2.4).		BES.[2] Binge status (binge-type or non-binge type) was determined following a median-split of scores on the BES.	BMI was calculated from measuring standing height without shoes to the nearest 0.5 cm using a stadiometer. Body weight was measured using an electronic balance and recorded to the nearest 0.1 kg. There were two conditions (fasted and fed) In the fed condition, a fixed energy lunch meal (cheese sandwich and strawberry	There was no significant difference in BMI for the obese binge type (M = 32, SD = 1.26) compared to the obese non-binge type participants (M = 29.68, SD = 0.64). There was a difference in waist circumference between obese binge and obese non-binge type participants ($p < 0.05$). There was also no significant difference in BMI	Obese binge-types consumed more energy overall in both conditions (fasted and fed) compared to the obese non-binge and both lean types ($p < 0.01$). There was no significant difference in overall EI between obese non-binge, lean binge, and lean non-binge types.

					yoghurt) was consumed before the ad libitum food intake task. The test meal included six pre-weighed bowls of snack foods (chocolate, biscuits, cookies, crisps, peanuts, and tortilla chips). Each bowl was weighed.	for the lean binge-type (M = 22.44, SD = 0.47) compared to the lean non-binge type participants (M = 21.71, SD = 0.38).	
Dalton, Blundell and Finlayson [24]	Cross-sectional	N = 24 staff and university students, 100% females. Age (M = 25.42 years, SD = 6.42). BMI (M = 30.30, SD = 2.6).		BES.[2] CoEQ (control of eating questionnaire) [25,26].	Standing height without shoes was measured to the nearest 0.5 cm using a stadiometer. Body weight was measured using an electronic balance and recorded to the nearest 0.1 kg. EI was examined at breakfast, lunch, and dinner. Ad libitum test meals included breakfast (cereal,	There was no significant difference in BMI between obese binge-types (M = 31.5, SD = 1.3) and obese non-binge types (M = 30.1, SD = 0.4). Obese binge-types had significantly greater fat mass (M = 36.3kg, SD = 3.8) than non-binge types (M = 27.4kg, SD = 1.4), $p < 0.05$.	Obese binge-types consumed more energy overall from the ad libitum snack box compared to obese non-binge-types ($p < 0.02$). Laboratory-based total EI was higher in the obese binge types (M = 3417.5 (SD = 192.2) compared to the obese non-binge-types (M =

					toast, milk, butter, jam), lunch (sandwiched, yogurt, crackers), dinner (pasta, sauce, side salad, garlic bread, chocolate cake rolls). Participants were also given a snack box, which contained four snacks representing high-fat savoury, low-fat savoury, high-fat sweet, low-fat sweet Food was measured to the nearest 0.1g.		2590.7, SD = 143.9).
Dalton, Finlayson, Blundell and Hill [27] study 1	Cross-sectional	N = 80 staff, students, and local residents, 67.5% female. Age (M = 26.5 years, SD = 8.1). BMI (M = 24.2, SD = 4.3).		CoEQ.[25,26]	Standing height without shoes was measured to the nearest 0.5 cm using a stadiometer. Body weight was measured using an electronic balance and recorded to the nearest 0.1 kg.	Three CoEQ subscales were correlated with BMI. Craving control ($r = -0.31$, $p < 0.001$), positive mood ($r = -0.23$, $p < 0.01$), craving for sweet ($r = 0.23$, $p < 0.01$).	Three subscales were correlated with total EI. Craving control ($r = -0.20$, $p < 0.05$), positive mood ($r = -0.21$, $p < 0.05$) and craving for sweet ($r = 0.40$, $p < 0.001$).

					The ad libitum food intake task included six pre-weighed bowls of palatable high-fat snack foods (milk chocolate, chocolate finger biscuits, cookies, ready salted crisps, salted peanuts and flavoured tortilla chips). Each bowl was weighed.		
Dalton, Finlayson, Blundell and Hill [27] study 2	Cross-sectional	N = 50 staff, students, and local residents, 100% female. Age (M = 24.3 years, SD = 5.9). BMI (M = 27.1, SD = 5.4).		“”	“”	“”	“”
Dalton, Hollingworth, Blundell and Finlayson [28]	Cross-sectional	N = 30 staff, students, and local residents, 100% female. Age (M = 28.0 years, SD = 10.6). BMI (M = 23.1, SD = 3.0).		CoEQ.[25,26] SQ.[29] To determine whether participants were reliably low or high in satiety responsiveness changes in subjective ratings of	During an initial screening visit, standing height without shoes was measured to the nearest 0.5 cm using a stadiometer (Seca,	There was no significant difference in BMI for the low satiety phenotypes (M = 24.6, SD = 2.6) compared to the high satiety	The low satiety phenotype consumed for energy from the ad libitum lunch in the 25% (p < 0.02) and 35% RMR (p < 0.01)

		Ethnicity = 77% Caucasian.		hunger and fullness were recorded before and following consumption of four, fixed energy breakfasts.	Birmingham, UK). Body weight was measured using an electronic balance (Seca, Birmingham, UK) and recorded to the nearest 0.1 kg. Tests foods included a fixed energy breakfast (muesli, yoghurt, semi-skimmed milk, and honey) and ad libitum lunch (tomato and herb risotto, strawberry yoghurt, and garlic bread). Food was measured to the nearest 0.1g.	phenotypes (M = 22.7, SD = 3.1).	conditions compared to the high satiety phenotype. There were no differences in EI in the 20% RMR condition or 30% RMR condition.
de Witt Huberts, Evers and de Ridder [30] study 1	Cross-sectional	N = 57 university students, 100% female. Age (M = 20.91 years, SD = 2.0). BMI (M = 21.81, SD = 2.95).		RS.[20]	No information on how BMI was measured. Food intake was measured as a bogus taste test of four different snack types (two	BMI correlated significantly with restraint ($r = 0.49$, $p < 0.01$).	Restraint did not correlate significantly with total calorie intake ($r = 0.00$).

					high calorie, two low calorie).		
de Witt Huberts, Evers and de Ridder [30] study 2		N = 43, 100% female. Age (M = 22.67, SD = 2.84). BMI (M = 22.58, SD = 3.11).			Identical to study 1 except participants compared different brands of palatable snacks (chips, peanuts, cookies). For each food, participants were provided with two different brands.	BMI correlated significantly with restraint (r = 0.36, p < 0.05).	Restraint did not correlate significantly with total calorie intake (r = -0.16).
de Witt Huberts, Evers and de Ridder [30] study 3		N = 42, 100% female. Age (M = 20.57, SD = 2.70). BMI (M = 20.98, SD = 1.98).				BMI did not correlate significantly with restraint (r = 0.02).	Restraint did not correlate significantly with total calorie intake (r = -0.09).
Drapeau, Blundell, Therrien, Lawton, Richard and Tremblay [31]	Cross-sectional	N = 51, 45% female. Age (M = 37.80 years, SD = 7.3). BMI (M = 27.65, SD = 5.28).		TFEQ.[7] SQ.[32]	Height (bathing suit, without shoes), waist circumference and percentage body fat were assessed for each participant. There were three test meals (standardized breakfast, ad libitum lunch and ad libitum dinner). Lunch was a buffet style meal (e.g., ham, cheese, bread, salad,	In women, BMI was negatively correlated with SQ for PFC (r = 0.49, p< 0·02). In men, only BMI was positively correlated with SQ for fullness (r = 0.44, p < 0.02).	SQ for fullness was the only subscale that was significantly correlated with total EI (r = -0.42, p < 0.001).

					biscuits) and dinner was a meal lasagne and granola bar. All foods were weighed before and after consumption		
Drapeau, Jacob, Panahi and Tremblay [33]	Cross-sectional	N = 100, 71% female. Age (M = 38.7 years, SD = 8.7). BMI (M = 33.2, SD = 3.6).	Data is included for the control groups only.	SQ.[32] Participants were divided in two satiety responsiveness groups using the SQ median. LSR group = mean SQ < 10.1 mm/100 kcal and HSR group = mean SQ ≥ 10.1 mm/100 kcal).	Body weight was measured to the nearest 0.1 kg using a digital scale, and height to the nearest 0.1 cm using a standard stadiometer. EI was measured using a buffet-type meal which included a variety of cold foods. All foods were weighed to the nearest 0.1g immediately before and after the test meal.	The LSR group did not significantly differ in BMI (33.7, SD = 3.9) from the HSR group (M = 32.6, SD = 3.3), p = 0.11.	EI in the low LSR group was not significantly different to the HSR group (p = 0.74).
Dweck, Jenkins and Nolan [34]	Cross-sectional.	N = 64 university students, 100% female.	Data is included for study 2	DEBQ.[16] Participants were divided into	Height and weight were measured using a	BMI was not correlated with emotional eating (r	There was no significant corelation

		Age (M = 18.8 years, SD = 0.4). BMI (M = 24.5, SD = 0.6). Ethnicity = 87.5% White.	because a control group is used.	emotional eating groups with classification of high emotional eating >2.6 and low emotional eaters <1.8. Participants scoring in between were classified as moderate emotional eaters. Only 12 participants scored below 1.8, so they were grouped with the moderate emotional eaters (low/moderate N = 36; high N = 28).	stadiometer and digital scale. After the no-stress (control condition) the participants were presented with a snack tray and water (cookies, cheese, candies, jellybeans, crackers and celery sticks). Each item was weighed before and after consumption.	= 0.163) or external eating (r = -0.178). BMI was correlated with restraint (r = 0.309, p < 0.05)	between emotional eating and EI in the control condition (r = -0.03)
Ely, Howard and Lowe [35]	Cross-sectional	N = 79, 100% female. Age (M = 20.70 years, SD = 2.60). BMI (M = 22.45, SD = 2.14).		PFS.[10]	Participant's height and weight were measured to calculate BMI. Participants were given a preload (oatmeal) before the taste test. Food intake was measured as the consumption of snack foods (e.g., cookies and popcorn),	BMI was significantly correlated with PFS scores (p = 0.028).	PFS did not significantly predict snack food intake (p = 0.53) but did significantly predict the oatmeal preload intake (p = 0.02).

Epstein, Lin, Carr and Fletcher [36]	Cross-sectional	N = 273, 50.92% female. Age (M = 34.40 years, SD = 10.70). BMI (M = 29.90, SD = 7.40). Ethnicity = 27% Caucasian.		TFEQ disinhibition.[7] High and low disinhibition levels were calculated as <6 = low disinhibition and ≥6 = high disinhibition.	The participant's weight and height were measured using a digital scale (TANITA Corporation of America Inc., Arlington Heights, IL) and a digital stadiometer (Measurement Concepts & Quick Medical, North Bend, WA). Before ad libitum food intake, participants were given a choice of two energy bar preloads. The taste test included six palatable, high-energy-density snack foods (potato chips, Doritos, M&M's, KitKat, and Butterfinger).	High TFEQ-D participants had significantly higher BMI's than low TFEQ-D participants ($p < 0.0001$).	Disinhibition was positively associated with EI.
Evers, de Ridder and Adriaanse [37] Study 3	Cross-sectional	N = 37 university students, 100% female.	Data is included for studies 3-5 because they use a control condition.	DEBQ.[16]	No information is included for how BMI was calculated. EI was	BMI did not differ between emotional (M = 22.19) and non-emotional	Emotional eating did not predict EI ($p = 0.45$).

