

Supplementary material

Table S1 Description of independent variables, dependent variables, mediators, and covariates/moderators included in the analysis.

Measure	Assessment point	Survey question	Response categories (codes)	Variables included in analysis ^a
Independent variables				
Group	Baseline			Control: 0 Intervention: 1
Dependent variables				
Fruit consumption	Post-intervention	‘How often do you usually eat fresh fruit?’	1. Never/seldom (0) 2. Less than once a week (0.5) 3. 1-2 times per week (1.5) 4. 3-4 times per week (3.5) 5. 5-6 times per week (5.5) 6. Once per day (7) 7. Twice per day (14) 8. 3 times or more per day (21)	Fruit consumption: 0-21 times/week
Vegetable consumption	Post-intervention	‘How often do you usually eat raw/cooked vegetables?’	1. Never/seldom (0) 2. Less than once a week (0.5) 3. 1-2 times per week (1.5) 4. 3-4 times per week (3.5) 5. 5-6 times per week (5.5) 6. Once per day (7) 7. Twice per day (14) 8. 3 times or more per day (21)	Vegetable consumption: 0-42 times/week

Mediators

Availability at home	Mid-way Post-intervention	‘How often are fruit/vegetables that you like available at home?’	1. Always (5) 2. Most days (4) 3. Occasionally (3) 4. Rarely (2) 5. Never (1)	Availability at home: 1-5
Availability at dinner	Mid-way Post-intervention	‘At home we usually have vegetables for dinner every day’	1. Completely disagree (1) 2. Slightly disagree (2) 3. Neither agree nor disagree (3) 4. Somewhat agree (4) 5. Totally agree (5)	Availability at dinner: 1-5
Accessibility at home	Post-intervention	‘When there are fruit/vegetables that you like at home, can you eat whenever you want?’	1. Always (5) 2. Most days (4) 3. Occasionally (3) 4. Rarely (2) 5. Never (1) 6. Do not have fruit/vegetables in my house (1)	Accessibility at home: 1-5
Taste preferences	Post-intervention	‘Which of the following fruit/vegetables do you like or dislike?’ (11 fruit and 11 vegetables listed)	1. Like very much (1) 2. Like a bit (1) 3. Dislike a little (0) 4. Dislike very much (0) 5. Have not tasted (0)	Taste preferences fruit/vegetables: 0-11 types
Parental encouragement	Mid-way Post-intervention	‘My mom and/or dad encourages me to taste the vegetables we have for dinner’	1. Completely disagree (1) 2. Slightly disagree (2) 3. Neither agree nor disagree (3)	Parental encouragement: 1-5

			4. Somewhat agree (4)	
			5. Totally agree (5)	
			6. They do not have to encourage me, because I taste because I want to (3)	
Knowledge of recommendations	Mid-way	‘How many servings of fruit and vegetables are recommended that someone your age eats every day?’	1. None (0)	No knowledge: 0
	Post-intervention		2. 1 serving (0)	Knowledge: 1
			3. 2 servings (0)	
			4. 3 servings (0)	Continuous: 1-7
			5. 4 servings (0)	
			6. 5 servings (1)	
			7. More than 5 servings (1)	
Covariates/Moderators				
Age	Baseline			Age: 10.5-12.5
Sex	Baseline	‘Are you a girl or a boy?’	1. Girl (0)	Girl: 0
			2. Boy (1)	Boy: 1
Parental education	Baseline		1. Less than 7 years of education (1)	Low: 1
			2. Primary school/secondary school (7-9 years) (1)	Medium: 2
			3. High school/vocational school or similar (up to 12 years) (1)	High: 3
			4. University/college education (up to 4 years) (2)	
			5. University/college education (more than 4 years) (3)	

Weight status

Baseline

Normal weight (including
underweight): 0

Overweight (including obesity): 1

^aRange of continuous variables and categories of dichotomous variables

Table S2 Baseline demographic and anthropometric characteristics of the excluded and included participants in the primary analysis in the HEIA study.

