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Mechanisms of physical activity behavior change in an incentive-based intervention: mediation analysis

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Additional file 3: Results of Bayesian mediation models.

Table 3.1

Results of single mediator models with six-month pedometer steps/day as the dependent variable

Hypothesized mediators	n	Intervention effect on mediator		Association of mediator with physical activity		Direct effect		Indirect effect		Proportion (%)
		a (SE)	95% HDI ³	b (SE)	95% HDI ³	c' (SE)	95% HDI ³	ab	95% HDI ³	ab/(c'+ab)
Short-term mediators¹										
Physical activity self-efficacy	417	0.11 (0.07)	-0.03, 0.25	292 (154)	-0.2, 602	-375 (220)	-822, 57	32.7	-14.0, 95.8	-10%
Intentions	415	0.38 (0.16)	0.09, 0.69	-29 (75)	-173, 118	-308 (228)	-768, 139	-11.3	-74.7, 53.0	4%
Outcome expectations	363	-0.04 (0.06)	-0.16, 0.08	-45 (223)	-477, 391	-403 (253)	-901, 80	1.9	-33.0, 37.8	-0.5%
Financial motivation	420	0.20 (0.13)	-0.05, 0.46	13 (84)	-156, 179	-337 (223)	-775, 104	2.5	-38.4, 49.3	-1%
Planning	403	0.06 (0.07)	-0.07, 0.18	-52 (179)	-408, 299	-286 (236)	-725, 187	-2.9	-41.3, 28.5	1.0%
Social norms	405	0.24 (0.11)	0.03, 0.46	-136 (105)	-344, 60	-294 (237)	-751, 167	-33.3	-106.7, 18.0	10%
Identified regulation	417	0.14 (0.06)	0.02, 0.26	94 (189)	-267, 454	-340 (226)	-799, 92	13.1	-41.7, 75.3	-4%
Integrated regulation	416	0.22 (0.07)	0.07, 0.36	107 (155)	-194, 400	-348 (232)	-814, 105	23.0	-42.6, 102.5	-7%
Intrinsic motivation	418	0.16 (0.07)	0.03, 0.29	38 (170)	-303, 362	-342 (228)	-789, 116	6.1	-53.8, 68.3	-2%
Long-term mediators²										
Planning	382	0.09 (0.07)	-0.04, 0.23	548 (176)	209, 898	-220 (238)	-687, 239	50.2	-29.9, 140.9	-30%
Social norms	382	0.08 (0.10)	-0.12, 0.29	262 (116)	34, 486	-301 (241)	-754, 177	21.9	-37.9, 91.9	-8%
Identified regulation	403	0.06 (0.06)	-0.06, 0.19	551 (175)	197, 886	-299 (230)	-744, 148	35.3	-35.6, 117.5	-13%
Integrated regulation	399	0.17 (0.08)	0.01, 0.32	572 (142)	293, 854	-362 (229)	-813, 87	94.6	1.5, 201.2	-35%
Intrinsic motivation*	400	0.13 (0.07)	-0.01, 0.28	456 (161)	128, 752	-321 (232)	-768, 128	59.0	-11.3, 143.9	-22%
Habit	394	0.41 (0.12)	0.18, 0.65	482 (94)	289, 664	-429 (231)	-873, 33	199.0	65.2, 341.2	-87%
Workplace norms	400	0.10 (0.07)	-0.03, 0.23	-363 (176)	-712, -24	-236 (231)	-693, 216	-36.1	-105.1, 17.0	13%
Recovery self-efficacy	402	-0.01 (0.07)	-0.16, 0.12	165 (158)	-146, 483	-276 (231)	-736, 173	-2.5	-40.4, 32.0	1%
Maintenance self-efficacy	403	-0.02 (0.07)	-0.16, 0.13	208 (151)	-88, 506	-265 (230)	-701, 191	-3.3	-48.9, 35.6	1%
Outcome satisfaction	376	0.07 (0.06)	-0.05, 0.18	408 (211)	-17, 812	-347 (240)	-817, 136	28.0	-22.9, 96.3	-9%

¹Short-term mediators measured baseline and four weeks; ²Long-term mediators measured baseline and six months; ³HDI: high density interval (95% HDI represents range within which 95% of estimated values lie).

*Indicates significance of estimated indirect effect (with reference to 95% HDI) differs from main analysis (with reference to 95% CI).

NB: results are mean of the posterior distributions estimated from single mediator models using the Bayesian approach (10,000 iterations). Independent variable=Group assignment, Mediating variable=follow-up scores of mediators, Dependent variable=follow-up scores of outcome (six-month pedometer steps/day). All paths are adjusted for strata, season, baseline values of the mediator and baseline pedometer steps/day.

Table 3.2

Results of single mediator models with 12-month pedometer steps/day as the dependent variable

Hypothesized mediators	n	Intervention effect on mediator		Association of mediator with physical activity		Direct effect		Indirect effect		Proportion (%)
		<i>a</i> (SE)	95% HDI ²	<i>b</i> (SE)	95% HDI ²	<i>c'</i>	95% HDI ²	<i>ab</i>	95% HDI ²	<i>ab/(c'+ab)</i>
<i>Long-term mediators¹</i>										
Planning*	314	0.14 (0.08)	-0.02, 0.29	833 (213)	412, 1,261	-932 (295)	-1,511, -360	116.1	-18.1, 268.1	-14%
Social norms	313	0.09 (0.12)	-0.13, 0.32	-14 (147)	-296, 280	-727 (296)	-1,320, -145	-1.2	-50.5, 44.7	0.2%
Identified regulation	326	0.10 (0.07)	-0.05, 0.24	559 (214)	130, 975	-634 (287)	-1,170, -70	56.6	-26.4, 165.4	-10%
Integrated regulation	323	0.21 (0.09)	0.04, 0.38	619 (188)	246, 977	-748 (301)	-1,326, -158	128.6	10.6, 267.9	-21%
Intrinsic motivation	323	0.19 (0.08)	0.03, 0.37	338 (199)	-41, 731	-631 (299)	-1,219, -59	66.1	-16.4, 175.1	-12%
Habit	318	0.45 (0.13)	0.20, 0.72	340 (126)	94, 590	-662 (307)	-1,271, -88	153.4	16.5, 296.6	-30%
Workplace norms	323	0.13 (0.07)	-0.02, 0.27	-316 (229)	-757, 132	-672 (300)	-1,258, -79	-40.2	-130.8, 24.2	6%
Recovery self-efficacy	323	-0.02 (0.08)	-0.18, 0.15	478 (202)	71, 866	-648 (300)	-1,224, -69	-9.1	-103.9, 77.5	1%
Maintenance self-efficacy	325	-0.05 (0.09)	-0.21, 0.12	186 (196)	-198, 567	-628 (295)	-1,200, -32	-8.7	-66.8, 34.3	1%
Outcome satisfaction	305	0.01 (0.07)	-0.12, 0.14	377 (265)	-144, 888	-812 (303)	-1,415, -219	3.6	-60.7, 70.7	-0.4%

¹Long-term mediators measured baseline and six months; ²HDI: high density interval (95% HDI represents range within which 95% of values lie).

*Indicates significance of estimated indirect effect (with reference to 95% HDI) differs from main analysis (with reference to 95% CI).

NB: results are mean of the posterior distributions estimated from single mediator models using the Bayesian approach (10,000 iterations). Independent variable=Group assignment, Mediating variable=follow-up scores of mediators, Dependent variable=follow-up scores of outcome (12-month pedometer steps/day). All paths are adjusted for strata, season, baseline values of the mediator and baseline pedometer steps/day.