		Age (M = 22.84 years, SD not given). BMI (M = 22.99, SD = 2.97).			assessed by bogus taste tests. Participants were provided with bowls containing different foods (chocolate, crisps, and cookies).	eaters (M = 23.75), p = 0.112.	
Evers, de Ridder and Adriaanse [37] Study 4		N = 57 university students, 100% female. Age (M = 20.80 years, SD not given). BMI (M = 21.80, SD = 2.46).			No information is included for how BMI was calculated. EI was assessed by bogus taste tests. Participants were provided with bowls containing different foods (chocolate, crisps, cookies and fruit).	BMI did not differ between emotional (M = 21.92) and non-emotional eaters (M = 22.19), p = 0.720.	Emotional eating did not predict EI (p = 0.76).
Evers, de Ridder and Adriaanse [37] Study 5		Study 3 and 4 results combined				BMI did neither differ between emotional (M = 21.71) and non-emotional eaters (M = 22.30) nor between studies, p = 0.134.	Emotional eating did not predict EI (p = 0.73).
Fedoroff, Polivy and Herman [38]	Cross-sectional	N = 91 university students, 100% female.	Data is included for control group (no cue and free	RRS.[22] Participants with scores ≤14 were classified as	The participant's height and weight were recorded.	Missing data	The EI of unrestrained eaters (M =

		Age (M = 20.86 years, SD = 5.13). BMI not given.	thoughts condition) only.	unrestrained eaters and those with scores of ≥15 were classified as restrained eaters.	After the control condition, participants were given a plate of four individual pizzas.		103.76, SD = 30.91) was larger than that of the restrained eaters (M = 89.06, SD = 29.38).
Finlayson, Arlotti, Dalton, King and Blundell [39]	Cross-sectional	N = 34 non-dieting adults, 100% female. Age (M = 24.10 years, SD = 5.83). BMI (M = 21.90, SD = 2.92).		BES.[2]	No information given for how BMI was calculated. A preload-test meal design was used. The preload consisted of jam on white bread with chocolate milk. The ad libitum test meal comprised of 8 different foods that were high or low in fat and sweet or non-sweet in taste (crisps, cheese, biscuits, salad, crackers, and fruit salad. Each plate was weighed before and after consumption.	Binge eating was positively correlated with BMI ($r = 0.37$, $p < 0.05$).	Before and after adjustment for BMI, binge eating was positively correlated with EI ($r = 0.35$, $p < 0.05$ and 0.35, $p < 0.05$).

Finlayson, Blundell, Bordes, Griffioen-Roose and de Graaf [40]	Cross-sectional	N = 30, 100% female. Age (M = 21.90 years, SD = 2.74). BMI (M = 22.7, SD = 2.19).		TFEQ.[7] The authors also sent data for BES, DEBQ and PFS.	BMI was calculated by measuring height, and weight using bioelectrical impedance. A pre-load study design was used (milk-based drinks). The test meal included 8 foods that differed in sweet or savoury taste (see Finlayson, Arlotti, Dalton, King and Blundell [39]).	BMI was significantly correlated with binge eating (r = 0.41, p < 0.05), emotional eating (r = 0.37, p < 0.05) and disinhibition (r = 0.44, p< 0.05). BMI was not significantly correlated with DEBQ restraint (r = 0.24), hunger (r = 0.21), external eating (r = 0.22) and power of food (r = 0.31).	Disinhibition was highly correlated with total food intake after consumption of the sweet preload (r = 0.59, p<0.001). There were no relationships between other TFEQ scales and food intake.
Guerrieri, Nederkoorn, Schrooten, Martijn and Jansen [41]	Cross-sectional	N = 46 university students, 100% female. Age (M = 20.4 years, SD = 2.00). BMI (M = 21.99, SD = 2.44).		RS.[20]	Participants self-reported their weight and height. A bogus taste test enabled EI to be tested. Participants were given chocolate, wine gums, marshmallows, and nuts. Food was weighed before and after consumption.	BMI significantly differed between high restrained eaters (M = 22.76, SD = 2.66) and low restrained eaters (M = 21.13, SD = 1.87), p < 0.05.	Restrained eaters (M = 443.76, SEM = 30 kcal) consumed significantly more calories than the unrestrained eaters (M = 276.61, SEM = 32 kcal).

Haynes, Lee and Yeomans [42]	Cross-sectional	N = 80 staff and university students, 100% female. Age (M = 23.28 years, SD = 12.17). BMI (M = 22.23, SD = 5.69).	Data is included for the control condition (no-stress).	TFEQ.[7] Women were categorised a priori as high or low on both TFEQ-R and TFEQ-D, according to whether they fell above or below the median on both measures determined from a previous sample of 150 women from the same population.	Weight and height were recorded in the laboratory. Breakfast consisted of either yogurt or cereal. The test meal served at lunch comprised of cheese sandwiches, egg sandwiches, cheese, crisps, tomato, cake, chocolate, and cookies. Each food item was weighed in its container to the nearest 0.1 gram before and after the test meal.	BMI was not significantly different across the four different TFEQ-R and TFEQ-D categories.	LR-HD consumed significantly more food than HR-HD ($p < 0.05$) and marginally more food than HR-LD ($p = 0.08$) and LR-LD ($p = 0.08$.)
Herhaus and Petrowski [43]	Cross-sectional	N = 50 adults with Obesity, 52% female. Age (M = 37.84 years, SD = 12.65). BMI (M = 33.63, SD = 3.94).	Data is included for the control condition (resting).	DEBQ.[16] Participants were split into high (N = 24) and low restrained eating (N = 26).	No data included for how BMI was calculated. The test food included four cheese sandwich halves, 12 biscuits, a fizzy drink and water. Food and	There were no significant differences in BMI between the LR group (M = 33.48, SD = 4.08) and the HR group (M = 33.78, SD = 3.85), $p = 0.79$.	There were no significant differences in EI between the HR group and the LR group ($p = 0.74$).

					beverages were weighed.		
Herman and Mack [20]	Cross-sectional	N = 45 university students, 100% female. Age not given. BMI not given.		RS.[20]	Weight and height were measured by the experimenter to calculate BMI. Participants were assigned to either a no preload condition, 1 preload or 2 preload (milkshakes). The following taste test comprised of 3 contained of ice cream (chocolate, vanilla, and strawberry). The ice creams were weighed before and after consumption.	Obese participants showed slightly more overall restraint, but the difference was not significant.	There was a significant positive correlation between restraint and EI in the 2 preload condition (r = 0.38). There was a weak positive correlation between restraint and EI in the 1 preload condition (r = 0.14). There was a negative correlation between restraint and EI in the no preload condition (r = -0.28). For normal weight participants, the HR group consumed more after the milkshake preload than after no preload. LR subjects

							consumed decreasing amounts of ice cream as a function of the size of the preload. Adding the data of participants with obesity did not substantially alter the results.
Herman, Polivy and Silver [22]	Cross-sectional	N = 80 university students, 100% female. Age not given. BMI not given.	Data is included for the unobserved (control) condition.	RRS.[22] Participants scoring ≤18 on the revised version of the scale were classed as unrestrained, and that subjects scoring >18 were classed as restrained.	The experimenter measured the weight and height of participants. A 5oz or 15oz preload was given to the participants. The ad libitum test meal consisted of four bowls containing cashews, peanuts, almonds and sunflower seeds. The experimenter re-weighed the four bowls.	Missing data	Restrained eaters ate significantly more nuts than unrestrained eaters ($p < 0.01$).
Higgs, Williamson	Cross-sectional	N = 73 students, 100% female.	Data is only included for study 2 because this	DEBQ restraint.[16] TFEQ disinhibition.[7]	The participant's weight and height were measured. EI	BMIs of the participants did not	There was no significant effect of restraint or

and Attwood [44]		Age (M = 20 years, SD = 1.71). BMI (M = 21.00, SD = 1.45).	study measured EBT and reported data for the outcomes.	Participants were allocated to one of four groups: LR/LD, HR/LD, HR/HD, LR/HD based on cut off scores of 2.3 for the DEBQ restraint scale and 8 for the TFEQ disinhibition scale.	was measured as popcorn intake. Three bowls of popcorn were placed on the table. The bowls were weighed after consumption.	significantly differ across conditions	disinhibition on popcorn intake.
Hofmann and Friese [45]	Cross-sectional	N = 63 university students, 100% female. Age (M = 21.6 years, SD = 2.4). BMI (M = 21.80, SD = 2.18).	Data is included for the control condition (no-alcohol)	TFEQ restraint.[7]	No information for how BMI was measured. Participants were given a package of M&Ms to taste test. Candies were weighed to determine consumption.	Missing data	Restraint was negatively correlated with candy consumption (r = -0.47, p < 0.05).
Hopkins, Michalowska, Whybrow, Horgan and Stubbs [46]	Cross-sectional	N = 59, 49% female. Age (M = 42.7 years, SD = 13.6). BMI (M = 26.1 years, SD = 3.8).	Data from only study 1 is included because study 2 does not include the associations between eating behaviour traits and EI or BMI.	DEBQ.[16]	Height was measured using a portable stadiometer and body weight was measured after voiding to calculate BMI. Food intake was measured using a laboratory	No subscales of the DEBQ were correlated with BMI. Restraint (r = -0.13), External eating (r = -0.48), emotional eating (r = 0.13).	Restraint was negatively correlated with covert LWI (r = -0.31, p < 0.05). External eating (r = 0.06) and emotional eating (r = 0.06) were not correlated with covert LWI.

					weighed intake method (LWI). A re-analysis of the data used only covert EI as the outcome variable to reduce the potential of an observer contaminating results.		
Jansen [47] study 1	Cross-sectional	N = 30, 100% female. Age (M = 23.5 years, SD = 5.85). BMI (M = 25.55, SD = 6.30).		DEBQ.[16] The participants were classified as restrained or unrestrained eaters based on the median split score on the DEBQ restraint scale.	Weight and height were measured. The taste test involved 10 large pre-weighed dishes containing: nuts, smarties, peanuts, marshmallows, unsalted peanuts, sugared peanuts, chocolate nuts, liquorice, shanghai nuts and cake. The remaining food was weighed.	The restrained and unrestrained groups did not differ in BMI.	There was a marginally significant difference in EI between the restrained and unrestrained groups ($p = 0.06$), with restrained individuals eating more than unrestrained individuals.
Jansen [47] study 2	Cross-sectional	N = 42, 100% female. Age (M = 20.6 years, SD = 2.05).		DEBQ.[16] Participants scoring ≥3.3 were classed as restrained (N = 17),	Weight and height were measured. The taste test consisted of ice	The restrained sample had a significantly higher BMI than the	The restrained eaters ate significantly more ice cream than the

		BMI (M = 22.2, SD = 1.65).		whereas scorers <2.9, (N = 25) were classed as unrestrained.	cream (chocolate, strawberry, and vanilla).	unrestrained sample ($p < 0.001$)	unrestrained eaters ($p < 0.03$)
Jansen, Merckelbach, Oosterlaan, Tuiten and Van Den Hout [48]	Cross-sectional	N = 40 staff and university students, 100% female. Age (M = 25.5 years, SD = 8.1). BMI (M = 22.8, SD = 2.7).		RS.[20] Participants were classified as restrained or unrestrained based on the median split score on the RS.	Each participant's weight and height were measured. EI was measured through consumption of ice cream (strawberry, chocolate, and vanilla).	Restrained participants had a significantly larger BMI (M = 24.2, SD = 2.6), than unrestrained participants (M = 21.5, SD = 1.9) $p < 0.001$.	There was no main effect of restraint on EI.
Kakoschke, Kemps and Tiggemann [49]	Cross-sectional	N = 144 university students, 100% female. Age (M = 20.20 years, SD = 2.64). BMI (M = 22.90, SD = 5.11).		DEBQ external eating.[16]	No information for how BMI was measured. Food intake was measured as the amount of snacks consumed. The taste test consisted of M&M's, biscuits, crisps, and pretzels.	Missing data	External eating was significantly correlated with sweet food intake ($r = 0.28$, $p < 0.01$) but not savoury food intake ($r = 0.08$).
Lattimore and Maxwell [50]	Cross-sectional	N = 119 university students, 100% female. Age (M = 23.60 years, SD = 7.70). BMI (M = 23.40, SD = 3.6).	Data is included for the one control condition (low cognitive load, colour name stroop test).	RS.[20]	Participant's self-reported height and weight. The taste test included portions of snack foods (crisps, biscuits, dried	Missing data	There was no significant effect of restraint on EI

					fruits). Food was weighed after consumption.		
Long, Meyer, Leung and Wallis [51]	Cross-sectional	N = 27 university students, 100% female. Age (M = 21.10 years, SD = 3.64). BMI (M = 23.80, SD = 3.33).	Data is included from only the control condition.	EDI-2.[52]	Participants were weighed with digital scales and their height was measured using a stadiometer. The ad libitum test meal consisted of pasta and Dolmio pasta sauce. EI was measured by weighing food before and after consumption	Missing data	No significant correlations were found between EDI-2 and EI (Bulimia r = 0.01, Drive for Thinness, r = 0.09, Body Dissatisfaction, r = 0.06, all p > .05.)
Martin, O'Neil, Tollefson, Greenway and White [53]	Cross-sectional	N = 91 adults with overweight and obesity, 81% female. Age (M = 43.20 years, SD = 10.70). BMI (M = 35.1 years, SD = 2.8). Ethnicity = 73.6% Caucasian.	Data included is from baseline measures.	FCI.[54]	No data given for the measurement of BMI. A laboratory-based taste test consisted of four types of food (baked potato chips, jellybeans, regular potato chips and M&M's). The serving bowls were weighed after consumption.	Missing data	There was a significantly positive correlation between FCI score and total EI (r = 0.22, p < 0.05). FCI significantly correlated more specifically with intake of regular potato chips (r = 0.23, p < 0.05)

							and M&M's (r = 0.23, p < 0.05).
Martin, Williamson, Geiselman, Walden, Smeets, Morales and Redmann Jr [55]	Cross-sectional	N = 36 staff and university students, 72% female. Age (M = 22.42 years, SD = 6.33). BMI (M = 22.05, SD = 2.15). Ethnicity = 88.9% White.		TFEQ restraint and disinhibition.[7]	Self-reported height and weight were used to calculate BMI for three LR females. All other participants' height and weight were measured at the PBRC by research staff. Two types of test meal were used, one sandwich type (chicken salad) or three types of sandwich (chicken salad, turkey and ham).	There were no significant differences in BMI across restraint or disinhibition conditions.	EI did not differ as a function of restraint (p = 0.21).
McNeil, Lamothe, Cameron, Riou, Cadieux, Lafreniere, Goldfield, Willbond, Prud'homme and Doucet [56]	Cross-sectional	N = 246, 86.6% female. Age (M = 31 years, SD = 11). BMI (M = 26.50, SD = 6.00).		TFEQ.[7]	Participants in all studies were weighed to the nearest 0.1 kg with a digital scale. Their standing height without shoes was measured to the nearest centimetre using a wall	Missing data	TFEQ-H was positively correlated with daily EI (r = 0.34, p = 0.01). TFEQ-R and TFEQ-D were not correlated with daily EI.

