Brief report: Piloting the Positive Life Changes (PLC) program for at-risk adolescents

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A B S T R A C T

The purpose of this study was to pilot the Positive Life Changes (PLC) program, a comprehensive cognitive-behavioral intervention for at-risk adolescents that aims to promote social competencies and to prevent aggression. The program was piloted in 4 intervention groups with a sample of 31 self-referred adolescents (M age 15.64) attending an alternative high school. Questionnaires at pretest and 6-week posttest included five social competencies that represent an expansion of social information-processing (SIP) skills, a measure of aggressive behavior, and a new measure of aggression propensity. Three-level hierarchical linear models showed increases in three social competencies and reductions in physical and verbal aggression propensity from pretest to posttest. Number of program sessions attended did not moderate pretest–posttest change. Findings are discussed in the context of program implementation and future research in school and community settings.

This study describes the piloting of Positive Life Changes (PLC),1 a cognitive-behavioral program to prevent adolescent aggression. PLC is grounded in a social information-processing model (SIP) of cognition that has been found to contribute to aggression and related problem behaviors (Crick & Dodge, 1994; Dodge, 2006). There is robust support for the effectiveness of SIP in preventing and treating such behavior in children (Conduct Problems Prevention Research Group [CPPRG], 2011; Landenberger & Lipsey, 2005; Metropolitan Area Child Study Research Group, 2007). The PLC program expands this literature in several ways.

PLC is organized around a practitioner-friendly metaphor of “core competency” development that builds upon and expands the SIP framework (Fig. 1). The five PLC core competencies are positive sense of self, self-control, moral system of belief, decision-making, and prosocial connectedness, all of which have been associated with reduced problem behaviors (Guerra & Bradshaw, 2008). Additionally, PLC is designed specifically for adolescents and focuses on issues and challenges related to adolescent development. Much of the evidence for SIP programs comes from studies of young children, with a paucity of interventions designed for and tested among older adolescents.

PLC is designed to facilitate implementation in real-world settings. PLC utilizes a group format with workbooks to guide each session. Although the specific skills taught are empirically and theoretically-based, participants apply these skills to situations and contexts relevant to their lives. This format allows for vignette modification depending on context (e.g., school or detention center) and unique challenges faced by different youth. The workbook format allows for easy monitoring of program dosage and provides a mechanism by which participants who are unable to attend the group can make up missed lessons. Finally, PLC emphasizes helping youth understand and navigate multiple contexts (peers, schools, families) by

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1 Abbreviations: PLC = Positive Life Changes; SIP = social information-processing.
Although programs that address multiple levels of risk typically are more effective than single-context programs (e.g., CPPRG, 2011), the costs and difficulties of providing services across multiple social contexts make such efforts less feasible.

PLC was implemented in four groups of alternative school adolescents at-risk for aggression and problem behaviors. We examined pretest–posttest change and whether program attendance moderated these outcomes.

Method

Participants

Thirty-one participants (29 males, 2 females) recruited between January and March, 2011, from an urban, Southern California alternative high school consented to participate in the intervention and met inclusion criteria. Participants were excluded if they were currently receiving substance use treatment, or if they had already fulfilled their school counseling requirements. Average participant age was 15.64 years (range = 14–18). Most participants self-identified as Latino (51.6%), followed by mixed race (25.8%), African American (19.4%), and Caucasian (3.2%). All participants had been expelled from public school for violating the district’s zero-tolerance policy, which includes weapon-carrying, substance use, or physical fighting at school. Fig. 2 shows participant flow and retention throughout the study.

Parental consent and adolescent assent were obtained in compliance with the Institutional Review Board and participating school district. Participants were offered credit for their required counseling hours upon completion of the PLC intervention.

Intervention procedure

Two psychology doctoral students implemented PLC in four school-based groups. Participants were randomly assigned to groups; average group size was seven participants. Implementation followed the sequence of the 3 PLC workbooks, which consist of 10 lessons each (Table 1). One-hour group sessions were held three times per week over a six-week period. Each meeting reviewed one lesson and assigned the next for homework, so that all 30 lessons were completed in 15 group sessions. Intervention fidelity was monitored through completion of PLC workbooks. Facilitators followed guidelines provided in the treatment manual.
Measures

Participants completed the following measures at pretest and 6-week posttest. Coefficient alpha was estimated for the current sample.

Propensity for physical and verbal aggression

The 24-item What Would Make You Fight Scale (Chan & Henry, 2009) was used to assess participants’ propensity for engaging in aggressive behavior. This measure has shown adequate reliability and validity in diverse samples (Chan & Henry, 2009). The measure contains a 12-item physical aggression propensity scale ($\alpha = .82$) and a 12-item verbal aggression propensity scale ($\alpha = .85$), each on a 4-point scale, from 0 (never) to 3 (yes, for sure).

