Parent Training to Reduce Problem Behaviors over the Transition to High School: Tests of Indirect Effects through Improved Emotion Regulation Skills

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Abstract

Adolescent problem behaviors are costly for individuals and society. Promoting the self-regulatory functioning of youth may help prevent the development of such behaviors. Parent-training and family intervention programs have been shown to improve child and adolescent self-regulation. This study helps fill gaps in knowledge by testing for indirect effects of the Common Sense Parenting® (CSP) program on reduced substance use, conduct problems, and school suspensions through previously identified short-term improvements in parents’ reports of their children’s emotion regulation skills. Over two cohorts, 321 low income families of 8th graders were enrolled and randomly assigned to either the standard CSP program, an adapted CSP Plus program, or a minimal-contact control condition. Pretest, posttest, 1-year follow-up, and 2-year follow-up survey assessments were completed by parents and students with 94% retention. Intent-to-treat multivariate path analyses were conducted. Neither intervention had statistically significant total effects on the three targeted adolescent outcomes. CSP, but not CSP Plus, had statistically significant indirect effects on reduced substance use and school suspensions at the 1-year follow-up as well as conduct problems and school suspensions at the 2-year follow-up through increased child emotion regulation skills at posttest. Findings provide some support for emotion regulation
as one pathway through which the intervention was associated, indirectly, with reduced substance use, conduct problems, and school suspensions among at-risk students over the high school transition.

Keywords
emotion regulation; parent-training; high school transition; substance use; conduct problems; school suspension

1. Introduction

Problem behaviors are common among youth and exact a high cost on individuals and society (Cohen, Piquero, & Jennings, 2010). Substance use initiation tends to occur in adolescence, and substance involvement escalates steadily throughout the teen years (Johnston, O'Malley, Bachman, Schulenberg, & Miech, 2014). Adolescent substance use can alter normative developmental processes, such as brain maturation, and is associated with a range of adverse outcomes, including substance use disorder onset. For some youth, conduct problems (e.g., aggression, theft) are prevalent and increase in adolescence (Moffitt, 1993). Conduct problems can disrupt functioning in multiple domains of life (e.g., family relationships, educational attainment, job stability), with lasting consequences for health and well-being (Bryant, Schulenberg, O'Malley, Bachman, & Johnston, 2003; Colman et al., 2009). Finally, given the importance of school as a socializing influence among youth, school-related problems are a concern. Such problems often culminate in school suspensions (Hemphill et al., 2007), which increase risk for school failure and dropout, particularly among high-risk youth. Importantly, adolescent problem behaviors do not occur in isolation, but often co-occur, as hypothesized by problem behavior theory (Jessor & Jessor, 1977) and demonstrated in prior research. For example, adolescent substance users often engage in higher levels of delinquency and other conduct problems (Mason & Windle, 2002; Mason et al., 2010), and also are more likely to experience school problems leading to disciplinary actions (Bachman et al., 2008).

Poor self-regulation increases risk for problem behaviors (Eisenberg et al., 2014; King, Fleming, Monahan, & Catalano, 2011; Lengua, 2009). Self-regulatory functioning refers to multiple cognitive and affective processes associated with planning, impulse control, and emotion regulation. These processes are rooted in neurobiological development, which continues throughout the teen years and beyond (Spear, 2000). During adolescence, brain systems related to self-regulation appear to develop more slowly than those related to reward sensitivity (Casey, Jones, & Hare, 2008; Steinberg, 2008). Efforts to improve the self-regulatory functioning of youth, for example through the development of emotion regulation skills, may help prevent and reduce problem behaviors (Greenberg, 2006).

Parent-training is a popular intervention approach that targets improved child and adolescent self-regulation by teaching parents or primary caregivers (henceforth referred to as parents) skills for effective parenting (e.g., praise, appropriate discipline, monitoring) and for helping their children learn how to cope with adversity, control their anger, and proactively problem solve. Developmental studies have shown that these types of parenting behaviors are
associated positively with self-regulation in children (Haggerty, McGlynn-Wright, & Kilma, 2013; Karreman, van Tuijl, van Aken, & Dekovic, 2006; Sanders & Mazzucchelli, 2013). Thus, parent-training programs encourage parents to provide their children an optimal combination of external control through developmentally appropriate parenting as well as internal control through self-regulatory skill development (Sanders & Mazzucchelli, 2013).

