

Supplementary Table 1. Education control group content (parents and teens)

Session	Topics covered	Sources
1	Difference between acute and chronic pain	www.webmap2.com
2	Pain assessment; Pain treatment	www.webmd.com www.aboutkidshealth.ca
3	Causes of chronic pain	www.med.umich.edu www.aboutkidshealth.ca
4	Overview of six different pain conditions	http://kidshealth.org www.webmd.com www.drugs.com http://orthoinfo.aaos.org http://my.clevelandclinic.org www.fibromyalgia-symptoms.org
5	Transmission of pain messages: pain and the brain	www.aboutkidshealth.ca
6	Chronic pain management; disparities in pain	http://chapinandrussell.com www.aboutkidshealth.org/ca www.nationalpainfoundation.org
7	Pain as a public health problem	http://health.yahoo.net www.webmd.com
8	Myths about pain; parenting a child with pain	www.aboutkidshealth.ca www.nationalpainfoundation.org

Supplementary Table 2. Standardized regression coefficients (β), standard errors, and statistical significance for the full linear mixed effects models predicting GI symptoms, abdominal pain, and pain interference

	<i>Treatment Outcome</i>		
	GI Symptoms $\beta(SE)$	Abdominal Pain $\beta(SE)$	Pain Interference $\beta(SE)$
Constant	0.09 (0.26)	0.87*** (0.31)	43.96*** (3.05)
Age	0.06*** (0.02)	0.03 (0.02)	-0.04 (0.20)
Male	0.01 (0.04)	0.08* (0.04)	1.20** (0.41)
Piece 1	-0.02*** (0.01)	-0.03*** (0.01)	0.01 (0.08)
Piece 2	0.003 (0.003)	-0.002 (0.004)	-0.07* (0.04)
Treatment (reference group = EDU)	-0.08 (0.08)	-0.09 (0.10)	0.47 (0.98)
FAP Subgroup (reference group = LPA)			
HPD	1.06*** (0.10)	1.32*** (0.12)	13.58*** (1.25)
HPA	0.51*** (0.10)	0.85*** (0.12)	7.10*** (1.21)
Treatment (reference group = EDU) x Time			
CBT x Piece 1	0.01 (0.01)	0.01 (0.01)	0.05 (0.08)
CBT x Piece 2	-0.001 (0.003)	-0.004 (0.004)	-0.04 (0.04)
FAP Subgroup (reference group = LPA) x Time			
HPD x Piece 1	-0.02** (0.01)	-0.03** (0.01)	-0.28** (0.10)
HPD x Piece 2	-0.01 (0.003)	-0.01 (0.005)	0.01 (0.04)
HPA x Piece 1	-0.01 (0.01)	-0.02* (0.01)	-0.22* (0.10)
HPA x Piece 2	-0.003 (0.003)	-0.001 (0.005)	0.06 (0.04)

Treatment (reference group = EDU) x FAP Subgroup (reference group = LPA)

CBT x HPD	0.24** (0.10)	0.06 (0.12)	-0.51 (1.20)
CBT x HPA	0.09 (0.10)	0.17 (0.12)	0.30 (1.19)

Treatment (reference group = EDU) x FAP Subgroup (reference group = LPA) x Time

CBT x HPD x Piece 1	-0.02** (0.01)	-0.02* (0.01)	-0.09 (0.10)
CBT x HPD x Piece 2	-0.0003 (0.003)	0.01 (0.005)	0.04 (0.04)
CBT x HPA x Piece 1	-0.01 (0.01)	-0.02 (0.01)	-0.06 (0.10)
CBT x HPA x Piece 2	-0.0000 (0.003)	-0.0002 (0.005)	0.02 (0.04)
Observations	1,143	1,134	1,140
Log Likelihood	-1,061.80	-1,366.99	-3,898.74
Akaike Inf. Crit.	2,173.61	2,783.98	7,847.49
Bayesian Inf. Crit.	2,299.20	2,909.38	7,973.01
Marginal R ²	0.26	0.28	0.25
Conditional R ²	0.71	0.67	0.64

Note:

*p<0.05; **p<0.01; ***p<0.001

The coefficient of determination (R²) reflects the total variance in the outcome variable explained by the predictors in each model. Marginal and conditional R² values for mixed models are calculated based on Nakagawa et al., (2017)¹⁸ where the marginal R² considers only the variance of fixed effects and the conditional R² considers both fixed and random effects.

Supplementary Table 3. Means and standard deviations (SDs) for outcome measures across timepoints by treatment condition

		Treatment Period (Piece 1)		Follow-up Period (Piece 2)		
Outcome	Treatment Condition	T0: Baseline	T1: Mid-Treatment	T2: Post-Treatment	T3: 6-month FU	T4: 12-month FU
GI Symptoms	CBT	1.63 (0.77)	1.21 (0.76)	1.09 (0.68)	0.94 (0.74)	0.96 (0.78)
	EDU	1.57 (0.73)	1.30 (0.79)	1.14 (0.79)	1.10 (0.79)	1.10 (0.84)
Abdominal Pain	CBT	2.24 (0.86)	1.70 (0.77)	1.48 (0.90)	1.22 (0.94)	1.17 (1.00)
	EDU	2.27 (0.93)	1.90 (0.99)	1.55 (1.02)	1.50 (0.99)	1.37 (1.05)
Pain Interference	CBT	52.00 (8.34)	51.45 (9.83)	49.11 (8.87)	47.72 (9.46)	46.59 (10.30)
	EDU	51.68 (8.67)	51.00 (10.25)	48.90 (9.29)	48.64 (9.79)	47.90 (9.91)

Scores for Children's Somatic Symptoms Inventory (GI Symptoms) and Abdominal Pain Index were normalized to a 4-point scale. The PROMIS Pain Interference is presented using T Scores.