					stadiometer. Acute EI was measured with either a test meal selected from a validated food menu or a buffet in all studies. Daily EI was calculated based on EI during the standard breakfast, the ad libitum test meal inside the laboratory, and from containers that were taken home for the remainder of that day. The participants brought back the containers the following day, at which time all remaining food items were weighed.		
Myhre, Buchwald, Kratz, Goldberg,	Cross-sectional	N = 32 twins, 100% female. Age (M = 31.5 years, SD = 13.6).		RRS.[22] Restrained eaters scored ≥15 on this scale.	Participants self-reported their weight and height. A standardised	There were no significant differences in BMI between the	There were also no significant differences in EI between the

Polivy, Melhorn, Schur and Cummings [57]		BMI (M = 23.50, SD = 3.10).			breakfast drink was given to the participants. At midday participants consumed a preload milkshake and were then presented with the ad libitum taste test (turkey sandwich, tortilla chips, fruits, and cookies). At dinner the meal consisted of teriyaki chicken, rice, peas, salad, roll, milk, and cookie.	restrained compared to unrestrained eaters.	restrained compared to unrestrained eaters (p = 0.83).
Nasser, Gluck and Geliebter [58]	Cross-sectional	N = 22 adults with Obesity, 100% female. Age (M = 31.25 years, SD = 7.50). BMI (M = 34.35, SD = 4.30).	Data is included for binge eaters and controls but not BED patients.	BES.[2] Controls were classified as no binge eating episodes. Binge Eaters were classified as having fewer than two binge episodes/week for 6 months.	No data given for how BMI was measured. The test meal consisted of Boost, a nutritionally complete food with water. Food was weighed before and after consumption	There were no significant differences in BMI between binge eaters and controls.	There were also no significant differences in EI between binge eaters and controls.

Nolan-Poupart, Veldhuizen, Geha and Small [59]	Cross-sectional	N = 20, 50% female. Age (M = 27 years, SD = 6.20). BMI (M = 25.00, SD = 4.00).		TFEQ.[7] PFS.[10]	Height and weight were measured after a mock scan. Participants first consumed a milkshake preload. After fMRI scans, the participants were offered a full bottle of chocolate milkshake. The amount consumed was weight after.	Missing data.	No scales (TFEQ or PFS) were significantly correlated with milkshake consumption.
Oliver, Wardle and Gibson [60]	Cross-sectional	N = 34 (control group), 61.76% female. Age (M = 26.10 years, SD = 5.45). BMI (M = 22.4, SD = 2.45).	Data is included for the control condition (non-stressful task).	DEBQ.[16] Participants were divided based on a median split into high and low emotional and restrained eaters.	Height and weight were recorded. Participants ate freely from a buffet lunch which included foods such as bread, butter, tomatoes, cheese, crisps, peanuts, fruits, jam, and biscuits. The foods were weighed before and after consumption.	Missing data.	There were no significant differences in EI between restrained and unrestrained eaters. There were also no significant differences between emotional and non-emotional eaters.
Ouwens, van Strien and van der Staak [61]	Cross-sectional	N = 209 university students, 100% female.		DEBQ.[16] RS.[20]	Participant's height and weight were measured.	Missing data	There were no significant correlations with

		Age (M = 20.90 years, SD = 2.40). BMI (M = 23.00, SD = 3.18).		TFEQ.[7]	109 participants were randomly assigned to the preload condition (strawberry milkshake). The other 100 participants were randomly assigned to the no preload condition. After preload or no preload, participants were given three pre-weighed plates of cookies to taste. The plates were weighed after consumption.		restraint scales (TFEQ, DEBQ or RS) and cookie consumption. However, there were significance positive correlations between TFEQ disinhibition ($r = 0.20$, $p < 0.001$) and cookie consumption as well as DEBQ disinhibition ($r = 0.25$, $p < 0.001$) and cookie consumption.
Peluso [62]	Cross-sectional	N = 24, 50% female. Age (Median = 24.00). BMI (Median: = 29.10).	Data is included for the control condition and measures taken at baseline.	TFEQ.[7]	Height and weight were measured during the baseline assessments. The control test meal consisted of pre-portioned and packaged macaroni cheese, which was weighed before	There were no significant differences between BMI and levels of restraint.	Levels of restraint were not significantly correlated with EI

					and after consumption.		
Raspopow, Abizaid, Matheson and Anisman [63]	Cross-sectional	N = 46 university students (control condition), 100% female. Age (M = 20.72 years, SD = 2.43). BMI not given.	Data is included for the control condition (non-stressful event)	DEBQ emotional eating.[16]	The height and weight of participants was measured at the end of the laboratory session. Half of the participants in each condition were provided with 6 pre-weight miniature brownies and were allowed to eat freely.	Emotional eating was not correlated with BMI ($r = 0.16$) was but positively correlated with body fat ($r = 0.23$).	Emotional eating was not significantly correlated with food intake ($r = 0.33$).
Rideout, McLean and Barr [64]	Cross-sectional	N = 62 college students, 100% females. Age (M = 21.60 years, SD = 2.5). BMI range = 18.5 to 25).		TFEQ restraint.[7]	No information for how BMI was measured. Participants consumed ad libitum breakfast in the laboratory and lunch and dinner were also consumed in the laboratory if possible. Any meals that could not be consumed in the laboratory	BMI did not differ significantly between groups.	The EI of restrained eaters was significantly less than that of unrestrained eaters (M = 2,095, SD = 569 kcal vs M = 2,423, SD = 475 kcal, $p < 0.05$).

					were taken away, consumed, returned, and re-weighed.		
Robinson and Haynes [65]	Cross-sectional.	N = 111, 50.45% female. Age (M = 31.10 years, SD = 11.80). BMI (M = 26.80, SD = 3.60).	Data is pooled from 3 studies.	DEBQ.[16]	Weight and height were measured using a digital scale and stadiometer to calculate BMI. The test foods over the 3 studies included pasta with tomato sauce, chicken curry, desserts, pesto pasta, carbonara and Bolognese. Data from lunchtime intake of the three studies was combined to create total calorie intake.	No subscales of the DEBQ were correlated with BMI: restraint, (r = 0.095), emotional eating (r = 0.074), external eating (r = -0.123).	No subscales of the DEBQ were correlated with total calorie intake: restraint (r = -0.026), emotional eating (r = 0.084), external eating (r = 0.058).
Rolls, Castellanos, Shide, Miller, Pelkman, Thorwart and Peters [66]	Cross-sectional	N = 67, 65.67% female. Age (M = 24.83 years, SD not given). BMI (M = 26.10, SD not given).		TFEQ.[7] A score of ≥9 on the restraint factor of the TFEQ (high restraint) for women and < 9 (low restraint). For men,	Weight and height measurements were taken in shorts and t-shirt to determine BMI. Participants consumed 3	There were no significant differences in BMI across restraint groups.	EI at lunch was not affected by restraint.

				≥8 (high restraint) and < 8 (low restraint).	preloads (three soups that differed in fat) and no preload over 4 test sessions. Energy intake was calculated as the intake from the lunch buffet meal (e.g., turkey, cheese, salad, cookies).		
Ruddock, Field and Hardman [67]	Cross-sectional	N = 60, 100% female. Age (M = 23.92 years, SD = 9.38). BMI (M = 23.72, SD = 4.57).		TFEQ restraint and disinhibition.[7]	Participant's weight and height were assessed to provide BMI. Participants completed a tapping task, a lunch meal (sandwiches) and then consumed chocolate and grapes ad libitum. Food intake was measured as the amount of grapes and chocolate consumed.	BMI did not correlate with restraint or disinhibition.	Disinhibition was a significant positive predictor and restraint a significant negative predictor of calorie intake.
Ruzanska and Warschburger [68]	Cross-sectional	Middle-aged adults, N = 55 middle aged		IES-2.[69]	Height and weight were assessed with validated	IES-2 was negatively	IES-2 was not significantly associated with

		adults, 76.4% female. Age (M = 59.29 years, SD = 5.73). BMI (M = 26.88, SD = 5.11).			devices. Food intake was measured using a taste test. The foods consisted of low-calorie foods (apples, carrots) and high calorie foods (chocolate, peanuts). The foods were weighed before and after consumption.	correlated with BMI (r = -0.399).	total food intake. In addition, IES-2 subscales were not associated with total food intake. However, when sex was added as a covariate, the eating for physical reasons subscale was significantly associated with healthy food intake.
Schoch and Raynor [70]	Cross-sectional	N = 38, 100% female. Age (M = 20.30 years, SD not given). BMI (M = 22.43, SD not given).		TFEQ restraint.[7] Scores of ≤10 were classed as low restraint. Scores of ≥13 were classed as high restraint.	Height and weight measures were taken on an electronic scale with stadiometer to calculate BMI. Food intake was measured as the consumption of sandwich wraps, chips, fruit, and ice cream.	BMI significantly differed across restraint groups with low restraint participants having lower BMI's (M = 21.7, SD = 1.8) than high restraint participants (M = 23.1, SD = 1.4), p < 0.01.	The high restraint participants consumed significantly less energy (M = 437, SD = 169 kcal) than the low restraint participants (M = 559, SD = 207 kcal), p < 0.05.
Schotte, Cools and McNally [71]	Cross-sectional	N = 60 university students, 100% female.	Data is included for the control condition (neutral film)	RRS.[22] Participants who scored below the sample median (<	No information given on how BMI was measured.	There was a significant correlation between	Restrained eaters ate less during the neutral film than unrestrained

		Age (M = 29.60 years, SD = 9.90) BMI (M = 23.90, SD = 0.9).		17) were classified as low restraint and those who scored above it, as high restraint.	Participants were given a pre-weighed bag of popcorn. The amount of popcorn consumed was the measure of food intake.	restraint and BMI (r = 0.36, p < 0.01).	eaters, but this effect was non-significant.
Schulte, Sonneville and Gearhardt [72]	Cross-sectional	N = 44 adults with overweight and obesity, 100% female. Age (M = 30.75 years, SD = 4.20). BMI (M = 33.68, SD = 5.46). Ethnicity = 52.3% White.		YFAS 2.0.[73] Participants were split by YFAS score into a food addiction group (N = 17) and control group (N = 27).	Height and weight were measured in the laboratory to calculate BMI. Participants completed a taste test task which consisted of 14 foods e.g., chocolate, cheese, applies, pizza and rice. After the taste test they were welcome to consume left over food. Foods were weighed before and after consumption.	BMI did not differ between the food addiction group and controls.	There were no differences in food consumption between the food addiction group and controls.
Shapiro and Anderson [74]	Cross-sectional	N = 86 university students (control group).	Data is included for the control condition (no-stress)	RS.[20] Using the customary cut-off of 16, 99 participants were	Height and weight were measures using a Detecto scale. The taste	Missing data	Restrained eaters consumed significantly more calories from