Indeed, several studies have reported effects of parent-training on indicators of self-regulation of children (Chang, Shaw, Dishion, Gardner, & Wilson, 2014; Pears, Kim, Healey, Yoerger, & Fisher, 2014; Somech & Elizur, 2012), and a few have addressed self-regulation of adolescents. For example, Fosco and colleagues (Fosco, Frank, Stormshak, & Dishion, 2013) found that the Family Check-up intervention increased levels of self-regulation, measured as effortful control, of middle school students from Grades 6 to 7.

Prior research supports the promise of parent-training effects on improved child self-regulation; however, at least three significant research and practice gaps remain. First, parent-training efforts timed to support key developmental turning points, such as major school transitions, are needed (Cicchetti & Rogosch, 2002; Graber & Brooks-Gunn, 1996). Turning points provide a window of opportunity for interventions designed to facilitate a positive developmental transition and prevent future problems. Timing interventions for delivery at these critical periods may increase the relevance and impact for participants. One of the most important turning points for youth is the transition from middle to high school (Jackson & Schulenberg, 2013), which often provides new opportunities for involvement in problem behaviors such as substance use. Providing adolescents and their parents with the skills to handle these expanded negative opportunities is crucial (Gonzales et al., 2012).

Second, many evidence-based parent-training programs are not being widely disseminated for public health benefit, in part because those programs were not developed with a delivery vehicle in mind (Klesges, Esabrooks, Dzewaltowski, Bull, & Glasgow, 2005). One underutilized way to address this concern is to refine and test promising parent-training programs already being used in community settings (Mason, Fleming, Thompson, Haggerty, & Snyder, 2014). Such programs, if supported by rigorous tests, can capitalize on existing resources to expand dissemination. Third, the indirect parent-training effects on distal outcomes through proximal targets hypothesized by intervention theory remain relatively untested and unknown for many programs (Sandler, Schoenfelder, Wolchik, & MacKinnon, 2011). Elucidating such indirect effects is critical for evaluating intervention theory and for identifying the potential active ingredients of programs.

This study addresses gaps in the literature by examining indirect effects of Common Sense Parenting® (CSP), a general parent-training program, on adolescent problem behaviors in a low-income sample of 8th graders and their parents followed over the transition to high school. CSP was developed by Boys Town, a national service provider, and currently is in widespread use based on positive preliminary findings (Thompson, Ruma, Brewster, Besetsney, & Burke, 1997). Like many parent-training programs, CSP has sessions that (a) teach parents new parenting skills and (b) instruct parents about how to teach their children self-control, including the development of emotion regulation skills. Specifically, parenting components include activities designed to increase praise, effective discipline, monitoring and supervision, and the provision of rationales; emotion regulation is targeted by teaching...
parents to adopt, model, and impart to their children anger management techniques as well as coping and problem solving strategies.

Current analyses of data from this study build on prior project findings that showed CSP, in its standard form and in a modified form known as CSP Plus, had a proximal effect on improved parent-reported child emotion-regulation skills from pretest to posttest. There was no evidence of overall intervention effects (i.e., total effects) on parenting in either the short term (Mason et al., 2015) or the long term, out to 1-year (9th grade) and 2-year (10th grade) follow-up, and total effects on long-term adolescent problem behaviors have not been demonstrated (Mason et al., unpublished results). Here, we extend prior research from this intervention study by testing the hypothesized sequence of events depicted in Figure 1, which models the CSP/CSP Plus theory of change, focusing on paths leading from the interventions to the problem behavior outcomes through child emotion regulation, a proximal target that has demonstrated improvements (Mason et al., 2015). Despite the lack of total effects on problem behaviors (for a discussion of conducting mediation tests in the absence of total effects, see Hayes, 2009; Shrout & Bolger, 2002; Zhao, Lynch, & Chen, 2010), it was hypothesized, based on both prior research (Eisenberg et al., 2014; King et al., 2011; Lengua, 2009) and the CSP/CSP Plus theory of change (Figure 1), that the interventions would have significant negative indirect effects on adolescent substance use, conduct problems, and school suspensions at 1-year and 2-year follow-up through increased child emotion regulation skills at posttest.

2. Method

2.1. Participants and Procedure

Participating families included a target parent and a target 8th grader who attended one of five middle schools in Tacoma, Washington. The percent of students in Grades 6 through 8 who received free or reduced-price school lunch across all five schools was above 70% in the 2010/2011 school year. Three of the five schools fed into a high school with a 5-year graduation rate of 52% for the class of 2010. Research staff presented information about the study during core classes and distributed permission slips for the students to take home to their parents. The permission forms were a district requirement that allowed for the release of parents’ contact information to the researchers. Schools aided the recruitment effort by disseminating notices of the study and by mailing a copy of the permission slip directly to families who had not responded to initial recruitment efforts.

