Randomized Evaluation of the *Positive Action* Pre-K program

Brian R. Flay, D.Phil., Oregon State University

Conducted for the Virginia Foundation for Healthy Youth and Positive Action, Inc.

**Abstract**

There is a definite need for effective intervention programs that address the social-emotional, character and healthy development of preschool children. Strong social-emotional skills are necessary for children to be ready for school and so they can start on a trajectory of positive physical, mental, cognitive, behavioral and social-emotional development. A positive trajectory will also help prevent negative and unhealthy behaviors and failure later in life. The *Positive Action* program has a long history of effectiveness in schools (K-12) and communities, but has only recently developed lessons for preschool settings. This paper reports the results of the first evaluation of these lessons. Students were randomly assigned to classrooms/instructors who had previously been assigned to offer *Positive Action* lessons or not. Instructors in both *Positive Action* and control classrooms rated student behavior at pretest and immediate posttest. Results suggest that the *Positive Action* Pre-K lessons are effective at improving Pre-K student skills and behaviors across all of the domains that the program addresses.
Randomized Evaluation of the *Positive Action* Pre-K program

Recent years have seen increased interest in early interventions with pre-school children to a) prepare children for school b) promote social-emotional, character and healthy development and c) improve the prevention of the early onset of conduct problems. These interests come because inadequate behavioral patterns acquired in the pre-school years tend to lead to expulsion from preschool (Gilliam, 2005), become more stable over time (Cole, Teti, & Zahn-Waxler, 2003; Moffitt & Caspi, 2001) and contribute to the development of subsequent behavioral problems which early interventions can prevent (Linares et al., 2005; Ramey & Ramey, 2004; Rhoades, Warren, Domitrovich, & Greenberg, 2010; Webster-Stratton & Taylor, 2001). Several recently developed pre-school programs have demonstrated short-term effects on improved social-emotional skills and school readiness (Bierman et al., 2008; Domitrovich, Cortes, & Greenberg, 2007; Stefan & Miclea, 2010).

The school-based components of the *Positive Action* program, a comprehensive social-emotional character and healthy development program, have been evaluated in multiple quasi-experimental (Flay & Allred, 2003; Flay, Allred, & Ordway, 2001) and randomized trials (Beets et al., 2009; Lewis et al., in press; Li et al., 2011; Washburn et al., 2011). These evaluations have demonstrated the effectiveness of the program when implemented in elementary (K-5, K-6 or K-8) schools (See Flay & Allred, 2010 for a summary of findings). The *Positive Action* program has different curricula for every grade level, K-12. The program developers recently developed a preschool curriculum, and this paper reports results from the first randomized trial of the Pre-K lessons.
Method

The Positive Action (PA) Pre-K program was evaluated in a convenience sample of three preschools in Virginia during the fall of 2009. Twelve classrooms/instructors were selected to offer the program, based primarily on scheduling. At each site, students were randomly assigned to classrooms/instructors. Classroom instructors completed web-based ratings of their students both before (pretest in September) and after (posttest December-January) they provided a condensed version of the PA PreK program (60 daily 15-20 minute lessons). At pretest, 12 instructors (7 PA and 5 controls) from 3 sites rated 146 students; at posttest, 11 instructors (6 PA and 5 controls) from 2 sites rated 163 students. For this report, only those students rated at both times are considered (N = 135, 55 control and 80 PA students from 6 PA classes and 5 controls); the instructors who rated these students implemented the program lessons faithfully for the full duration of the evaluation (see results below). De-identified data were provided to the author for this analysis.

The student rating scale consisted of 33 items assessing 11 different domains addressed by the PA program (see Appendix for a listing of items by domain – actual delivery was by the first item from each domain, then the second item, and finally the third). By Unit, these were: Unit 1: understanding of PA and self-concept; Unit 2: physical health and intellectual health; Unit 3: self-management and self-control; Unit 4: respectful of others, considerate of others, and social bonding; Unit 5: honesty with self and others; and Unit 6: self-improvement. For each item, the instructor was asked to rate how much the item described the student’s behavior on a 7-point
scale from not at all to totally. A mean score was calculated for each scale and the total by taking the average of the items (3 per scale) so that all scores ranged from 1 to 7. The responses for three negatively worded items were reversed before calculating the average, so that higher scores on all scales represent better behavior.

At posttest, instructors reported how many lessons each student received as a measure of implementation. Instructors also reported on how engaged each student was in the classroom activities, and how much they thought each student discussed the program outside of the classroom, including with their parents. Instructors also rated how much they (the instructors) talked about PA with the parents of each of the participating students. Each of these items was answered on a 6-point scale ranging form not at all to very much.