	Excluded (n = 459^a)		Included (n = 1121)		<i>p</i> -value ^b
	Mean	SD	Mean	SD	
	%		%		
Age (years)	11.2 (0.3)		11.2 (0.3)		0.33
Sex					
Girl	43.2		50.3		0.02*
Boy	56.8		49.7		
Parental education ^c					
Low	32.0		28.9		0.37
Medium	36.2		36.0		
High	31.8		35.1		
Weight status ^d					
Normal weight	80.3		87.7		<0.01*
Overweight	19.7		12.3		
Condition					
Control	58.4		66.5		<0.01*
Intervention	41.6		33.5		

* $p < 0.05$

^a n varies slightly for all characteristics

^b Independent t-test (age) and chi-square test

^c Based on the parent with the highest level of education or else the one available: low (≤ 12 years), medium (13–16 years), and high (> 16 years)

^d Based on age and sex specific BMI cut-off values proposed by the International Obesity Task Force: normal weight (including underweight) and overweight (including obese)⁽²⁹⁾

Table S3 Mediation of the mid-way and post-intervention determinants in the associations between the intervention condition and fruit and vegetable consumption in the HEIA study (n = 1046).

	c-path ^a		a-path ^b		b-path ^a		c'-path ^a		Mediated effect		Proportion mediated	
	β	95% CI	β	95% CI	β	95% CI	β	95% CI	a*b	95% CI ^c	(a*b)/c	
Mid-way												
Fruit consumption	1.6*	0.8; 2.4										
Availability at home			0.1*	0.0; 0.2	1.3*	0.7; 1.8	1.5*	0.7; 2.3	0.1	0.0; 0.3	-	
Knowledge – continuous			0.3*	0.1; 0.5	0.5*	0.2; 0.8	1.4*	0.6; 2.2	0.1*	0.0; 0.3	9%	
Knowledge – dichotomous			0.5*	0.2; 0.8	1.0*	0.2; 1.8	1.5*	0.7; 2.3	0.5	0.0; 1.0	-	
Vegetable consumption	1.2*	0.1; 2.3										
Availability at home			0.1	0.0; 0.2	1.0*	0.4; 1.6	1.0	0.0; 2.1	0.1	0.0; 0.2	-	
Availability at dinner			0.1	0.0; 0.3	0.8*	0.4; 1.2	1.0	-0.1; 2.1	0.1	0.0; 0.2	-	
Parental encouragement			0.0	-0.1; 0.2	0.4	-0.1; 0.8	1.2*	0.1; 2.3	0.0	0.0; 0.1	-	
Knowledge – continuous			0.3*	0.1; 0.5	0.3	-0.1; 0.8	1.1*	0.0; 2.2	0.1	0.0; 0.3	-	
Knowledge – dichotomous			0.5*	0.2; 0.8	0.8	-0.3; 1.9	1.2*	0.0; 2.3	0.4	-0.2; 1.0	-	
Post-intervention												
Fruit consumption	1.6*	0.8; 2.4										
Availability at home			0.0	-0.1; 0.1	2.0*	1.5; 2.6	1.6*	0.8; 2.3	0.0	-0.2; 0.2	-	
Accessibility at home			0.0	-0.1; 0.1	1.9*	1.3; 2.5	1.6*	0.8; 2.4	0.0	-0.2; 0.1	-	
Taste preferences			-0.1	-0.3; 0.1	0.7*	0.4; 0.9	1.7*	0.9; 2.4	-0.1	0.3; 0.1	-	
Knowledge – continuous			0.2*	0.0; 0.3	0.6*	0.3; 0.9	1.5*	0.7; 2.3	0.1*	0.0; 0.2	7%	
Knowledge – dichotomous			0.5*	0.2; 0.7	1.1*	0.3; 1.9	1.5*	0.7; 2.3	0.5*	0.0; 1.0	32%	
Vegetable consumption	1.2*	0.1; 2.3										
Availability at home			-0.1	-0.2; 0.0	2.3*	1.7; 2.9	1.3*	0.3; 2.4	-0.2	-0.5; 1.0	-	

Availability at dinner	0.1	-0.1; 0.2	1.8*	1.4; 2.2	1.0	-0.1; 2.0	0.2	-0.1; 0.4	-
Accessibility at home	0.0	-0.1; 0.1	1.1*	0.4; 1.7	1.3*	0.2; 2.4	0.0	-0.2; 0.1	-
Taste preferences	-0.1	-0.3; 0.2	0.8*	0.5; 1.0	1.1*	0.1; 2.2	0.0	-0.2; 0.2	-
Parental encouragement	0.0	-0.1; 0.2	0.2	-0.2; 0.6	1.2*	0.1; 2.3	0.0	0.0; 0.1	-
Knowledge – continuous	0.2*	0.0; 0.3	0.6*	0.2; 1.1	1.1*	0.0; 2.2	0.1*	0.0; 0.3	7%
Knowledge – dichotomous	0.5*	0.2; 0.7	1.0	-0.1; 2.1	1.1	0.0; 2.2	0.5	-0.1; 1.0	-

* p < 0.05

^a Linear regression

^b Linear regression (continuous mediators), logistic regression (dichotomous mediators)

^c Bootstrapping with 1000 resamples of the data (continuous mediators), Sobel test (dichotomous mediators)