A list of 658 interested families was compiled (out of a pool of 1,646 families across the five schools) from the signed and returned permission forms. These families were assigned identification numbers in the order in which permission slips were returned and then blocked by school and adolescent gender. Within blocks, families were assigned in sequential order to either the standard CSP program condition, the CSP Plus program condition, or a minimal contact control condition. Data collection staff members, who were not aware of condition assignments, then contacted families to describe the study in detail, obtain parental consent and child assent to participate in the research project, and conduct pretest interviews. Families learned of their condition assignment after consenting to participate and completing the pretest assessments.
Families were enrolled in the project in two cohorts, including 122 families in the 2010/2011 school year and 199 families in 2011/2012. Overall, 321 families were enrolled, including 108 in the control condition, 118 in the CSP program condition, and 95 in the CSP Plus program condition. The racial composition of the parent sample was 48% Caucasian, 26% African American, 4% Asian American, 4% Pacific Islander, 2% Native American, and 16% mixed or “other”; 14% of parents reported they were Hispanic. Eighty-three percent of the parents were female; of these, 73% were the biological mothers of the 8th grade student. Sixty percent reported living with a spouse or significant other (46% married). Parent average age was 40.21 years ($sd = 7.49$). Forty-two percent of the parents reported annual incomes below $24,000 for their households, the median annual household income category reported was $28,000–$31,000, and 59% of the households received food stamps. Forty-four percent of the parents were employed full time, 15% part time, 13% considered themselves unemployed, and 28% were not in the labor force. Most (92%) of the parents were high school graduates or had a GED; 18% had a Bachelor’s or more advanced degree. Just over half (52%) the 8th grade students in the study were female, and their mean age at enrollment was 13.41 years ($sd = 0.52$). The sample was generally representative of the population of 8th grade families in participating schools. All procedures were reviewed and approved by the University of Washington and Father Flanagan’s Boys’ Home (Boys Town) Institutional Review Boards as well as the participating school district.

Interviews were conducted in families’ homes. Surveys were self-administered on laptop computers, with a researcher present to provide assistance. In both recruitment years, enrollment and pretest interviews began in November/December and were completed by April. Posttest, 1-year follow-up, and 2-year follow-up interviews began in May/June and were completed by September (posttest) or October (1-year and 2-year follow-up). Participants were compensated for completing assessments at each time point (pretest = $20$, posttest = $25$, 1-year follow-up = $25$, and 2-year follow-up = $30$). In addition to pretest data, the current study used parent survey data from the posttest and student survey data from the 1-year and 2-year follow-up, which reduced the likelihood of monorater bias in the analyses (Podsakoff, MacKenzie, & Podsakoff, 2012). Attrition in this study was low at posttest (93% retention), 1-year follow-up (95% retention) and 2-year follow-up (94% retention). There was no evidence of differential attrition across conditions and no robust pattern of selective attrition in analyses comparing retained versus attrited families across a range of socio-demographic characteristics and psychosocial factors over the duration of the study.

2.2. Interventions

The CSP and CSP Plus interventions were administered to groups of families. Families began the intervention soon after enrollment, with workshop groups beginning as early as December and as late as May to correspond to the rolling enrollment of families into the project within each year of recruitment. CSP in its standard form consists of six weekly two-hour sessions. Sessions include the following primary components for parents: instruction in new skills related to discipline, praise, rationales, coping, problem solving, and anger management; discussion of short videos demonstrating these skills; and guided skills practice. Sessions also include reviews and summaries, and homework activities are...
incorporated into the curriculum. CSP Plus was different from CSP in that (a) two new sessions were added, one before and one after the standard CSP sessions, and (b) adolescents were asked to attend those two sessions with their parents. The new CSP Plus sessions adopted the same structure as CSP. New content covered goal setting for parents and teens in relation to the transition to high school and guided skills practice in family communication and decision making regarding the opportunities and responsibilities involved in this transition. Fidelity assessments were conducted by coding a random sample of videotaped workshop sessions. Two certified CSP trainers independently rated a random selection of 26% ($n = 38$) of sessions to measure the degree to which workshop leaders adhered to the content for each session. Results indicated that 95% of the core components of both interventions were delivered as designed (Oats et al., 2014). Inter-rater reliability was calculated by dividing the number of agreements by the agreements plus disagreements, multiplied by 100. Inter-rater reliability averaged 96% (Oats et al., 2014).