**Results**

Most (4 of 6) PA instructors reported that they delivered almost all of the lessons (50-60 lessons) to their students; 2 reported delivering only 2 or 3 lessons per week. Students received an average (mean) of 4.8 (sd = 1.7) lessons per week (for 10 weeks); the median number of lessons per week was 6. Instructors reported that students were very involved in the program. On the 6-point scales, students were reported to be highly engaged (Mean = 4.0, sd = 1.2) and talked about PA with their parents at a moderate level (mean=3.9 on 6-point scale, sd=1.9). Instructors thought that students discussed PA outside of the classroom at a moderate level (mean = 3.2, sd = 1.0). Instructors reported that parents discussed PA with them only a very little to a little (mean = 2.5, sd = 1.4).
Table 1 presents the reliability coefficients for each outcome scale, the mean scores on each scale and the total score by condition (control and PA) and time (pretest and posttest), together with differences in change scores, calculated t-tests, and the percentage of relative improvement \([(Post-Pre for PA – Post-Pre for C)/Pre for C]\). The scales representing the 11 domains of the PA program had reliability coefficients between .76 and .93, with the total scale alpha being .98. As noted in Table 1, on average, PA students were rated significantly better on all scales and the total score at pretest - by an average of 0.37 points on the 7-point scale. However, PA students were rated an average of 0.83 points better than control students at posttest. T-tests of the differences in change scores (similar to an ANCOVA of posttest scores adjusting for pretest scores) were statistically significant (p < .05) for all scales and the total score.

On average, PA students were rated as improving by 0.48 points compared to only 0.02 points for control students. Furthermore, PA students were rated as improving on all scales, while control students actually got worse on 3 of the scales (self-concept, physical health and self-control). The figure shows the significant improvement in PA student ratings compared to the almost zero change in control student ratings. The effect size for the total score was 0.62 standard deviations, with a range of 0.36 (self-management) to 0.72 (self-control); the relative improvement on the total score was 13.6% with a range of 11.7% (self-management) to 16.6% (understanding PA) for the scales.
Discussion

This is the first randomized evaluation of the newly developed Pre-K lessons of the Positive Action program. One main limitation of this study was that the assignment of classrooms/teachers to conditions was non-random. This was probably responsible for the significant pretest differences – with instructors assigned to deliver the program rating their students better at pretest than instructors assigned to the control condition. This could have been the unfortunate effect of reducing the chances of detecting effects of the program; on the contrary, however, PA instructors clearly observed improvements in their students, while control instructors did not observe such improvements. Clearly, the random assignment of students to instructors was a major strength of this evaluation. As with all such studies, another limitation of this study is reliance on ratings of student behavior by the same people who delivered the intervention. Future studies might obtain ratings from other staff in the preschool as well as parents and independent observers.

The results from this randomized study suggest that the PA Pre-K program lessons are effective at improving Pre-K student skills and behaviors across all of the domains that the program addresses. Students exposed to Positive Action lessons improved an average effect size of 0.62 standard deviations and an average relative improvement of 11.9%. It is likely that the effects will be even greater in future implementations when all students within a preschool setting receive these lessons and the school-, family- and community-wide aspects of the program are also implemented.
<table>
<thead>
<tr>
<th>Scale alpha</th>
<th>Understand PA</th>
<th>Self-concept</th>
<th>Physical health</th>
<th>Intellect health</th>
<th>Self-manage</th>
<th>Self-control</th>
<th>Respect</th>
<th>Considerate</th>
<th>Social bonding</th>
<th>Honesty</th>
<th>Self-improve</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.933</td>
<td>0.835</td>
<td>0.806</td>
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**Pretest**

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<th>Intellect health</th>
<th>Self-manage</th>
<th>Self-control</th>
<th>Respect</th>
<th>Considerate</th>
<th>Social bonding</th>
<th>Honesty</th>
<th>Self-improve</th>
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<tbody>
<tr>
<td>Control</td>
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<td>0.51</td>
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**Posttest**

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<th>Intellect health</th>
<th>Self-manage</th>
<th>Self-control</th>
<th>Respect</th>
<th>Considerate</th>
<th>Social bonding</th>
<th>Honesty</th>
<th>Self-improve</th>
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<tbody>
<tr>
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<td>4.46</td>
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<td>4.60</td>
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<td>0.0000</td>
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<td>0.99</td>
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**Differences**

