Official Title: Prevention of Substance Use in At-Risk Students: A Family-Centered Web Program

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Statistical Analysis Plan with Results Information

Data Analysis

Preliminary analyses included descriptive statistics and plots to screen outcomes for normality. Chi-square statistics and one-way ANOVA models were used to compare study condition and demographic characteristics between participants who dropped out of the study versus those who completed all four assessments.

Intent-to-treat analyses of condition effects were evaluated with mixed effects growth models using SAS 9.2 PROC MIXED and estimated using full-information maximum likelihood, an unstructured variance and covariance matrix, and random intercepts and slopes. Variability in outcomes from pretest to 1-year follow-up was modeled as a function of condition, time (coded in months), and a condition × time interaction term. The intercept was specified at the 1-year follow-up assessment; thus, the condition effect is a test of whether intervention groups differed at the end of the study. Following Singer and Willet (2003), when constructing the longitudinal model we (a) examined empirical growth plots; (b) fit an unconditional means model; (c) fit an unconditional linear growth model; (d) fit unconditional non-linear models; and (e) compared models of longitudinal change using the Akaike Information Criterion. Three a priori dummy coded comparisons were examined: wait-list control (reference group) versus web-only, wait-list control (reference group) versus web plus coach, and web-only (reference group) versus web plus coach. Effect sizes for the condition effect at the end of the study are reported as Cohen's *d* (Cohen, 1988) and computed as model estimated differences in the outcomes at 1-year follow-up divided by the observed baseline pooled standard deviation.

Results

Preliminary analyses. Demographic make-up of the sample, program use metrics, baseline equivalency of the three intervention groups, and correlations of the pretest measures

have been previously reported (Stormshak et. al., 2019). Briefly, parents in the study were predominately female, on average 40.0 (*SD* = 6.1) years of age, and 35% had a 4-year college degree or graduate training. The children in the study were approximately gender balanced, mostly white, and mostly lived in suburban environments. Use of the site was robust, but the web plus coach group used the program significantly more than the web-only group. Participants in the three conditions did not differ on gender, area (rural, suburban, urban), minority status, SES risk score or pretest measures of the outcomes indicating randomization produced initially equivalent groups. The correlations of the pretest measures ranged from *r* = -.67 to *r* = .60 (mean | *r* | = .30).

The outcomes approximated normal distributions except conduct problems which was normalized with a logarithmic transformation. Complete data was available for 88% of the sample and attrition was 6% at posttest, 8% at 6-month follow-up and 9% at 1-year follow-up. Number of assessments completed was not signficantly associated with study condition, child's gender and child's race (all p-values > .08). Comparison of linear and non-linear unconditional models showed a linear model had superior fit to a linear and quadtric model for all study outcomes.

Table 1 provides means and standard deviations for the outcomes at each assessment point for each of the three conditions. Table 2 provides a summary of the condition effects from the growth models for the three a priori comparisons and is a test of whether groups differed in change in outcomes from pretest to the 1-year follow-up. No statistically significant (at *p* <.017) differences were found, although one trend-level effect (*p* <.10) is worth noting. The web plus coach group showed trend level differences in sense of parenting importance that favored the

web plus coach group relative to the wait-list control group, a small to medium effect (p-value = .081, d = .28), a small to medium effect (Cohen, 1988).