Attempts were made to reduce participation barriers by offering a stipend to pay for childcare and reimbursement for transportation costs. A lottery system was used to encourage and reward attendance. At the end of each session, one attendee was randomly selected to receive a cash prize. At the first five sessions in the CSP condition and the first seven sessions in the CSP Plus condition, the prize was $35. At the last session of each workshop group the prize was $150 and was based on attendance throughout the class such that participants who attended more sessions had higher odds of winning. Finally, an attempt was made to schedule families who missed sessions into make-up sessions and/or offer them opportunities to attend other ongoing classes.

Initial engagement, defined as attending at least one of the first two sessions, was slightly but not significantly higher in the CSP Plus condition (76%) compared to the CSP condition (69%). Among those who engaged in the interventions, retention was similar for CSP and CSP Plus (mean of possible sessions attended = 70%, $sd = 29\%$ in CSP Plus vs. mean = 72%, $sd = 28\%$ in CSP). Twenty-one percent of CSP participants came to all six sessions compared to 17% in the CSP Plus condition who attended all eight of the sessions. In both intervention conditions, 20% of participants never attended any sessions (Fleming et al., 2015). Minimal-contact control families were mailed newsletters with general parenting information.

### 2.3. Measures

At pretest, adolescents were asked if they had ever used alcohol, tobacco cigarettes, or marijuana in three separate questions. At both 1-year and 2-year follow-up, use of these substances within the past year was assessed. Due to the relatively low prevalence rates among the early adolescent participants, responses to these questions were coded to create dichotomous measures of any substance use ($1 =$ any use, $0 =$ no use) at pretest and, separately, at 1-year follow-up and 2-year follow-up. Adolescent conduct problems were measured via self-report at all three time points with the Conduct Problems scale from the Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001). This subscale is comprised of five items that were rated by adolescents on a scale from 0 (not true) to 2 (certainly true). The scale includes items such as “I fight a lot” and “I get very angry and
often lose my temper.” In this study, reliability of the scale was adequate (pretest: \( \alpha = .60 \), 1-year follow-up: \( \alpha = .68 \), and 2-year follow-up: \( \alpha = .73 \)). At pretest and the two follow-up assessments, adolescents were asked to indicate the frequency of being suspended from school for disciplinary reasons in the past year. To create the school suspension variable, responses to each question were dichotomized to indicate whether the youth had been suspended at least once (coded 1) versus not being suspended (coded 0) during the reference period.

Child emotion regulation skills were measured with a subscale from the Social Competence Scale-Parent (Webster-Stratton, 1998) at pretest and posttest. The subscale was calculated as the mean of six items (e.g., “(Your child) can accept things not going his/her way” and “(Your child) can calm down by himself/herself when excited or all wound up”; pretest \( \alpha = .87 \); posttest \( \alpha = .85 \)). The items describe coping, problem solving, and anger management skills during encounters with difficult day-to-day situations. Response options ranged from 1 = “Not at all” to 5 = “Very well.”

CSP was a program variable that indexed assignment to either CSP (coded 1) or the control condition (coded 0). Likewise, CSP Plus indexed assignment to either CSP Plus (coded 1) or the control condition (coded 0). Covariates measured at pretest included parent age, parent race (White/Caucasian = 1; other = 0), parent ethnicity (Hispanic = 1; non-Hispanic = 0), and student gender (male = 1; female = 0).

2.4. Data Analyses

The primary analyses were conducted via multivariate path analysis in Mplus 7.11 (Muthén & Muthén, 1998–2012) using a weighted least squares mean- and variance-adjusted (WLSMV) estimator because of the dichotomous substance use and school suspensions outcome variables. An intent-to-treat approach was implemented that included all participants who were assigned to the experimental conditions regardless of their degree of intervention exposure. To isolate point-in-time program effects, two models were estimated at each of the follow-up periods: a CSP versus control model (\( n = 226 \)) and a CSP Plus versus control model (\( n = 203 \)). In each model (see Figure 2 for the CSP example), the three outcome variables at either 1-year follow-up or 2-year follow-up were regressed on emotion regulation at posttest as well as on the program variable and the pretest variables. Simultaneously, emotion regulation at posttest was regressed on the program variable and the pretest variables. All exogenous variables were allowed to correlate with one another. These models were just-identified (i.e., Chi-square = 0, Degrees of Freedom = 0). In Mplus, WLSMV estimation incorporates a pair-wise missing data procedure to maximize use of the available data (Muthén & Muthén, 1998–2012). Bias-corrected bootstrapped 95% confidence intervals were computed to determine the statistical significance of the indirect effects based on 5,000 bootstrap samples (MacKinnon, Lockwood, & Williams, 2004). Confidence intervals that do not include zero are statistically significant. Although students were clustered within schools for recruitment purposes, school was not the unit of randomization in this trial. Still, supplemental analyses were conducted to examine the potential for school effects by including dummy coded school variables in the primary path analyses. No consistent pattern of school effects was observed, and when including school
covariates in the models the results were substantively identical to those reported below. Likewise, no consistent pattern of cohort effects was observed, and substantive results held when controlling for cohort. Thus, school and cohort were omitted from the primary analyses.