		Age (M = 19.30 years, SD = 3.0). BMI (M = 24.00, SD = 4.6). Ethnicity = 69.3% Caucasian.		defined as non-restrained, and 54 participants were defined as restrained eaters.	test consisted of several foods that encompassed a variety of food categories e.g., cookies, grapes, pretzels and carrots. The food was weighed.		grapes than non-restrained eaters ($p < 0.05$). Un-restrained eaters consumed significantly more pretzels than restrained eaters ($p < 0.01$). However, overall, there was no main effect of restraint.
Sim, Lee and Cheon [75]	Cross-sectional	N = 21 physically inactive men, 100% male. Age (M = 24 years, SD = 2.00). BMI (M = 26.7, SD = 1.80).	Data is included for the control condition (video watching)	DEBQ restraint.[16] Classification was based on the cut off values of >3 for restrained eaters and <3 for unrestrained eaters.	No information given for how BMI was measured. To assess EI, participants were given two bags of crisps.	Missing data	The EI of unrestrained eaters was slightly higher than restrained eaters, but a re-analysis found this effect failed to reach significance ($p = 0.60$).
Smith, Geiselman, Williamson, Champagne, Bray and Ryan [76]	Cross-sectional	N = 124 university students, 100% female. Age (M = 22.60 years, SD = 6.20). BMI (M = 23.55, SD = 4.45). Ethnicity = 86.3% Caucasian.		TFEQ restraint and disinhibition.[7] Four groups were formed based on restraint and disinhibition scores (LR/LD, HR/LD, LR/HD, HR/HD)	Height and weight were measured to calculate BMI. A pre-load study design was utilised whereby participants in the pre-load condition tasted four	The mean BMI of the LR/HD group was significantly larger than the LR/LD group and the HR/LD group (all p values < 0.05). Furthermore, the mean BMI of the	Participants scoring high in disinhibition ate significantly more macaroni and beef than participants scoring low in disinhibition.

					puddings. After the pre-load or no preload, participants were served a large dish of macaroni and beef.	HR/HD group was significantly larger than the mean BMI of the LR/LD group ($p < 0.05$)	There was no main effect of restraint on food intake.
Stice, Fisher and Lowe [77] study 1	Cross-sectional	N = 64 university students, 100% female. Age (M = 19.10 years, SD = 3.2). BMI (M = 24.60, SD = 6.0). Ethnicity = 69% White	Studies 1-2 are included because they use lab-based measures of EI. For study 2, data is included for the 59 participants who did not meet the DSM-IV for bulimia or BED.	RS.[20] TFEQ restraint.[7]	A direct reading stadiometer and digital scale were used to measure height and weight. EI was measured as total intake of three types of cookies.	No measures of dietary restraint were significantly correlated with BMI.	Restraint measures were positively correlated with caloric intake ($r = 0.30$), but this relationship was insignificant.
Stice, Fisher and Lowe [77] study 2		N = 59, 100% female. Age (M = 41.20, SD = 10.90). BMI (M = 31.30, SD = 7.3). Ethnicity = 73% White.		TFEQ restraint.[7] EDEQ-R.[78]	Height and weight were measured. A standard breakfast was served to participants (cereal, fruit, bread roll and decaffeinated tea or coffee). Food items were weighed before and after consumption.	Missing data	TFEQ–R and EDEQ–R did not show significant correlations with caloric intake among the participants with no eating disorder ($r = 0.02$ and -0.18)
Stice, Sysko, Roberto and Allison [79]	Cross-sectional	N = 94 (control condition), 50% female.	Data is only included for study 1 (no calorie label	TFEQ restraint.[7]	No information for how BMI was measured. In the	Missing data	Restraint was not significantly correlated with

		Age (M = 30.22 years, SD = 12.54). BMI (M = 25.46, SD = 6.82).	condition) because this is the only study that fulfilled the inclusion criteria.		no calorie condition, participants were presented a menu without calorie labels. The dishes were weighed before and after consumption.		caloric intake in the no calorie label condition (r = -0.14).
Stinson, Votruba, Venti, Krakoff, Gluck and Perez [80]	Cross-sectional	N = 82, 35.37% female. Age (M = 38, SD = 12). BMI (M = 29, SD = 7).		TFEQ.[7] BES.[2]	No information included for how BMI was measured. A vending machine paradigm was used to measure EI.	Disinhibition (r = 0.34, p < 0.01), hunger cues (r = 0.23, p < 0.05) and BES (r = 0.26, p < 0.05) were significantly correlated with BMI. Restraint was not correlated with BMI (r = 0.10).	Restraint was significantly correlated with EI (r = -0.29, p < 0.01). Disinhibition (r = 0.11), hunger cues (r = 0.20) and BES (r = 0.08) were not significantly correlated with EI.
van Strien, Donker and Ouwens [81] study 3	Cross-sectional	N = 203, 100% female. Age (M = 20.88, SD = 2.39). BMI (M = 22.93, SD = 3.04).	Data from Study 1 and 3 are included because they measure BMI and EI.	DEBQ.[16]	BMI was measured objectively. Food intake was the sum of the grams of chocolate cookies eaten.	Missing data	Food intake was significantly correlated with DEBQ-positive (r = 0.16, p < 0.01), DEBQ-negative (r = 0.22, p < 0.001) and DEBQ-external (r = 0.23, p < 0.001)

Vainik, Eun Han, Epel, Janet Tomiyama, Dagher and Mason [82]	Cross-sectional	N = 165 total (n = 51 for EI data) university students, 64.24% female. Age not given for Canadian sample. BMI: 22.6 (SD = 3.15).	Data included for Canadian University student sample because this sample measured BMI and EI.	RED-X5, RED-9, RED-13.[82]	BMI was computed from self-reported height and weight. Food intake was measured as the consumption of Lays potato chips, measured in grams by weighing the bowl before and after the session.	BMI was significantly correlated with all RED questionnaires. RED-X5 ($r = 0.18$, $p < 0.05$, RED-9 (0.17, $p < 0.06$), RED-13 ($r = 0.18$, $p < 0.05$).	Food intake was significantly correlated with all RED questionnaires. RED-X5 ($r = 0.31$, $p < 0.05$), RED-9 ($r = 0.35$, $p < 0.05$), RED-13 ($r = 0.32$, $p < 0.05$).
van Strien, Herman, Anschutz, Engels and de Weerth [83]	Cross-sectional	N = 45 university students, 100% female. Age (M = 21.80 years, SD = 3.60). BMI (M = 23.30, SD = 3.70).	Only data from study 1 are included because they use a control condition.	DEBQ.[16]	Weight and height were measured to calculate BMI. Food intake was measured as the intake of two pre-weighed bowls of crisps and M&M's.	A re-analysis of the summary data found that high emotional eaters had a larger BMI than low emotional eaters ($p = 0.035$).	Missing data
van Strien and Ouwens [84]	Cross-sectional	N = 31 adults with moderate obesity, 100% female. Age (M = 21.65 years, SD = 3.32). BMI (M = 28.63, SD = 2.86).		DEBQ.[16]	Weight and height were measured. Half of the participants were randomly assigned to a preload condition (milkshake). Food intake was	Missing data	Emotional eating was positively correlated with food consumption ($r = 0.40$, $p < 0.05$). Restraint and external eating were not correlated with

					measured as the consumption of chocolate cookies.		food consumption (r = 0.01 and r = 0.19).
Vijayvargiya, Chedid, Wang, Atieh, Maselli, Burton, Clark, Acosta and Camilleri [85]	Cross-sectional	N = 62 adults with obesity, 91.94% female. Age (M = 38 years, SD = 10.10). BMI (M = 36.80, SD = 4.80).		WEL.[86]	No information for how BMI was measured. Participants consumed a liquid preload then were invited to eat an ad libitum buffet meal (lasagne, vanilla pudding, and milk). The amount of food consumed was analysed using validated software.	Missing data	Buffet meal intake was significantly correlated with total WEL score ($r = -0.26$, $p < 0.05$) and the social pressure subscale of WEL ($r = -0.44$, $p < 0.001$).
Visona and George [87]	Cross-sectional	N = 36 university students who are overweight, 100% female. Age (M = 26 years, SD = 7). BMI (M = 27, SD = 3).	Data is included for the control group (non-exercise condition).	TFEQ restraint.[7] High restraint >10, low restraint ≤10 Three groups were created: dieting high-restraint (D-HR), non-dieting high-restraint (ND-HR) and non-dieting low-restraint (ND-LR).	BMI was based on self-reported weight and height. After the non-exercise condition, participants chose their lunch meal ad libitum from a wide variety of foods e.g., fast food, sandwiches, pastry, chips, and cookies. The	There were no significant differences in BMI between restraint groups.	Re-analysis of the data found that while high restrained eaters ate less than low restrained eaters, the difference was non-significant ($p = 0.32$).

					foods were weighed and recorded after consumption.		
Wallis and Hetherington [88]	Cross-sectional	N = 38 university students, 100% female. Age (M = 24.38 years, SD not given). BMI (M = 24.10, SD not given).	Data is included for the control condition (neutral words).	DEBQ.[16] Participants were allocated to one of four groups based on the median split score of 2.8 for restraint and emotional eating (HR/HE, HR/LE, LR/HE, LR/LE).	Weight and height were measured using a stadiometer and portable scales to calculate BMI. Food intake was measured as the consumption of chocolate buttons.	There were no significant differences in BMI across the four restraint/emotional groups.	In the control condition, the LR/LE group had the greatest food intake (M = 52.1, SD = 23.4). However, a re-analysis combining groups into high and low restraint found no significant difference in EI ($p = 0.12$).
Wallis and Hetherington [89]	Cross-sectional.	N = 26, 100% female. Age (M = 27.40 years, SD = 16.83). BMI = 24.25, SD = 5.66).	Results from study 2 are included because a control condition is used.	DEBQ emotional and restraint.[16] Participants were allocated to high and low groups on restrained and emotional eating using a median split of scores (2.6 for restraint and 2.5 for emotional eating).	BMI was based on self-reported weight and height. Two snack foods were presented on a tray (chocolate and dried fruit).	The high and low emotional groups did not differ significantly in BMI. However, the high restraint group had a significantly higher BMI than the low restraint group ($p < 0.05$).	Missing data for effects in the control condition.

Wardle and Beales [90]	Cross-sectional	N = 50 volunteers from a university, 100% female. Age (M = 26.34 years, SD = 9.47). BMI (M = 21.51, SD = 2.42).		DEBQ restraint.[16] Restraint classification was based on the median split of scores.	Weight and height were measured to calculate BMI. Half of the subjects were given a preload (two milkshakes). Food consumption was measured as the amount of food eaten during the taste test, which consisted of three two-litre containers of ice-cream. The containers were weighed before and after consumption.	The correlation between restraint and BMI did not reach significance ($r = 0.18$, $p = 0.10$).	The restraint group showed a significant positive correlation with food intake ($r = 0.24$, $p < 0.05$).
Westenhoefer, Broeckmann, Münch and Pudel [91]	Cross-sectional	N = 133 young adults from a university and hospital, 100% female. Age (M = 25.70 years, SD = 5.73). BMI (M = 21.40, SD = 1.90).		TFEQ.[7] Group Classifications were based according to the medians of a representative sample of the German population. RRS[22] to assess flexible and rigid	No information for how BMI was measured. 65 participants were given a preload (banana milkshake). Then participants were given pre-weighed containers of ice-cream (vanilla,	BMI was positively correlated with TFEQ-R ($r = 0.18$, $p < 0.05$), TFEQ-D ($r = 0.23$, $p < 0.01$), TFEQ-H ($r = 0.17$, $p < 0.05$) and rigid control ($r = 0.24$, $p < 0.01$). BMI was not significantly correlated with	In the no-preload condition, restraint was not correlated with ice-cream intake ($r = 0.03$). However, disinhibition ($r = 0.30$, $p < 0.01$) and hunger ($r = 0.27$, $p < 0.05$) were correlated