Table 1

Descriptive Statistics for Study Outcomes

	Pretest		3-Month Posttest		6-Month Follow-up		1-Year Follow-up	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Effortful control								
Wait-list control	3.34	0.95	3.29	0.95	3.33	0.88	3.21	0.92
Web-only intervention	3.37	0.92	3.39	0.88	3.44	0.84	3.33	0.80
Web plus coach intervention	3.19	0.91	3.37	0.84	3.36	0.86	3.31	0.92
Sense of parenting importance								
Wait-list control	4.49	0.30	4.47	0.31	4.47	0.30	4.47	0.32
Web-only intervention	4.51	0.31	4.48	0.35	4.51	0.34	4.48	0.34
Web plus coach intervention	4.55	0.24	4.59	0.27	4.56	0.29	4.55	0.29
Sense of parenting confidence								
Wait-list control	4.13	0.54	4.08	0.62	4.10	0.52	4.03	0.55
Web-only intervention	4.16	0.64	4.23	0.56	4.21	0.54	4.15	0.58
Web + Coach intervention	4.11	0.51	4.17	0.55	4.20	0.53	4.19	0.54
Parenting self-efficacy								
Wait-list control	2.75	0.78	2.75	0.75	2.78	0.75	2.80	0.80
Web-only intervention	2.85	0.79	2.80	0.76	2.90	0.70	2.85	0.73
Web plus coach intervention	2.66	0.74	2.85	0.70	2.86	0.71	2.91	0.65
Conduct problems								

	Pretest		3-Month Posttest		6-Month Follow-up		1-Year Follow-up	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Wait-list control	1.05	1.38	1.24	1.54	1.00	1.44	1.08	1.45
Web-only intervention	1.37	1.81	1.32	1.63	1.17	1.57	1.19	1.40
Web plus coach intervention	1.44	1.65	1.30	1.55	1.12	1.54	1.21	1.60
Hyperactivity								
Wait-list control	3.45	2.69	3.31	3.43	3.24	2.32	3.46	2.56
Web-only intervention	3.72	2.46	3.20	2.02	3.11	2.39	3.21	2.10
Web plus coach intervention	4.19	2.87	3.47	2.39	3.45	2.37	3.41	2.47
Emotional problems								
Wait-list control	2.34	2.27	2.56	2.42	2.47	2.30	2.60	2.37
Web-only intervention	2.56	2.28	2.36	2.23	2.45	2.37	2.64	2.43
Web plus coach intervention	2.78	2.12	2.20	1.97	2.31	2.04	2.09	1.96
SD = standard deviation.								

Table 2

Condition Parameter from Growth Models

Contrast and Outcomes	*Estimate*	*SE*	*t-value*	*p-value*	*d*
Wait-list control vs. Web-only					
Effortful control	0.07	0.12	0.60	.549	0.08
Sense of parenting importance	0.03	0.05	0.62	.535	0.09
Sense of parenting confidence	0.11	0.08	1.45	.149	0.19
Parenting self-efficacy	0.06	0.10	0.60	.547	0.08
Conduct problems	0.04	0.04	1.19	.236	0.16
Hyperactivity	-0.17	0.32	-0.53	.599	-0.07
Emotional problems	0.06	0.33	0.17	.867	0.02
Wait-list control vs. Web plus coach					
Effortful control	-0.02	0.13	-0.18	0.854	-0.03
Sense of parenting importance	0.08	0.04	1.75	0.081	0.28
Sense of parenting confidence	0.10	0.08	1.27	0.207	0.19
Parenting self-efficacy	0.06	0.10	0.56	0.575	0.08
Conduct problems	0.05	0.04	1.47	0.142	0.20
Hyperactivity	0.22	0.34	0.64	0.523	0.08
Emotional problems	-0.47	0.30	-1.53	0.127	-0.21
Web-only vs. Web plus coach					
Effortful control	-0.09	0.12	-0.73	0.469	-0.09
Sense of parenting importance	0.05	0.05	1.05	0.295	0.17
Sense of parenting confidence	-0.01	0.08	-0.16	0.871	-0.02

Contrast and Outcomes	Estimate	SE	t-value	p-value	d
Parenting self-efficacy	0.00	0.10	0.05	0.964	0.01
Conduct problems	0.01	0.04	0.24	0.810	0.03
Hyperactivity	0.36	0.32	1.15	0.252	0.14
Emotional problems	-0.51	0.31	-1.65	0.101	-0.22

Note. *SE* = standard error, *d* = d-statistic.