3. Results

Preliminary analyses revealed no pattern of statistically significant experimental condition differences across the measures at baseline. As noted, previous analyses of data from this trial showed that CSP ($b = .16, p < .05; \beta = .10$) and CSP Plus ($b = .22, p < .05; \beta = .12$) predicted increased parent-reported child emotion regulation from pretest to posttest (Mason et al., 2015), suggesting that emotion regulation may represent a proximal target that has longer-term associations, in turn, with adolescent outcomes. Means and standard deviations for substance use, conduct problems, and school suspensions at pretest, 1-year follow-up, and 2-year follow-up are reported in Table 1. Separate logistic regression analyses examined CSP and CSP Plus as predictors of each outcome at 1-year and 2-year follow-up, with reference to the control condition and adjusting for pretest levels of the outcome. None of the total intervention effects in these analyses was statistically significant (not shown but available on request).

Path coefficients from analyses of the 1-year follow-up data are reported in Table 2, whereas those from analyses of the 2-year follow-up data are reported in Table 3 (results regarding the covariates are available on request). CSP had a statistically significant positive effect on emotion regulation at posttest that, in turn, had statistically significant negative associations with substance use and school suspensions at 1-year follow-up (see Table 2) and with conduct problems and school suspensions at 2-year follow-up (see Table 3). At 1-year follow-up, indirect effects of CSP on substance use ($b = -.059 [-.181, -.005]$) and school suspensions ($b = -.071 [-.195, -.009]$) through emotion regulation were negative and statistically significant. However, there was not a statistically significant indirect effect of CSP on conduct problems ($b = -.022 [-.130, .040]$ at 1-year follow-up. At 2-year follow-up, indirect effects of CSP on conduct problems ($b = -.084 [-.247, -.008]$) and school suspensions ($b = -.057 [-.186, -.002]$) were negative and statistically significant. The indirect effect of CSP on substance use ($b = -.026 [-.107, .012]$ was not statistically significant at 2-year follow-up. The effect of CSP Plus on emotion regulation at posttest was statistically non-significant (see Tables 2 and 3), as were the indirect effects of CSP Plus on substance use ($b = -.029 [-.131, .010]$), conduct problems ($b = -.048 [-.178, .021]$), and school suspensions ($b = -.026 [-.132, .012]$) at 1-year follow-up. Likewise, at 2-year follow-up, the indirect effects of CSP Plus on substance use ($b = -.014 [-.101, .011]$), conduct problems ($b = -.072 [-.252, .035]$), and school suspensions ($b = .001 [-.053, .064]$) were not statistically significant.

4. Discussion

Results partially supported the primary hypothesis by indicating that CSP had statistically significant indirect effects on reduced substance use (1-year follow-up), conduct problems (2-year follow-up), and school suspensions (1-year and 2-year follow-up) through improved
parent-reported child emotion regulation skills at posttest. These findings provide some support for one pathway through which the CSP parent-training program is hypothesized to be associated with reduced adolescent problem behaviors (see Figure 1). Emotion regulation is a key aspect of self-regulatory functioning, which is rooted in brain systems that continue to develop during adolescence (Spear, 2000). Prior analyses of data from this study showed that CSP improved child emotion regulation as reported by parents from pretest to posttest (Mason et al., 2015), possibly as a result of program components designed to teach parents how to model and teach their children anger management as well as coping and problem solving skills. This is consistent with findings from tests of similar skills-based parenting programs that have demonstrated effects on self-regulation for children (Chang et al., 2014; Pears et al., 2014; Somech & Elizur, 2012) and adolescents (Fosco et al., 2013).