Table S4 Moderation by sex, parental education, and weight status of the mediation of the post-intervention determinants in the associations between the intervention condition and fruit and vegetable consumption in the HEIA study (n = 1121).

		a-path^a		b-path^b		Mediated effect		Moderated mediation	
		β interaction	<i>p</i> -value	β interaction	<i>p</i> -value	a*b	95% CI ^c	Index	95% CI
Sex									
Fruit consumption									
Availability at home	Girl					0.1	-0.1; 0.4		
	Boy	-0.1	0.20	0.4	0.40	-0.1	-0.4; 0.2	-0.2	-0.7; 0.2
Accessibility at home	Girl					0.0	-0.1; 0.2		
	Boy	-0.1	0.31	0.5	0.43	-0.1	-0.4; 0.2	-0.1	-0.5; 0.1
Taste preferences	Girl					-0.1	-0.2; 0.1		
	Boy	-0.1	0.67	0.2	0.26	-0.1	-0.5; 0.1	-0.1	-0.4; 0.2
Knowledge – continuous	Girl					0.1	0.0; 0.3		
	Boy	-0.2	0.15	0.4	0.20	0.0	-0.2; 0.2	-0.1	-0.3; 0.2
Knowledge – dichotomous	Girl					0.1	-0.5; 0.7		
	Boy	-0.3	0.31	0.8	0.33	0.3	-0.3; 1.0		
Vegetable consumption									
Availability at home	Girl					-0.1	-0.4; 0.3		
	Boy	-0.2	0.13	-0.3	0.65	-0.4**	-0.9; -0.1	-0.3	-0.9; 0.1
Availability at dinner	Girl					0.2	-0.2; 0.6		
	Boy	-0.1	0.42	-0.3	0.48	0.0	-0.4; 0.3	-0.2	-0.8; 0.4
Accessibility at home	Girl					0.0	-0.1; 0.2		
	Boy	-0.2	0.13	-0.2	0.70	-0.1	-0.4; 0.0	-0.1	-0.4; 0.1
Taste preferences	Girl					0.0	-0.2; 0.3		
	Boy	-0.4	0.13	0.4**	0.05	-0.3	-0.8; 0.1	-0.4	-0.9; 0.1
Parental encouragement	Girl					0.0	-0.1; 0.2		

Knowledge – continuous	Boy	-0.2	0.25	0.0	0.99	0.0	-0.1; 0.1	0.0	-0.2; 0.1
	Girl					0.1	0.0; 0.4		
Knowledge – dichotomous	Boy	-0.2	0.15	0.3	0.44	0.0	-0.2; 0.2	-0.1	-0.4; 0.2
	Girl					0.4	-0.4; 1.3		
	Boy	-0.3	0.31	0.1	0.92	0.3	-0.3; 0.9		
Parental education									
Fruit consumption									
Availability at home	Low					0.1	-0.3; 0.6		
	Medium	0.0	0.87	-0.6	0.34	0.1	-0.3; 0.3	-0.1	-0.6; 0.4
	High	-0.1	0.46	-0.4	0.50	-0.1	-0.5; 0.2	-0.2	-0.8; 0.3
Accessibility at home	Low					0.1	-0.3; 0.5		
	Medium	-0.1	0.41	-0.4	0.59	-0.1	-0.4; 0.1	-0.2	-0.7; 0.3
	High	-0.1	0.47	-1.0	0.17	0.0	-0.3; 0.1	-0.1	-0.6; 0.3
Taste preferences	Low					0.0	-0.2; 0.2		
	Medium	-0.4	0.16	0.2	0.35	-0.2	-0.5; 0.0	-0.2	-0.6; 0.1
	High	-0.2	0.49	0.4*	0.09	-0.1	-0.5; 0.2	-0.1	-0.5; 0.3
Knowledge – continuous	Low					0.1	-0.1; 0.4		
	Medium	0.0	0.89	-0.3	0.41	0.1	-0.1; 0.2	-0.1	-0.4; 0.2
	High	0.1	0.75	-0.1	0.77	0.1	0.0; 0.4	0.0	-0.3; 0.4
Knowledge – dichotomous	Low					0.3	-0.4; 1.0		
	Medium	0.0	0.95	-0.6	0.53	0.1	-0.6; 0.8		
	High	0.4	0.26	0.1	0.93	1.0	-0.2; 2.0		
Vegetable consumption									
Availability at home	Low					-0.2	-0.9; 0.4		
	Medium	0.0	0.79	-0.8	0.26	-0.1	-0.5; 0.2	0.1	-0.6; 0.9
	High	-0.1	0.40	-0.8	0.20	-0.4	-0.8; 0.0	-0.2	-0.9; 0.6