				control of eating behaviour.	chocolate, and strawberry).	flexible control (r = 0.03, p = 0.70).	with ice-cream intake. In the preload condition, restraint was uncorrelated with ice-cream intake (r = 0.09). Again, both disinhibition (r = 0.48, p < 0.001) and hunger (r = 0.28, p < 0.05) were correlated with ice-cream intake. There was a significant main effect of rigid restraint on ice-cream intake (p < 0.05) but no significant effect of flexible restraint.
Yeomans and Coughlan [92]	Cross-sectional	N = 96 staff and university students, 100% female. Age (M = 21.60 years, SD = 3.92). BMI (M = 22.40, SD = 3.92).	Data is included for the control condition (neutral mood).	TFEQ restraint and disinhibition.[7] Participants were categorised as high or low on both TFEQ-R and TFEQ-D, based on the median split from a	Participant's height and weight were measured to calculate BMI. Food intake was assessed by weighed consumption of	Women in the high TFEQ-D group had a larger BMI than those in the low TFEQ-D group (p < 0.05). There were no significant	The low TFEQ-R groups had larger food intakes than the high TFEQ-R groups, however a re-analysis of the data found the difference to be

				previous sample of 150 women from the same population.	two snack foods (popcorn and raisins).	differences in BMI between the TFEQ-R groups.	non-significant (p = 0.12). A re-analysis found no differences in food intake between high and low TFEQ-D groups (p = 0.73)
Yeomans, Tovey, Tinley and Haynes [93]	Cross-sectional	N = 40 staff and university students, 100% female. Age (M = 24.45 years, SD = 10.20). BMI (M = 22.65, SD = 5.38).		TFEQ restraint and disinhibition.[7] Participants were categorised as high (H) or low (L) on both TFEQ-R and TFEQ-D, based on the median split from a previous sample of 150 women from the same population.	Weight and height of all participants were recorded at the end of testing, to calculate BMI. Participants were served breakfast (cereal, milk, and orange juice). The food for the test meal consisted of pasta served with either an unseasoned (bland) or seasoned (palatable) tomato and onion sauce. Food was weighed automatically by a digital balance.	A re-analysis was conducted. BMI did not differ between TFEQ restraint groups. (p = 0.65). The BMI of the high disinhibition group was greater than that of the low disinhibition group (p = 0.05)	HD was associated with increased food intake response to palatability, whereas HR was associated with reduced sensitivity to palatability. The LR–HD group was more responsive to palatability than any other group.

Zambrowicz, Schebendach, Sysko, Mayer, Walsh and Steinglass [94]	Cross-sectional	N = 70 healthy controls with no prior eating disorder, 98.57% female. Age (M = 27.31 years, SD = 9.53). BMI (M = 22.60, SD = 3.00).	Data is only included for the control group.	TFEQ.[7] EDE-Q.[95]	No information as to how BMI was measured. Caloric intake was calculated based on grams consumed from multi-item test meals which included a range of foods (e.g., chicken, salad, cookies, sandwiches and crisps).	Missing data	Caloric intake was only correlated with TFEQ-restraint ($r = -0.32$, $p < 0.05$). Caloric intake was not correlated with TFEQ-hunger ($r = 0.20$, $p = 0.11$), TFEQ-disinhibition ($r = 0.21$, $p = 0.09$) or EDE-Q-restraint ($r = -0.23$, $p = 0.06$).
Zuraikat, Roe, Smethers, Reihart and Rolls [96]	Cross-sectional	N = 79, 69.62% female. Age (M = 33.90, SD = 12.70) BMI (M = 25.60, SD = 5.00). Ethnicity = 79% White.		AEBQ SR.[97]	Participants had their height and weight measured to calculate BMI. The experimental lunch consisted of pasta, salad, bread, and water. Intake was determined by weighing food before and after consumption.	Satiety responsiveness was correlated with BMI ($r = -0.19$) but this trend was not significant ($p = 0.087$). However, satiety responsiveness was significantly correlated with body weight ($r = -0.35$, $p < 0.001$).	Participants scoring low on satiety responsiveness increased their intake when they were served larger meals ($p < 0.0001$).

Note: BMI (body mass index weight (kg/m^2)), SD (standard deviation), BES (Binge Eating Scale), EI (Energy Intake), IES (Intuitive Eating Scale), MEQ (Mindful Eating Scale), TFEQ-R (Three Factor Eating Questionnaire Restraint), TFEQ-H (Three Factor Eating Questionnaire Hunger), TFEQ-D (Three Factor Eating Questionnaire Disinhibition), HD (High Disinhibition), LD (Low Disinhibition), HR (High Restraint), LR (Low Restraint), EDDS (Eating Disorders Diagnostic Scale), PFS (Power of Food Scale), EDAS (Eating Disorders Assessment Scale), DEBQ (Dutch Eating Behaviour Questionnaire), HE (High Emotional Eating), LE (Low Emotional Eating), HF (high fat), LF (low fat), HC (high carbohydrate), LC (low carbohydrate), RS (Restraint Scale), RRS (Revised Restraint Scale), CoEQ (Control of Eating Questionnaire), RMR (resting metabolic rate), SQ (Satiety Quotient), PFC (Prospective Food Consumption), HSR (High Satiety Responsiveness), LSR (Low Satiety Responsiveness), EBT (Eating Behaviour Traits), LWI (Laboratory Weighed Intake Method), EDI-2 (Eating Disorders Inventory). FCI (Food Craving Inventory), IES-2 (Intuitive Eating Scale 2), YFAS 2.0 (Yale Food Addiction Scale). EDEQ-R (Eating Disorder Examination Questionnaire—Restraint subscale), WEL (Eating Self-Efficacy), EDE-Q (Eating Disorders Examination Questionnaire, AEBQ SR (Adult Eating Behaviour Questionnaire Satiety Responsiveness subscale).

Figure S1. Forest plot of the effect of IES on BMI.

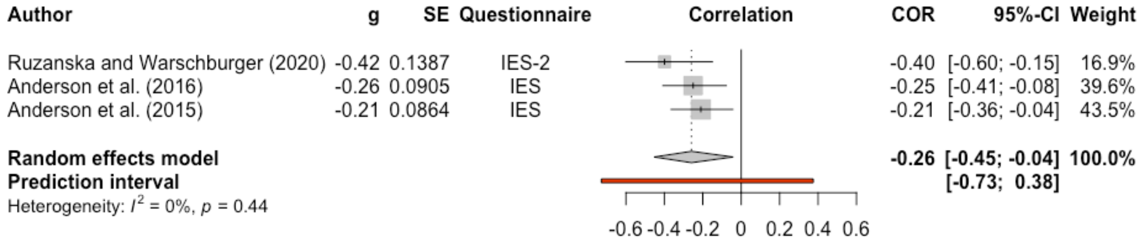


Figure S2. Forest plot of the effect of satiety responsiveness on BMI.

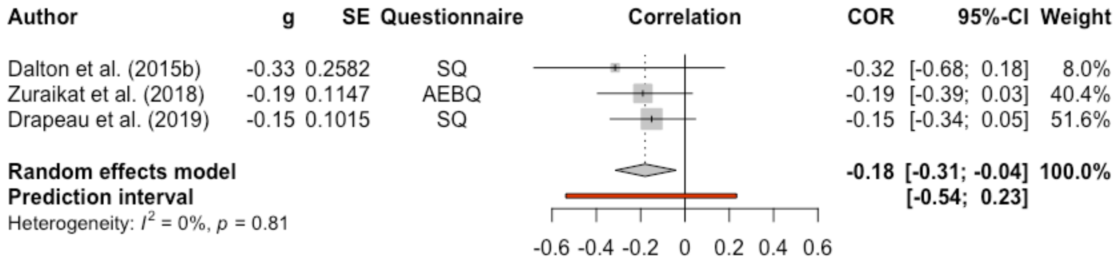


Figure S3: Funnel plot of the effect of restraint on EI.

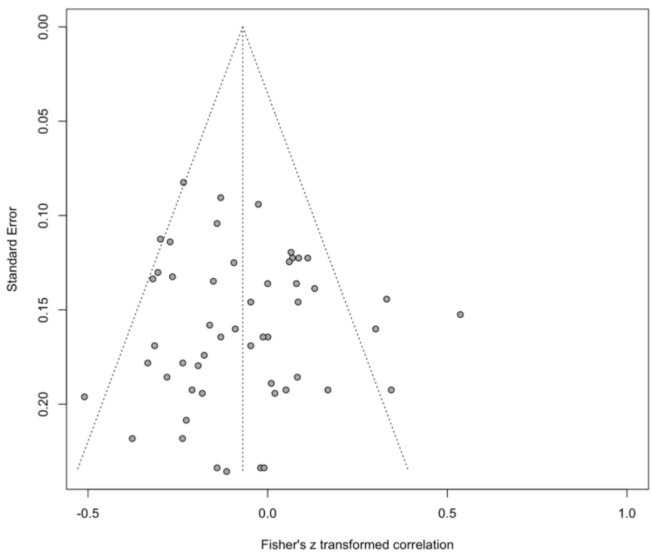


Table S3. Results of the subgroup-meta-analysis for the effect of restraint on EI, influenced by questionnaire type.

Questionnaire	k	*r*	95% CI	I^2
TFEQ	22	-0.16	-0.23, -0.10	16.9%
RS	10	0.09	-0.06, 0.23	44.6%
RRS	4	-0.12	-0.33, 0.12	0.0%
DEBQ	14	0.01	-0.09, 0.11	21.7%
EDE-Q	2	-0.21	-0.50, 0.13	0.0%

Table S4:

Results of a subgroup meta-analysis on the effects of restraint on EI influenced by a preload

Preload?	k	*r*	95% CI	I^2
No preload	45	-0.09	-0.15, -0.03	41.0%
Preload	10	0.04	-0.09, 0.16	0.0%

Figure S4: Funnel plot of the effect of restraint on BMI.

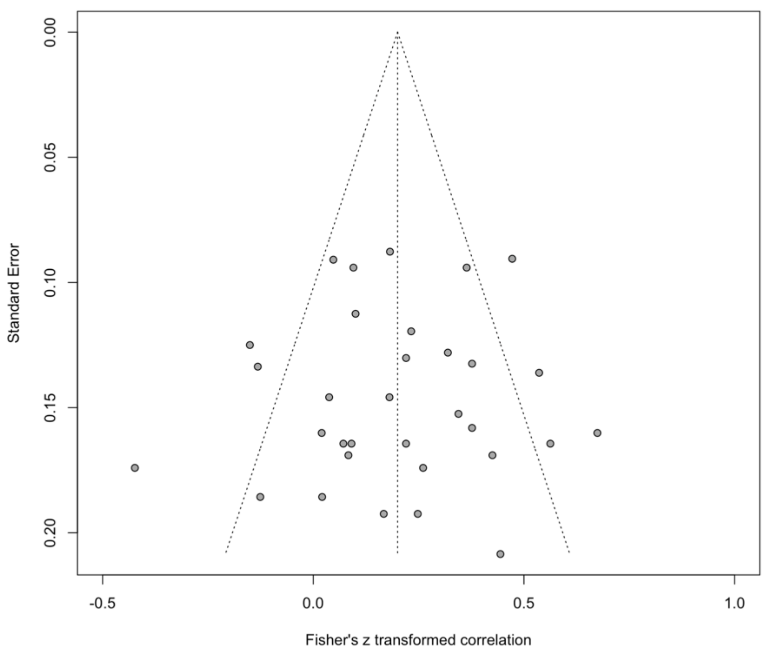


Figure S5. Forest plot of the effect of susceptibility to hunger on EI.