Here, improvements in child emotion regulation skills were shown to translate into reduced adverse outcomes as reported by adolescents at 1-year (substance use and school suspensions) and 2-year (conduct problems and school suspensions) follow-up, supporting the role of self-regulation in the etiology of adolescent problem behaviors (Eisenberg et al., 2014; King et al., 2011; Lengua, 2009). The indirect effect on substance use at 1-year follow-up was not maintained at the 2-year follow-up, perhaps because such use becomes increasingly normative as adolescents age (Miech, Johnston, O'Malley, Bachman, & Schulenberg, 2015). Conversely, the indirect effect on conduct problems was not evident at the 1-year follow-up, but emerged later. Greater confidence is placed in the findings for school suspensions, since indirect effects of CSP on this outcome were maintained across the 1-year and 2-year follow-up assessments.

Consistent with prior project analyses (Mason et al., unpublished results), the current tests revealed statistically non-significant total effects of CSP on the three adolescent outcomes at both follow-up assessments. Potential explanations for the lack of total intervention effects include the brief nature of CSP and the general (rather than problem behavior-targeted) content of the program. It is also noteworthy that prior project analyses have not demonstrated improvements in parenting; as discussed in more detail elsewhere (Mason et al., 2015; Mason et al., unpublished results), it may be more difficult to impact parenting patterns that are well established by the time children reach adolescence. As a program already in use, more extensive adaptations of CSP might be in order for targeting parents of older children. For example, additional content that more directly addresses the emerging concerns of adolescence and that further targets self-regulatory skills might be needed. Of course, such adaptations should be evaluated in new trials.

The prerequisite of establishing a statistically significant association between an independent variable and a dependent variable, found in the traditional causal steps approach to mediation (Baron & Kenny, 1986), has been challenged in recent years (Hayes, 2009; Shrout & Bolger, 2002; Zhao, Lynch, & Chen, 2010). It has been established that there are circumstances in which analyses can reveal a statistically significant indirect effect in the absence of a significant total effect, where the total effect is defined as the sum of indirect and direct (unmediated) effects. This can happen, for example, when the test of the total effect is underpowered or when multiple indirect effects (even those involving unmeasured mediators) operate in opposite directions and cancel out the overall effect (Hayes, 2009;
Shrout & Bolger, 2002; Zhao et al., 2010). A practical implication of these methodological advancements is that mediation analysis can proceed without first establishing a statistically significant total effect, ideally guided by theory, such as depicted in Figure 1 for CSP/CSP Plus. It is the statistical significance of the indirect effect that provides the desired test of a hypothesized mediating process, in this case leading from CSP to the outcomes through emotion regulation skills. We note, however, that our mediation results do not provide strong evidence of causality since the test of the second path in the chain is correlational and not grounded in randomization (i.e., the mediator was not a manipulated variable). In the current context, the indirect effect captures the impact of the intervention on emotion regulation and the association of emotion regulation, in turn, with the outcomes.

Statistically significant indirect effects were limited to the CSP condition, which is surprising since both the standard and adapted programs cover much of the same core content. A prior analysis found small but statistically significant effects of CSP Plus on emotion regulation skills at posttest (Mason et al., 2015). However, within the longitudinal multivariate modeling context of the current study, the effect of CSP Plus on emotion regulation skills was not significant and there was no support for hypothesized indirect effects leading to the adolescent outcomes. This may weaken inferences about the CSP indirect effects, although it is possible that having adolescents involved in the adapted CSP Plus program, which was newly created for the current study and not as well developed as the original program, interfered with the core parent-training components in some way. For example, parents may need to practice and consolidate new skills in interactions with workshop leaders and peers before effectively engaging with their adolescent children.

There are several study limitations. Low income families were recruited from one region of Washington State using school-based recruitment strategies, and the sample size is modest. Data for the current analyses were based solely on self-reports from participants, although it is noteworthy that different raters contributed to the measurement of emotion regulation (parents) and the outcome variables (adolescents). We did not consider indirect effects through general parenting, since, as noted, no such effects have been demonstrated. Future research might investigate indirect effects through other proximal intervention targets related to improvements in youth problem behaviors. A final limitation is that, in the effort to design a strong randomized trial, certain aspects of CSP implementation in this study did not closely match CSP as delivered in practice settings (e.g., intervention condition families were offered an incentive to participate in the program, which is not done in practice; moreover, children targeted by CSP in practice often already display high levels of problem behaviors). Tests that are even more closely aligned with how CSP is delivered in practice would be beneficial.

Strengths of the study include the experimental design, longitudinal assessments collected over the transition to high school, high retention rates, tests of hypothesized indirect intervention effects using an intent-to-treat approach, and the multivariate path analytic techniques examining change in targeted outcomes over time. Findings are partly consistent with theory that suggests self-regulatory functioning is an important target for prevention programs (Greenberg, 2006). Additional research is needed to further examine the role of
parent-training and family interventions in improving emotion regulation and related skills in vulnerable adolescents (Sanders & Mazzucchelli, 2013).