Aggressive behavior

Aggressive behavior was measured by the 8-item Self-Report of Behavior (Farrell, Danish, & Howard, 1992), which has shown adequate reliability and validity. This scale reflects the frequency of aggressive actions in the last 30 days, on a 4-point scale: 0 (never), 1 (once or twice), 2 (3 to 5 times) or 3 (6 or more times) ($\alpha = .86$).

Core competencies

The Core Competency Survey was adapted from a measure found to be reliable and valid with U.S. and international samples (Gardner, Williams, Guerra, & Walker, 2011). The survey contains five subscales: positive sense of self (10 items; $\alpha = .88$); self-control (4 items; $\alpha = .70$); decision-making (20 items; $\alpha = .90$); moral beliefs (10 items; $\alpha = .86$), and prosocial connectedness (10 items; $\alpha = .82$). All items were rated on a 5-point scale, from 0 (strongly disagree) to 4 (strongly agree).

Data analytic approach

Three-level hierarchical linear modeling in HLM 7 (Raudenbush, Bryk, Cheong, Congdon, & duToit, 2011) was used to examine pretest–posttest change, and to test whether program attendance moderated outcomes. These models account for the nesting of observations within participants and participants within groups, and adjust standard errors accordingly (Raudenbush & Bryk, 2002). A nonlinear Poisson distribution was used when data were severely skewed. In hierarchical
models, pretest–posttest analyses included time as a level 1 predictor of outcomes, with no predictors at level 2 (between persons) or level 3 (between groups). In program attendance moderation analyses, number of sessions attended was then entered as a level 2 predictor of between-persons slopes, or pretest–posttest change. Sample sizes at levels 2 and 3 are low for this analytic approach, which limits degrees of freedom; however, this approach appropriately partitions outcome variance and addresses the nested data structure.

Post-hoc effect size estimates (Cohen’s d) were hand-calculated using dependent t-tests, as these results were consistent with hierarchical analyses. The following equation was used to account for the correlated nature of the data (Dunlap, Cortina, Vaslow, & Burke, 1996):

\[ d_{RM} = t_c[2(1 - r)/n_{ij}]^{1/2} \]

**Missing data**

Less than 10% of data were missing due to non-response or attrition. Data were considered to be missing at random (MAR), as mean comparisons showed no relationship between missing data and pretest values. Missing data were handled using maximum likelihood estimation in HLM 7, which treats data as MAR, allowing for the full sample of 31 participants to be analyzed and resulting in unbiased parameter estimates (Arbuckle, 1996).

**Results**

**Program attendance and attrition**

Twenty-seven participants completed the program, and finished the 30 workbook lessons at a rate of 100%. The average PLC session attendance rate across groups for study completers was 80% (range = 60%–100%) or 12 of the 15 in-person PLC sessions. Hierarchical models using program attendance to predict pretest–posttest change showed that number of sessions attended did not moderate program outcomes.

Four male participants attrited from the PLC groups (Fig. 2). Analyses comparing the attrited group and the study completers on demographic variables (age, ethnicity, and grade) and pretest measures indicated no systematic differences between these groups.
Table 2
Descriptive statistics for study variables and pretest–posttest hierarchical linear and nonlinear model results.

<table>
<thead>
<tr>
<th>Study variables descriptive statistics</th>
<th>Pretest M (SD)</th>
<th>Posttest M (SD)</th>
<th>ICC1</th>
<th>ICC2</th>
<th>ICC3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical aggression propensity</td>
<td>18.96 (7.19)</td>
<td>15.67 (5.51)</td>
<td>0.53</td>
<td>0.47</td>
<td>0.0001</td>
</tr>
<tr>
<td>Verbal aggression propensity</td>
<td>18.61 (7.86)</td>
<td>15.44 (8.63)</td>
<td>0.30</td>
<td>0.70</td>
<td>0.0003</td>
</tr>
<tr>
<td>Aggressive behavior</td>
<td>5.44 (5.75)</td>
<td>5.58 (3.95)</td>
<td>0.37</td>
<td>0.63</td>
<td>0.0002</td>
</tr>
<tr>
<td>Sense of self</td>
<td>20.78 (4.22)</td>
<td>22.41 (3.72)</td>
<td>0.47</td>
<td>0.53</td>
<td>0.0001</td>
</tr>
<tr>
<td>Self-control</td>
<td>7.52 (1.85)</td>
<td>7.92 (1.76)</td>
<td>0.46</td>
<td>0.54</td>
<td>0.000005</td>
</tr>
<tr>
<td>Decision-making</td>
<td>36.10 (7.99)</td>
<td>39.38 (7.10)</td>
<td>0.35</td>
<td>0.65</td>
<td>0.003</td>
</tr>
<tr>
<td>Moral beliefs</td>
<td>18.85 (4.29)</td>
<td>20.44 (3.63)</td>
<td>0.46</td>
<td>0.54</td>
<td>0.000009</td>
</tr>
<tr>
<td>Prosocial connectedness</td>
<td>19.80 (5.22)</td>
<td>20.44 (5.42)</td>
<td>0.17</td>
<td>0.81</td>
<td>0.02</td>
</tr>
</tbody>
</table>