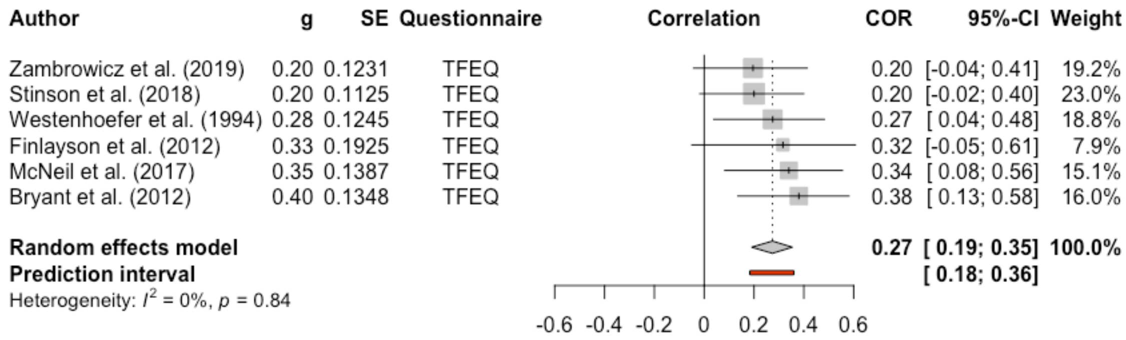


Figure S6. Forest plot of the effect of susceptibility to hunger on BMI

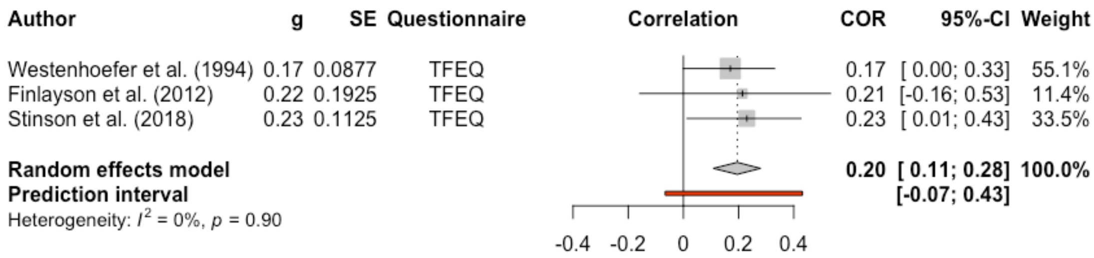


Figure S7. Forest plot of the effect of external eating on EI

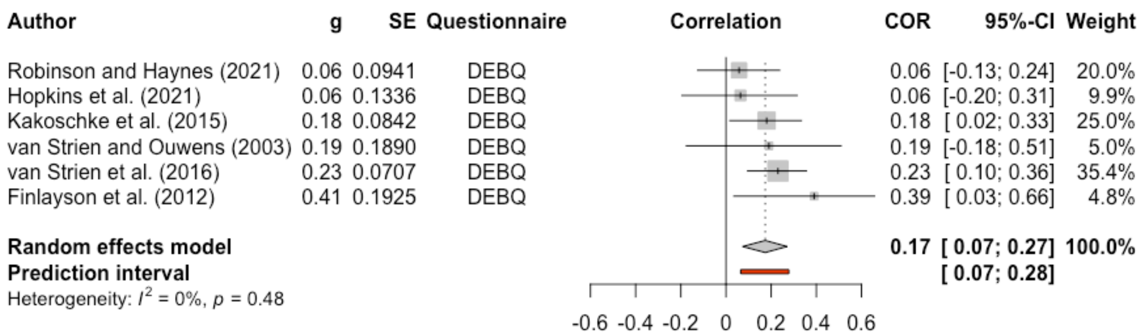


Figure S8. Forest plot of the effect of emotional eating on EI.

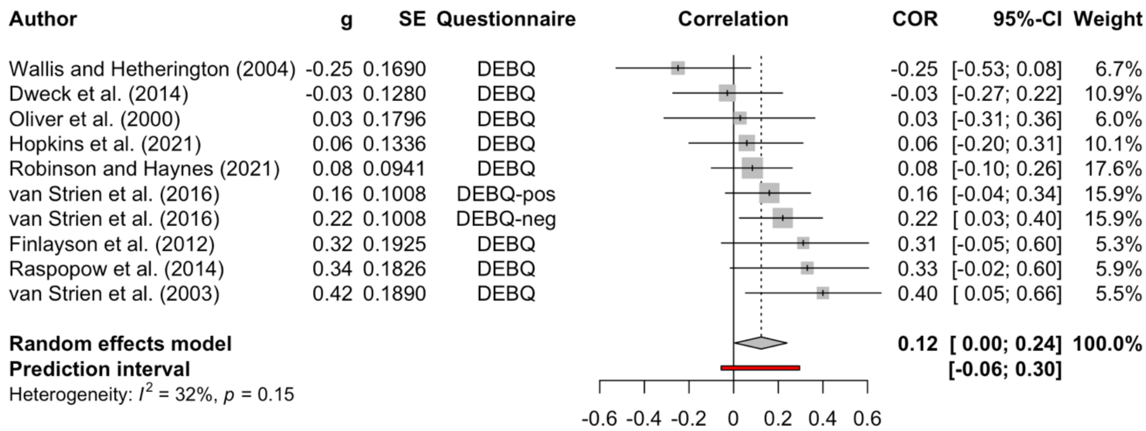


Figure S9. Funnel plot of the effect of emotional eating on EI.

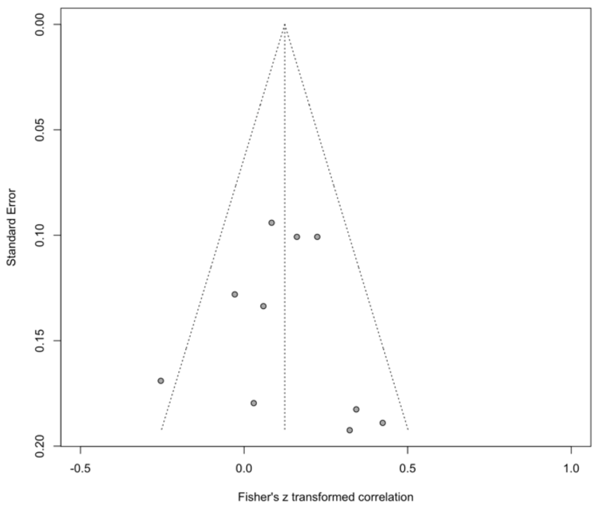


Figure S10. Forest plot of the effect of emotional eating on BMI.

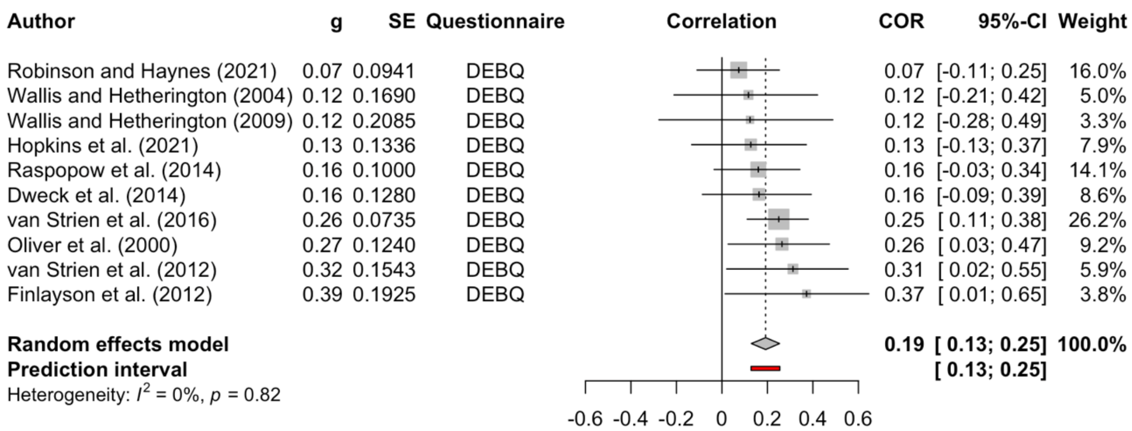


Figure S11. Funnel plot of the effect of emotional eating on BMI.

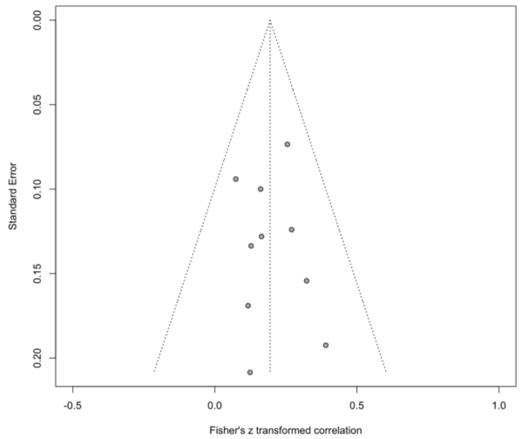


Figure S12. Forest plot of the effect of disinhibition on EI.

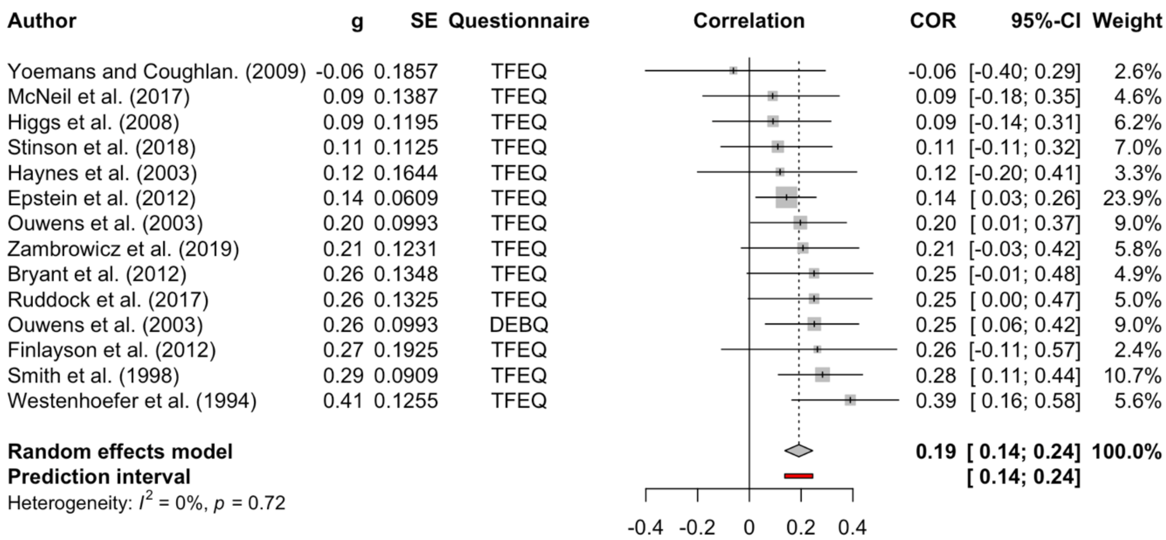


Figure S13. Funnel plot of the effect of disinhibition on EI.

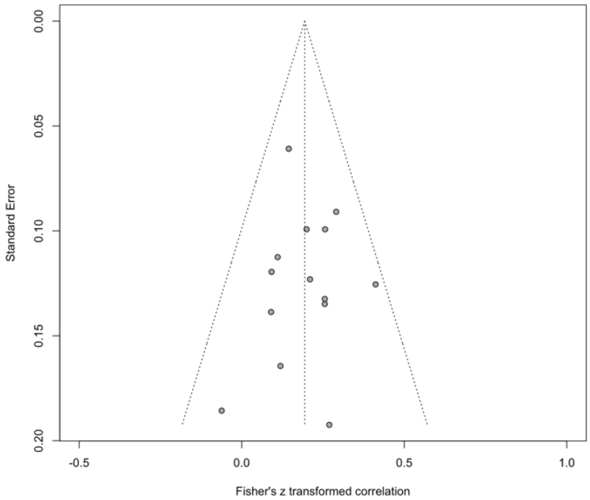


Figure S14. Forest plot of the effect of disinhibition on BMI.

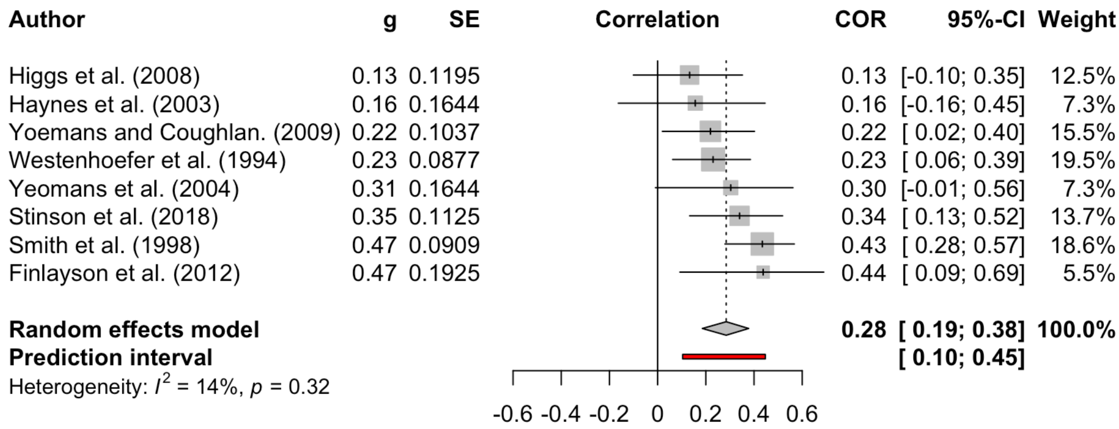


Figure S15. Forest plot of the effect of binge eating on EI.