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<td>- Effective discipline</td>
<td>- Supervision</td>
<td>- School disciplinary actions</td>
</tr>
<tr>
<td><strong>CSP 2</strong></td>
<td>- Discipline</td>
<td></td>
</tr>
<tr>
<td>- Giving reasons</td>
<td><strong>Children:</strong></td>
<td></td>
</tr>
<tr>
<td>- Using praise</td>
<td>- <strong>Self-Control/Emotion Regulation Skills</strong></td>
<td></td>
</tr>
<tr>
<td><strong>CSP 3</strong></td>
<td>-- Anger management</td>
<td></td>
</tr>
<tr>
<td>- Teaching social skills</td>
<td>-- Problem solving/coping</td>
<td></td>
</tr>
<tr>
<td><strong>CSP 4</strong></td>
<td>-- Decision making</td>
<td></td>
</tr>
<tr>
<td>- Using corrective teaching</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CSP 5</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Teaching self-control</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CSP 6</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Having a parenting plan</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CSP Plus +8</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Coaching decision making</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Figure 1.**
Intervention Theory of Change

*Note.* CSP = Common Sense Parenting; + = increase; − = decrease. The standard CSP program is six sessions in length (CSP 1 – CSP 6). The CSP Plus program begins with session CSP +1, continues with CSP sessions 1–6, and ends with CSP +8. Each CSP/CSP Plus session is 2 h in duration.
Figure 2.
Illustration of Basic Analysis Model: Common Sense Parenting (CSP) versus Control
Table 1

Means (standard deviations) of the outcome variables at pretest, 1-year follow-up, and 2-year follow-up by experimental condition

<table>
<thead>
<tr>
<th>Variable</th>
<th>Pretest</th>
<th>1-Year Follow-up</th>
<th>2-Year Follow-up</th>
<th>Pretest</th>
<th>1-Year Follow-up</th>
<th>2-Year Follow-up</th>
<th>Pretest</th>
<th>1-Year Follow-up</th>
<th>2-Year Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substance use</td>
<td>.30 (.46)</td>
<td>.32 (.47)</td>
<td>.38 (.49)</td>
<td>.23 (.42)</td>
<td>.26 (.44)</td>
<td>.38 (.49)</td>
<td>.27 (.45)</td>
<td>.27 (.44)</td>
<td>.36 (.48)</td>
</tr>
<tr>
<td>Conduct problems</td>
<td>2.26 (1.89)</td>
<td>2.43 (1.92)</td>
<td>1.97 (1.70)</td>
<td>2.32 (1.83)</td>
<td>2.16 (1.86)</td>
<td>2.23 (2.12)</td>
<td>2.10 (1.99)</td>
<td>1.98 (1.83)</td>
<td>1.93 (1.74)</td>
</tr>
<tr>
<td>School suspensions</td>
<td>.26 (.44)</td>
<td>.24 (.43)</td>
<td>.22 (.41)</td>
<td>.17 (.38)</td>
<td>.16 (.36)</td>
<td>.21 (.41)</td>
<td>.30 (.46)</td>
<td>.21 (.41)</td>
<td>.22 (.41)</td>
</tr>
</tbody>
</table>