Availability at dinner	Low					-0.1	-0.8; 0.6		
	Medium	0.1	0.57	-0.9*	0.06	0.1	-0.3; 0.5	0.2	-0.6; 1.0
	High	0.1	0.49	-1.0**	0.04	0.1	-0.3; 0.5	0.2	-0.5; 1.1
Accessibility at home	Low					-0.1	-0.5; 0.2		
	Medium	0.0	0.81	0.0	0.99	0.0	-0.3; 0.2	0.0	-0.3; 0.5
	High	0.0	0.70	-0.6	0.40	-0.1	-0.3; 0.1	0.0	-0.3; 0.4
Taste preferences	Low					0.1	-0.4; 0.6		
	Medium	-0.2	0.52	-0.3	0.22	-0.1	-0.4; 0.2	-0.2	-0.8; 0.4
	High	-0.4	0.19	-0.3	0.12	-0.2	-0.6; 0.2	-0.3	-1.0; 0.3
Parental encouragement	Low					0.0	-0.2; 0.3		
	Medium	0.1	0.66	-0.6	0.29	0.0	-0.1; 0.1	0.0	-0.3; 0.2
	High	-0.1	0.54	-0.4	0.46	0.0	-0.1; 0.1	0.0	-0.3; 0.1
Knowledge – continuous	Low					0.1	-0.2; 0.6		
	Medium	0.0	0.89	-0.6	0.20	0.0	-0.1; 0.2	-0.1	-0.5; 0.3
	High	0.1	0.77	-0.6	0.18	0.1	0.0; 0.3	-0.1	-0.5; 0.3
Knowledge – dichotomous	Low					0.2	-0.5; 1.0		
	Medium	0.0	0.92	-0.5	0.68	0.2	-0.3; 0.8		
	High	0.4	0.27	-0.6	0.67	0.8	-0.5; 2.0		

Weight status

Fruit consumption

Availability at home	Normal weight					0.1	-0.2; 0.3		
	Overweight	-0.1	0.54	0.2	0.82	-0.1	-0.7; 0.4	-0.2	-0.8; 0.4
Accessibility at home	Normal weight					0.0	-0.2; 0.1		
	Overweight	0.0	0.87	-0.6	0.53	0.0	-0.3; 0.3	0.0	-0.4; 0.4
Taste preferences	Normal weight					-0.1	-0.3; 0.0		
	Overweight	0.1	0.75	-0.1	0.64	0.0	-0.6; 0.3	0.1	-0.5; 0.5

Knowledge – continuous	Normal weight					0.1	0.0; 0.2		
	Overweight	-0.3	0.20	0.5	0.27	-0.1	-0.8; 0.3	-0.3	-0.9; 0.2
Knowledge – dichotomous	Normal weight					0.4	0.0; 0.9		
	Overweight	-0.7	0.14	0.8	0.51	-0.4	-1.5; 0.8		
Vegetable consumption									
Availability at home	Normal weight					-0.2	-0.5; 0.1		
	Overweight	-0.2	0.25	-0.7	0.37	-0.5	-1.1; 0.1	-0.3	-1.0; 0.4
Availability at dinner	Normal weight					0.1	-0.2; 0.3		
	Overweight	0.1	0.37	0.4	0.52	0.3	-0.9; 1.4	0.2	-1.0; 1.4
Accessibility at home	Normal weight					0.0	-0.2; 0.1		
	Overweight	-0.1	0.38	-0.5	0.61	-0.1	-0.5; 0.3	-0.1	-0.5; 0.4
Taste preferences	Normal weight					-0.2	-0.4; 0.1		
	Overweight	0.5	0.27	-0.2	0.37	0.2	-0.4; 0.7	0.3	-0.3; 0.9
Parental encouragement	Normal weight					0.0	0.0; 0.0		
	Overweight	0.2	0.49	1.3*	0.07	0.3	-0.3; 1.1	0.3	-0.3; 1.1
Knowledge – continuous	Normal weight					0.1**	0.0; 0.3		
	Overweight	-0.3	0.21	0.2	0.72	-0.1	-0.9; 0.3	-0.2	-1.0; 0.2
Knowledge – dichotomous	Normal weight					0.5	-0.1; 1.0		
	Overweight	-0.6	0.16	0.1	0.97	-0.4	-1.6; 0.9		

* p < 0.10, ** p < 0.05

^a Linear regression (continuous mediators), logistic regression (dichotomous mediators)

^b Linear regression

^c Bootstrapping with 1000 resamples of the data (continuous mediators), Sobel test (dichotomous mediators)