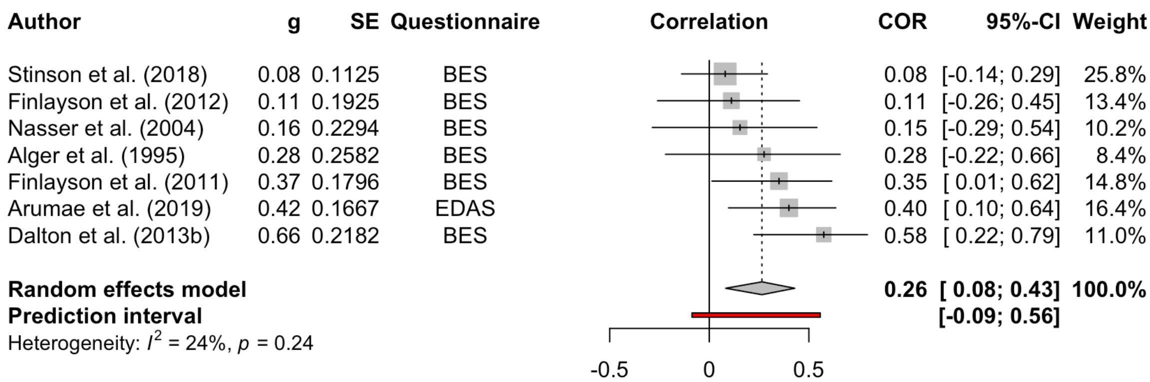
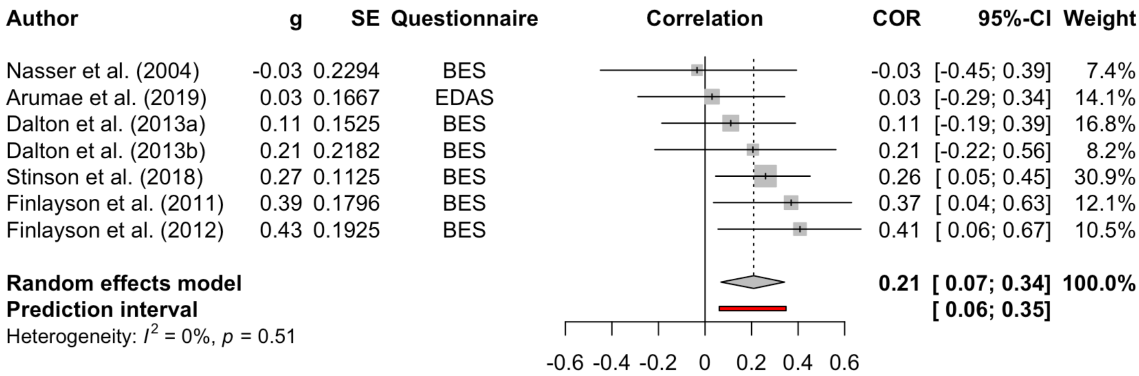


Figure S16. Forest plot of the effect of binge eating on BMI.



References:

1. Alger S, Seagle H, Ravussin E. Food-intake and Energy Expenditure in Obese Female Bingers and Non-bingers. *INTERNATIONAL JOURNAL OF OBESITY*. 1995;19(1)
2. Gormally J, Black S, Daston S, Rardin D. The assessment of binge eating severity among obese persons. *Addictive behaviors*. 1982;7(1):47-55.
3. Anderson DA, Schaumberg K, Anderson LM, Reilly EE. Is level of intuitive eating associated with plate size effects? *Eating behaviors*. 2015;18:125-130.
4. Tylka TL. Development and psychometric evaluation of a measure of intuitive eating. *Journal of Counseling Psychology*. 2006;53(2):226.
5. Anderson LM, Reilly EE, Schaumberg K, Dmochowski S, Anderson DA. Contributions of mindful eating, intuitive eating, and restraint to BMI, disordered eating, and meal consumption in college students. *Eating and Weight Disorders*. 2016;21(1)doi:http://dx.doi.org/10.1007/s40519-015-0210-3
6. Framson C, Kristal AR, Schenk JM, Littman AJ, Zeliadt S, Benitez D. Development and validation of the mindful eating questionnaire. *Journal of the American dietetic Association*. 2009;109(8):1439-1444.
7. Stunkard AJ, Messick S. The three-factor eating questionnaire to measure dietary restraint, disinhibition and hunger. *Journal of psychosomatic research*. 1985;29(1):71-83.
8. Stice E, Telch CF, Rizvi SL. Development and validation of the Eating Disorder Diagnostic Scale: a brief self-report measure of anorexia, bulimia, and binge-eating disorder. *Psychological assessment*. 2000;12(2):123.
9. Appelhans BM, Liebman R, Woolf K, Pagoto SL, Schneider KL, Whited MC. Inhibiting food reward: Delay discounting, food reward sensitivity, and palatable food intake in overweight and obese women. *Obesity*. 2011;19(11)doi:http://dx.doi.org/10.1038/oby.2011.57
10. Lowe MR, Butryn ML, Didie ER, et al. The Power of Food Scale. A new measure of the psychological influence of the food environment. *Appetite*. 2009;53(1)doi:https://dx.doi.org/10.1016/j.appet.2009.05.016

11. Ard JD, Desmond RA, Allison DB, Conway JM. Dietary restraint and disinhibition do not affect accuracy of 24-hour recall in a multiethnic population. *JOURNAL OF THE AMERICAN DIETETIC ASSOCIATION*. 2006;106(3)doi:10.1016/j.jada.2005.12.006
12. Arumae K, Kreegipuu K, Vainik U. Assessing the Overlap Between Three Measures of Food Reward. *FRONTIERS IN PSYCHOLOGY*. 2019;10doi:10.3389/fpsyg.2019.00883
13. Akkermann K, Herik M, Aluoja A, Järv A. Constructing an assessment scale for eating disorders. *Tartu: Department of Psychology of University of Tartu*. 2010;
14. Bellisle F, Dalix A-M, Airinei G, Hercberg S, Péneau S. Influence of dietary restraint and environmental factors on meal size in normal-weight women. A laboratory study. *Appetite*. 2009;53(3):309-313.
15. Bellisle F, Dalix AM. Cognitive restraint can be offset by distraction, leading to increased meal intake in women. *American Journal of Clinical Nutrition*. 2001;74(2)doi:http://dx.doi.org/10.1093/ajcn/74.2.197
16. van Strien T, Frijters JE, Bergers GP, Defares PB. The Dutch Eating Behavior Questionnaire (DEBQ) for assessment of restrained, emotional, and external eating behavior. *International journal of eating disorders*. 1986;5(2):295-315.
17. Bryant EJ, Caudwell P, Blundell JE, Hopkins ME, King NA. Psycho-markers of weight loss. The roles of TFEQ Disinhibition and Restraint in exercise-induced weight management. *Appetite*. 2012;58(1)doi:http://dx.doi.org/10.1016/j.appet.2011.09.006
18. Chambers L, Yeomans MR. Individual differences in satiety response to carbohydrate and fat. Predictions from the Three Factor Eating Questionnaire (TFEQ). *Appetite*. 2011;56(2)doi:https://dx.doi.org/10.1016/j.appet.2011.01.003
19. Coelho JS, Polivy J, Herman CP, Pliner P. Wake up and smell the cookies. Effects of olfactory food-cue exposure in restrained and unrestrained eaters. *Appetite*. 2009;52(2)doi:https://dx.doi.org/10.1016/j.appet.2008.10.008
20. Herman CP, Mack D. Restrained and unrestrained eating. *Journal of personality*. 1975;
21. Cools J, Schotte DE, McNally RJ. Emotional arousal and overeating in restrained eaters. *Journal of abnormal psychology*. 1992;101(2):348.
22. Herman CP, Polivy J, Silver R. Effects of an observer on eating behavior: the induction of "sensible" eating. *Journal of personality*. 1979;47(1)
23. Dalton M, Blundell J, Finlayson G. Effect of BMI and binge eating on food reward and energy intake: Further evidence for a binge eating subtype of obesity. *Obesity Facts*. 2013;6(4)doi:http://dx.doi.org/10.1159/000354599
24. Dalton M, Blundell J, Finlayson GS. Examination of food reward and energy intake under laboratory and free-living conditions in a trait binge eating subtype of obesity. *Frontiers in Psychology*. 2013;4doi:http://dx.doi.org/10.3389/fpsyg.2013.00757
25. Hill AJ, Weaver CF, Blundell JE. Food craving, dietary restraint and mood. *Appetite*. 1991;17(3):187-197.
26. Greenway FL, Fujioka K, Plodkowski RA, et al. Effect of naltrexone plus bupropion on weight loss in overweight and obese adults (COR-I): a multicentre, randomised, double-blind, placebo-controlled, phase 3 trial. *The Lancet*. 2010;376(9741):595-605.
27. Dalton M, Finlayson G, Blundell J, Hill A. Preliminary validation and principal components analysis of the Control of Eating Questionnaire (CoEQ) for the experience of food craving. *European Journal of Clinical Nutrition*. 2015;69(12)doi:http://dx.doi.org/10.1038/ejcn.2015.57
28. Dalton M, Hollingworth S, Blundell J, Finlayson G. Weak Satiety Responsiveness Is a Reliable Trait Associated with Hedonic Risk Factors for Overeating among Women. *NUTRIENTS*. 2015;7(9)doi:10.3390/nu7095345

29. Drapeau V, King N, Hetherington M, Doucet E, Blundell J, Tremblay A. Appetite sensations and satiety quotient: predictors of energy intake and weight loss. *Appetite*. 2007;48(2):159-166.
30. de Witt Huberts JC, Evers C, de Ridder DT. Double trouble: restrained eaters do not eat less and feel worse. *Psychology & Health*. 2013;28(6):686-700.
31. Drapeau V, Blundell J, Therrien F, Lawton C, Richard D, Tremblay A. Appetite sensations as a marker of overall intake. *BRITISH JOURNAL OF NUTRITION*. 2005;93(2)doi:10.1079/BJN20041312
32. Green S, Delargy H, Joanes D, Blundell J. A satiety quotient: a formulation to assess the satiating effect of food. *Appetite*. 1997;29(3):291-304.
33. Drapeau V, Jacob R, Panahi S, Tremblay A. Effect of energy restriction on eating behavior traits and psychobehavioral factors in the low satiety phenotype. *Nutrients*. 2019;11(2)doi:http://dx.doi.org/10.3390/nu11020245
34. Dweck JS, Jenkins SM, Nolan LJ. The role of emotional eating and stress in the influence of short sleep on food consumption. *Appetite*. 2014;72doi:http://dx.doi.org/10.1016/j.appet.2013.10.001
35. Ely AV, Howard J, Lowe MR. Delayed discounting and hedonic hunger in the prediction of lab-based eating behavior. *Eating behaviors*. 2015;19doi:https://dx.doi.org/10.1016/j.eatbeh.2015.06.015
36. Epstein LH, Lin H, Carr KA, Fletcher KD. Food reinforcement and obesity. Psychological moderators. *APPETITE*. 2012;58(1)doi:10.1016/j.appet.2011.09.025
37. Evers C, de Ridder DTD, Adriaanse MA. Assessing yourself as an emotional eater: mission impossible? *Health psychology : official journal of the Division of Health Psychology, American Psychological Association*. 2009;28(6)doi:https://dx.doi.org/10.1037/a0016700
38. Fedoroff ID, Polivy J, Herman CP. The effect of pre-exposure to food cues on the eating behavior of restrained and unrestrained eaters. *Appetite*. 1997;28(1):33-47.
39. Finlayson G, Arlotti A, Dalton M, King N, Blundell JE. Implicit wanting and explicit liking are markers for trait binge eating. A susceptible phenotype for overeating. *APPETITE*. 2011;57(3)doi:10.1016/j.appet.2011.08.012
40. Finlayson G, Blundell JE, Bordes I, Griffioen-Roose S, de Graaf C. Susceptibility to overeating affects the impact of savory or sweet drinks on satiation, reward, and food intake in nonobese women. *Journal of Nutrition*. 2012;142(1)doi:http://dx.doi.org/10.3945/jn.111.148106
41. Guerrieri R, Nederkoorn C, Schrooten M, Martijn C, Jansen A. Inducing impulsivity leads high and low restrained eaters into overeating, whereas current dieters stick to their diet. *Appetite*. 2009;53(1)doi:https://dx.doi.org/10.1016/j.appet.2009.05.013
42. Haynes C, Lee MD, Yeomans MR. Interactive effects of stress, dietary restraint, and disinhibition on appetite. *Eating behaviors*. 2003;4(4):369-383.
43. Herhaus B, Petrowski K. The effect of restrained eating on acute stress-induced food intake in people with obesity. *Appetite*. 2021;159doi:https://dx.doi.org/10.1016/j.appet.2020.105045
44. Higgs S, Williamson AC, Attwood AS. Recall of recent lunch and its effect on subsequent snack intake. *Physiology & behavior*. 2008;94(3):454-462.
45. Hofmann W, Friese M. Impulses got the better of me: alcohol moderates the influence of implicit attitudes toward food cues on eating behavior. *Journal of abnormal psychology*. 2008;117(2)doi:https://dx.doi.org/10.1037/0021-843X.117.2.420
46. Hopkins M, Michalowska J, Whybrow S, Horgan GW, Stubbs RJ. Identification of psychological correlates of dietary misreporting under laboratory and free-living