Pretest-to-posttest hierarchical models

<table>
<thead>
<tr>
<th>Coefficient</th>
<th>SE</th>
<th>t-ratio</th>
<th>Cohen's d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical aggression propensity</td>
<td>-2.87</td>
<td>-4.85, -0.89</td>
<td>1.01</td>
</tr>
<tr>
<td>Verbal aggression propensity</td>
<td>-2.81</td>
<td>-4.84, -0.74</td>
<td>1.04</td>
</tr>
<tr>
<td>Aggressive behavior</td>
<td>0.59</td>
<td>(0.79, 1.25)</td>
<td>0.11</td>
</tr>
<tr>
<td>Sense of self</td>
<td>1.42</td>
<td>(0.16, 2.68)</td>
<td>0.64</td>
</tr>
<tr>
<td>Self-control</td>
<td>0.39</td>
<td>(-0.25, 1.03)</td>
<td>0.33</td>
</tr>
<tr>
<td>Decision-making</td>
<td>3.14</td>
<td>(1.10, 5.18)</td>
<td>1.04</td>
</tr>
<tr>
<td>Moral beliefs</td>
<td>1.49</td>
<td>(0.26, 2.72)</td>
<td>0.63</td>
</tr>
<tr>
<td>Prosocial connectedness</td>
<td>0.49</td>
<td>(-0.57, 1.55)</td>
<td>0.54</td>
</tr>
</tbody>
</table>

Note. ICC = intraclass correlation, calculated according to Raudenbush and Bryk (2002). ICC1 = proportion of total variance at the individual level (level 1): ICC1 = s2/(s2 + τ2 + d2). ICC2 = proportion of total variance at the between persons level (level 2): ICC2 = τ2/(s2 + τ2 + d2). ICC3 = proportion of total variance at the between groups level (level 3): ICC3 = d2/(s2 + τ2 + d2). Coefficient = slope coefficient γ100 in hierarchical linear and nonlinear models. Subscript a = exponentiated values from a nonlinear analysis using a Poisson distribution. Cohen’s d = hand-calculated using dependent t-tests and the formula provided by Dunlap et al. (1996). Cohen’s d interpretation standards are: <0.20 = not meaningful; 0.20–0.49 = small; 0.50–0.79 = medium; 0.80 and above = large (Cohen, 1988). *p < .05; **p < .01.

Pretest–posttest change

Table 2 summarizes study outcome means, intraclass correlations (ICCs), and pretest–posttest hierarchical analyses. ICCs indicate that there was little between-group variation at level 3. Results revealed statistically significant increases in participants’ decision-making, sense of self, and moral beliefs, as well as decreases in propensity for physical and verbal aggression. Effect sizes were generally in the small to medium range, and are comparable to other group interventions to prevent aggression (e.g., Wilson, Gottfredson, & Najaka, 2001).

Discussion

We examined pretest–posttest change and implementation feasibility from a pilot of the PLC program in an alternative high school. Hierarchical models showed statistically significant pretest–posttest increases in three core competencies and reductions in participants’ physical and verbal aggression propensity. Program attendance did not moderate outcomes, and the 27 adolescents who remained in the program completed 100% of their program workbooks.

This study is limited by a small sample size and by the self-report nature of the data. The lack of a control group precludes conclusions about the causative role of PLC in producing pretest–posttest change, although the peer contagion literature suggests that these adolescents might be expected to increase antisocial beliefs and behavior over time (Dodge, Dishion, & Lansford, 2006). However, findings from this study offer preliminary evidence that PLC is a relatively flexible and easy to implement intervention with high-risk youth in an alternative setting. The workbook format allows adolescents to complete lessons in groups and individually, reducing the number of group sessions required to complete the program. Further, no significant differences in outcomes were found based on attendance.

An important next step is to conduct a randomized trial of PLC with a larger sample of diverse males and females. Given the preliminary feasibility of implementing this program by blending individual workbook completion and group sessions, it also is important to test empirically whether there is an optimum balance of group sessions and individual workbook completion, or possibly whether the entire program can be equally effective when youth work entirely on their own.

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References