Separate logistic regression analyses examined CSP and CSP Plus as predictors of each outcome at 1-year and 2-year follow-up, with reference to the control condition and adjusting for pretest levels of the outcome. None of the intervention effects in these analyses was statistically significant (not shown but available on request).
<table>
<thead>
<tr>
<th>predictor variable</th>
<th>emotion regulation (pt)</th>
<th>substance use (1FUP)</th>
<th>conduct problems (1FUP)</th>
<th>school suspensions (1FUP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>condition: CSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>emotion regulation (PT)</td>
<td>--</td>
<td>--</td>
<td>--30 (.16)*</td>
<td>--30 (.24)</td>
</tr>
<tr>
<td>CSP</td>
<td>.15 (.08)*</td>
<td>.10</td>
<td>.20 (.16)</td>
<td>.10 (.23)</td>
</tr>
<tr>
<td>emotion regulation (PR)</td>
<td>.64 (.04)*</td>
<td>.68</td>
<td>.28 (.15)</td>
<td>.24 (.20)</td>
</tr>
<tr>
<td>substance use (PR)</td>
<td>-.09 (.10)</td>
<td>-.05</td>
<td>.67 (.16)*</td>
<td>.30 (.30)</td>
</tr>
<tr>
<td>conduct problems (PR)</td>
<td>-.01 (.02)</td>
<td>-.02</td>
<td>.11 (.04)*</td>
<td>.21 (.07)*</td>
</tr>
<tr>
<td>school suspensions (PR)</td>
<td>-.05 (.11)</td>
<td>-.03</td>
<td>.47 (.18)*</td>
<td>.21 (.28)</td>
</tr>
<tr>
<td>condition: CSP Plus</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>emotion regulation (PT)</td>
<td>--</td>
<td>--</td>
<td>--32 (.18)</td>
<td>--32 (.22)*</td>
</tr>
<tr>
<td>CSP Plus</td>
<td>.09 (.08)</td>
<td>.06</td>
<td>.12 (.17)</td>
<td>.06 (.24)</td>
</tr>
<tr>
<td>emotion regulation (PR)</td>
<td>.61 (.05)*</td>
<td>.65</td>
<td>.35 (.17)*</td>
<td>.28 (.33)</td>
</tr>
<tr>
<td>substance use (PR)</td>
<td>-.13 (.10)</td>
<td>-.08</td>
<td>.97 (.16)*</td>
<td>.42 (.66)</td>
</tr>
<tr>
<td>conduct problems (PR)</td>
<td>-.05 (.02)*</td>
<td>-.12</td>
<td>.11 (.05)*</td>
<td>.21 (.38)</td>
</tr>
<tr>
<td>school suspensions (PR)</td>
<td>-.03 (.10)</td>
<td>-.02</td>
<td>.56 (.20)*</td>
<td>.24 (.36)</td>
</tr>
</tbody>
</table>

h PR = pretest; PT = posttest; 1FUP = 1-year follow-up.

*p < .05.
### Table 3

CSP vs. control and CSP Plus vs. control models at 2-year follow-up

<table>
<thead>
<tr>
<th>Condition: CSP</th>
<th>Emotion Regulation (PT)</th>
<th>Substance Use (2FUP)</th>
<th>Conduct Problems (2FUP)</th>
<th>School Suspensions (2FUP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotion Regulation (PT)</td>
<td>--</td>
<td>--</td>
<td>-.17 (.16)</td>
<td>-.13</td>
</tr>
<tr>
<td>CSP</td>
<td>.15 (.08)*</td>
<td>.10</td>
<td>.04 (.16)</td>
<td>.02</td>
</tr>
<tr>
<td>Emotion regulation (PR)</td>
<td>.64 (.05)*</td>
<td>.68</td>
<td>.28 (.15)</td>
<td>.23</td>
</tr>
<tr>
<td>Substance use (PR)</td>
<td>-.09 (.10)</td>
<td>-.05</td>
<td>.94 (.15)*</td>
<td>.42</td>
</tr>
<tr>
<td>Conduct problems (PR)</td>
<td>-.01 (.02)</td>
<td>-.02</td>
<td>.09 (.05)</td>
<td>.17</td>
</tr>
<tr>
<td>School suspensions (PR)</td>
<td>-.05 (.11)</td>
<td>-.03</td>
<td>.27 (.20)</td>
<td>.12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Condition: CSP Plus</th>
<th>Emotion Regulation (PT)</th>
<th>Substance Use (2FUP)</th>
<th>Conduct Problems (2FUP)</th>
<th>School Suspensions (2FUP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotion Regulation (PT)</td>
<td>--</td>
<td>--</td>
<td>-.16 (.17)</td>
<td>-.12</td>
</tr>
<tr>
<td>CSP Plus</td>
<td>.09 (.08)</td>
<td>.06</td>
<td>.15 (.18)</td>
<td>.08</td>
</tr>
<tr>
<td>Emotion regulation (PR)</td>
<td>.61 (.05)*</td>
<td>.65</td>
<td>.16 (.16)*</td>
<td>.13</td>
</tr>
<tr>
<td>Substance use (PR)</td>
<td>-.13 (.10)</td>
<td>-.08</td>
<td>1.12 (.16)*</td>
<td>.49</td>
</tr>
<tr>
<td>Conduct problems (PR)</td>
<td>-.05 (.02)*</td>
<td>-.12</td>
<td>.01 (.05)*</td>
<td>.02</td>
</tr>
<tr>
<td>School suspensions (PR)</td>
<td>-.03 (.10)</td>
<td>-.02</td>
<td>.53 (.20)*</td>
<td>.23</td>
</tr>
</tbody>
</table>

*PR = pretest; PT = posttest; 2FUP = 2-year follow-up.

*p < .05.