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<th>Physical health</th>
<th>Intellect health</th>
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<tr>
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<td>-0.11</td>
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<td>PA change</td>
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<td>ES</td>
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<td>0.50</td>
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<td>0.46</td>
<td>0.46</td>
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<tr>
<td>%RI</td>
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<td>11.7</td>
<td>9.7</td>
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<td>11.8</td>
<td>12.7</td>
<td>11.9</td>
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</tbody>
</table>
PreK Total Scores at Pretest and Posttest by Condition

Average Total Score

- Control
- PA

Pretest vs. Posttest


## Appendix: Teacher Rating of Students

Please think about the time you have had this student in classes. Please use the following rating scale, and check the number of your response. *Please try to use the complete 7-point scale across your students and the items.*

**Student ID:**

<table>
<thead>
<tr>
<th>Rating scale:</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<tbody>
<tr>
<td>Today’s date:</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Items

1. **Has a good understanding of which behaviors are positive and which are negative**
   - 1 2 3 4 5 6 7
2. **Clearly understands that positive thoughts lead to positive actions, which lead to positive feelings about him/herself, which lead to more positive thoughts**
   - 1 2 3 4 5 6 7
3. **Clearly understands that negative thoughts lead to negative actions, which lead to negative feelings about him/herself, which lead to more negative thoughts**
   - 1 2 3 4 5 6 7
4. **Feels good about him/herself when he/she does positive actions**
   - 1 2 3 4 5 6 7
5. **Is generally happy, outgoing, optimistic, confident, feels good about him/herself**
   - 1 2 3 4 5 6 7
6. **Is withdrawn, depressed/sad, unhappy, pessimistic, anxious/fearful**
   - 1 2 3 4 5 6 7
7. **Likes to eat healthy food and avoid unhealthy foods and substances**
   - 1 2 3 4 5 6 7
8. **Likes to be clean (personal hygiene) and to clean teeth after eating**
   - 1 2 3 4 5 6 7
9. **Likes to play actively, engage in physical activities/exercise**
   - 1 2 3 4 5 6 7
10. **Likes to learn**
    - 1 2 3 4 5 6 7
11. **Can play by themselves (independently)**
    - 1 2 3 4 5 6 7
12. **Can make good choices/decisions**
    - 1 2 3 4 5 6 7
13. **Uses free time in an acceptable way**
    - 1 2 3 4 5 6 7
14. **Looks after his/her possessions and respects others’ possessions**
    - 1 2 3 4 5 6 7
15. **Follows rules, accepts limits, cleans up his/her mess when asked**
    - 1 2 3 4 5 6 7
16. **Shows self control**
    - 1 2 3 4 5 6 7
17. **Is a bully (harasses, teases) or violent (hit others, fights, etc.)**
    - 1 2 3 4 5 6 7
18. **Can be impulsive, throw temper tantrums, be disruptive in class**
    - 1 2 3 4 5 6 7
19. **Listens to adults and other kids without interrupting**
    - 1 2 3 4 5 6 7
20. **Treats others with fairness, tolerant of differences in others**
    - 1 2 3 4 5 6 7
21. **Can cooperate with others, can compromise when necessary**
    - 1 2 3 4 5 6 7
22. **Is a good friend to others, is helpful to others who need it**
    - 1 2 3 4 5 6 7
23. **Understands how others feel, shows empathy or sympathy, compliments others**
    - 1 2 3 4 5 6 7
24. **Has good social skills with peers, can initiate conversation or play, is not bossy**
    - 1 2 3 4 5 6 7
25. **Likes to spend time with parents (and other adults outside of school)**
    - 1 2 3 4 5 6 7
26. **Likes to be with teachers (and in school generally)**
    - 1 2 3 4 5 6 7
27. **Is friendly with and sought out by peers, interacts well, inclusive of others, shares**
    - 1 2 3 4 5 6 7
28. **Is honest with him/herself (does not blame others or make excuses), takes responsibility for his/her own actions**
    - 1 2 3 4 5 6 7
29. ** Tells the truth, does not lie or cheat**
    - 1 2 3 4 5 6 7
30. **Is honest with others (does what they say they will do, keeps promises)**
    - 1 2 3 4 5 6 7
31. **Tries to be their best (can set small goals for themselves)**
    - 1 2 3 4 5 6 7
32. **Likes to (and has the courage to) try new things**
    - 1 2 3 4 5 6 7
33. **Persist in tasks, turns problems into challenges, receives suggestions**
    - 1 2 3 4 5 6 7