environments. *British Journal of Nutrition*. 2021;126(2)doi:http://dx.doi.org/10.1017/S000711452000389X
47. Jansen A. How restrained eaters perceive the amount they eat. *The British journal of clinical psychology*. 1996;35(3)
48. Jansen A, Merckelbach H, Oosterlaan J, Tuiten A, Van Den Hout M. Cognitions and self-talk during food intake of restrained and unrestrained eaters. *Behaviour Research and Therapy*. 1988;26(5):393-398.
49. Kakoschke N, Kemps E, Tiggemann M. External eating mediates the relationship between impulsivity and unhealthy food intake. *Physiology & Behavior*. 2015;147doi:http://dx.doi.org/10.1016/j.physbeh.2015.04.030
50. Lattimore P, Maxwell L. Cognitive load, stress, and disinhibited eating. *Eating Behaviors*. 2004;5(4):315-324.
51. Long S, Meyer C, Leung N, Wallis DJ. Effects of distraction and focused attention on actual and perceived food intake in females with non-clinical eating psychopathology. *Appetite*. 2011;56(2)doi:https://dx.doi.org/10.1016/j.appet.2010.12.018
52. Garner DM. Eating Disorder Inventory-2; Pro-fessional Manual. *Psychological assessment resources*. 1991;
53. Martin CK, O'Neil PM, Tollefson G, Greenway FL, White MA. The association between food cravings and consumption of specific foods in a laboratory taste test. *Appetite*. 2008;51(2):324-326.
54. White MA, Whisenhunt BL, Williamson DA, Greenway FL, Netemeyer RG. Development and validation of the food-craving inventory. *Obesity Research*. 2002;10(2):107-114.
55. Martin CK, Williamson DA, Geiselman PJ, et al. Consistency of food intake over four eating sessions in the laboratory. *Eating Behaviors*. 2005;6(4):365-372.
56. McNeil J, Lamothe G, Cameron JD, et al. Investigating predictors of eating: is resting metabolic rate really the strongest proxy of energy intake? *The American journal of clinical nutrition*. 2017;106(5)doi:https://dx.doi.org/10.3945/ajcn.117.153718
57. Myhre R, Buchwald D, Kratz M, et al. A twin study of differences in the response of plasma ghrelin to a milkshake preload in restrained eaters. *Physiology and Behavior*. 2014;129doi:http://dx.doi.org/10.1016/j.physbeh.2014.02.008
58. Nasser JA, Gluck ME, Geliebter A. Impulsivity and test meal intake in obese binge eating women. *Appetite*. 2004;43(3)
59. Nolan-Poupart S, Veldhuizen MG, Geha P, Small DM. Midbrain response to milkshake correlates with ad libitum milkshake intake in the absence of hunger. *Appetite*. 2013;60(1)doi:https://dx.doi.org/10.1016/j.appet.2012.09.032
60. Oliver G, Wardle J, Gibson EL. Stress and food choice: a laboratory study. *Psychosomatic medicine*. 2000;62(6):853-865.
61. Ouwens MA, van Strien T, van der Staak CP. Tendency toward overeating and restraint as predictors of food consumption. *Appetite*. 2003;40(3):291-298.
62. Peluso A. Comparison of mindful and slow eating strategies on acute energy intake. *Dissertation Abstracts International: Section B: The Sciences and Engineering*. 2017;78(5-B(E))
63. Raspopow K, Abizaid A, Matheson K, Anisman H. Anticipation of a psychosocial stressor differentially influences ghrelin, cortisol and food intake among emotional and non-emotional eaters. *Appetite*. 2014;74:35-43.
64. Rideout CA, McLean JA, Barr SI. Women with high scores for cognitive dietary restraint choose foods lower in fat and energy. *Journal of the American Dietetic Association*. 2004;104(7):1154-1157.

65. Robinson E, Haynes A. Individual differences and moderating participant characteristics in the effect of reducing portion size on meal energy intake: Pooled analysis of three randomized controlled trials. *Appetite*. 2021;159doi:http://dx.doi.org/10.1016/j.appet.2020.105047
66. Rolls BJ, Castellanos VH, Shide DJ, et al. Sensory properties of a nonabsorbable fat substitute did not affect regulation of energy intake. *The American journal of clinical nutrition*. 1997;65(5):1375-1383.
67. Ruddock HK, Field M, Hardman CA. Exploring food reward and calorie intake in self-perceived food addicts. *Appetite*. 2017;115doi:http://dx.doi.org/10.1016/j.appet.2016.12.003
68. Ruzanska UA, Warschburger P. How is intuitive eating related to self-reported and laboratory food intake in middle-aged adults? *EATING BEHAVIORS*. 2020;38doi:10.1016/j.eatbeh.2020.101405
69. Ruzanska UA, Warschburger P. Psychometric evaluation of the German version of the Intuitive Eating Scale-2 in a community sample. *Appetite*. 2017;117:126-134.
70. Schoch AH, Raynor HA. Social desirability, not dietary restraint, is related to accuracy of reported dietary intake of a laboratory meal in females during a 24-hour recall. *Eating behaviors*. 2012;13(1):78-81.
71. Schotte DE, Cools J, McNally RJ. Film-induced negative affect triggers overeating in restrained eaters. *Journal of Abnormal Psychology*. 1990;99(3):317.
72. Schulte EM, Sonneville KR, Gearhardt AN. Subjective experiences of highly processed food consumption in individuals with food addiction. *Psychology of addictive behaviors : journal of the Society of Psychologists in Addictive Behaviors*. 2019;33(2)doi:https://dx.doi.org/10.1037/adb0000441
73. Gearhardt AN, Corbin WR, Brownell KD. Development of the Yale Food Addiction Scale Version 2.0. *Psychology of Addictive Behaviors*. 2016;30(1):113.
74. Shapiro JR, Anderson DA. Counterregulatory eating behavior in multiple item test meals. *Eating behaviors*. 2005;6(2)
75. Sim AY, Lee LL, Cheon BK. When exercise does not pay: Counterproductive effects of impending exercise on energy intake among restrained eaters. *Appetite*. 2018;123doi:https://dx.doi.org/10.1016/j.appet.2017.12.017
76. Smith CF, Geiselman PJ, Williamson DA, Champagne CM, Bray GA, Ryan DH. Association of dietary restraint and disinhibition with eating behavior, body mass, and hunger. *Eating and weight disorders : EWD*. 1998;3(1)
77. Stice E, Fisher M, Lowe MR. Are dietary restraint scales valid measures of acute dietary restriction? Unobtrusive observational data suggest not. *Psychological assessment*. 2004;16(1):51.
78. Fairburn CG, Beglin SJ. Assessment of eating disorders: Interview or self-report questionnaire? *International journal of eating disorders*. 1994;16(4):363-370.
79. Stice E, Sysko R, Roberto CA, Allison S. Are dietary restraint scales valid measures of dietary restriction? Additional objective behavioral and biological data suggest not. *Appetite*. 2010;54(2):331-339.
80. Stinson EJ, Votruba SB, Venti C, Krakoff J, Gluck ME, Perez M. Food Insecurity is Associated with Maladaptive Eating Behaviors and Objectively Measured Overeating. *Obesity*. 2018;26(12)doi:http://dx.doi.org/10.1002/oby.22305
81. van Strien T, Donker MH, Ouwens MA. Is desire to eat in response to positive emotions an 'obese' eating style: Is Kummerspeck for some people a misnomer? *Appetite*. 2016;100doi:http://dx.doi.org/10.1016/j.appet.2016.02.035
82. Vainik U, Eun Han J, Epel ES, Janet Tomiyama A, Dagher A, Mason AE. Rapid Assessment of Reward-Related Eating: The RED-X5. *Obesity*. 2019;27(2):325-331.

83. van Strien T, Herman CP, Anschutz DJ, Engels RC, de Weerth C. Moderation of distress-induced eating by emotional eating scores. *Appetite*. 2012;58(1):277-284.
84. van Strien T, Ouwens MA. Counterregulation in female obese emotional eaters: Schachter, Goldman, and Gordon's (1968) test of psychosomatic theory revisited. *Eating Behaviors*. 2003;3(4)doi:http://dx.doi.org/10.1016/S1471-0153%2802%2900092-2
85. Vijayvargiya P, Chedid V, Wang XJ, et al. Associations of gastric volumes, ingestive behavior, calorie and volume intake, and fullness in obesity. *American journal of physiology Gastrointestinal and liver physiology*. 2020;319(2)doi:https://dx.doi.org/10.1152/ajpgi.00140.2020
86. Clark MM, Abrams DB, Niaura RS, Eaton CA, Rossi JS. Self-efficacy in weight management. *Journal of consulting and clinical psychology*. 1991;59(5):739.
87. Visona C, George VA. Impact of dieting status and dietary restraint on postexercise energy intake in overweight women. *OBESITY RESEARCH*. 2002;10(12)doi:10.1038/oby.2002.170
88. Wallis DJ, Hetherington MM. Stress and eating: the effects of ego-threat and cognitive demand on food intake in restrained and emotional eaters. *Appetite*. 2004;43(1):39-
89. Wallis DJ, Hetherington MM. Emotions and eating. Self-reported and experimentally induced changes in food intake under stress. *Appetite*. 2009;52(2)doi:https://dx.doi.org/10.1016/j.appet.2008.11.007
90. Wardle J, Beales S. Restraint and food intake: An experimental study of eating patterns in the laboratory and in normal life. *Behaviour Research and Therapy*. 1987;25(3)doi:http://dx.doi.org/10.1016/0005-7967%2887%2990044-1
91. Westenhoefer J, Broeckmann P, Münch A-K, Pudel V. Cognitive control of eating behavior and the disinhibition effect. *Appetite*. 1994;23(1):27-41.
92. Yeomans MR, Coughlan E. Mood-induced eating. Interactive effects of restraint and tendency to overeat. *Appetite*. 2009;52(2)doi:https://dx.doi.org/10.1016/j.appet.2008.10.006
93. Yeomans MR, Tovey H, Tinley E, Haynes C. Effects of manipulated palatability on appetite depend on restraint and disinhibition scores from the Three-Factor Eating Questionnaire. *International journal of obesity*. 2004;28(1):144-151.
94. Zambrowicz R, Schebendach J, Sysko R, Mayer LES, Walsh BT, Steinglass JE. Relationship between three factor eating questionnaire-restraint subscale and food intake. *International Journal of Eating Disorders*. 2019;52(3)doi:http://dx.doi.org/10.1002/eat.23014
95. Fairburn CG, Cooper Z, O'Connor M. The eating disorder examination. *International Journal of Eating Disorders*. 1993;6:1-8.
96. Zuraikat FM, Roe LS, Smethers AD, Reihart LW, Rolls BJ. Does the cost of a meal influence the portion size effect? *Appetite*. 2018;127:341-348.
97. Hunot C, Fildes A, Croker H, Llewellyn CH, Wardle J, Beeken RJ. Appetitive traits and relationships with BMI in adults: Development of the Adult Eating Behaviour Questionnaire. *Appetite*. 2016;105:356-363.