RESEARCH REPORT

Penn State Better Kid Care Click. Coach. Connect.: Supporting Infant-Toddler Early Learning Project

Abstract

This research report provides the statistical and data analyses, and the Methodology for the Penn State's Better Kid Care Click. Coach. Connect.: Supporting Infant-Toddler Early Learning Project

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The purpose of this report is to describe the efforts of an intensive infant-toddler, in-house coaching intervention – a hybrid model using digital resources and virtual support for onsite coaches through the Better Kid Care Program funded by the William Penn Foundation; as well as providing descriptive and demographic analyses of the Infant Toddler Environmental Rating Scale, Version 3 (ITERS-3). In starting any intervention study, it is paramount that one establishes equivalency between the intervention and comparison groups and usually there are always some very interesting descriptive and demographic trends that appear in the data. In this case because the ITERS-3 is so new, it is equally interesting to report on some very basic descriptive/demographic statistics drawn from this study so that other researchers can compare their respective samples with this sample. As the reader will see in the Results section, all of these relationships have been addressed.

Before beginning there are several interesting footnotes that need to be made to better understand the results of this study. Although the programs were randomly assigned to either the intervention group or the comparison group, all the programs that participated in this study were high performing programs as measured by the Pennsylvania Quality Rating and Improvement System Keystone Stars. They were all at either a Star 3 or 4 level which is indicative of a high performing early care and education program. In selecting the Comparison Group, it is not a typical Control Group in that it did have access to the Better Kid Care Online Modules, just the Onsite Coaching was not available; and the Comparison Group participants were asked not to engage in any coaching and did not receive any of the coaching supports available to the Intervention Group.

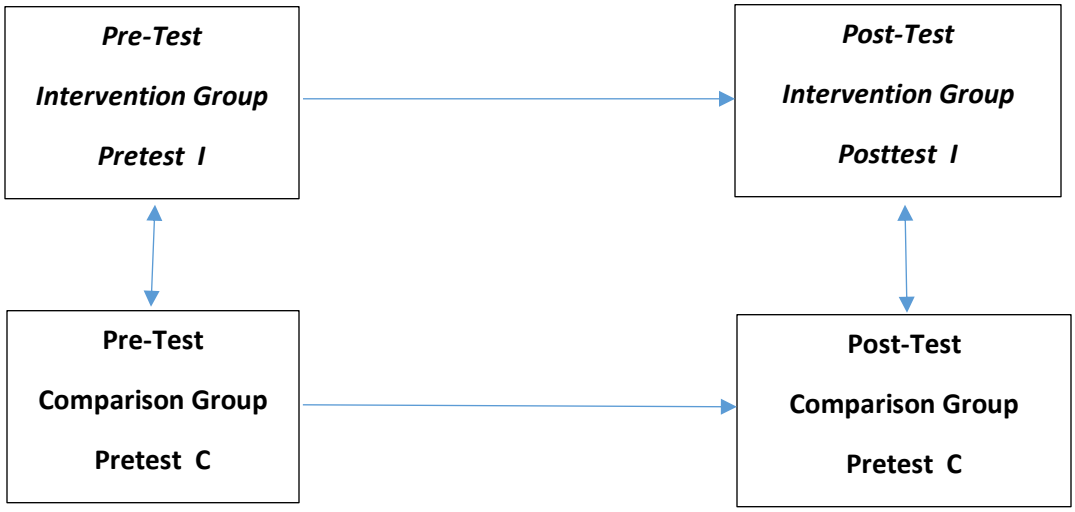
Coaching has been demonstrated to be a very effective professional development, training and technical assistance approach to improving the level of early care and education quality. The problem with coaching is that although it is very effective, it is costly to implement and therefore is not very cost efficient. This project is an attempt to combine the cost effectiveness of coaching with a cost efficient in-house delivery system supported by digital resources delivery system through the Penn State Better Kid Care project.

Coaching interventions are being used in many state professional development and training systems as well in state Quality Rating and Improvement Systems (QRIS) technical assistance in order to improve the overall quality of care being provided in early care and education programs. Interest in online approaches to training has grown over the past decade because of its cost efficiency and effectiveness and the ability to reach hard-to-reach early care and education providers, such as family child care. The Better Kid Care Click. Coach. Connect. Approach provided the following supports to the intervention group: a 300+ page hybrid learning guide aligned with the ITERS-3; full-day training; access to weekly coaching logs; and bi-weekly support calls with the project coordinator.

LOGIC MODEL FOR ANALYTICS

Figure 1 provides the logic model for the analytics for the study. It is a classic random clinical trial with an intervention group (Modules plus in-house coaching) with a comparison group (Modules only). Paired t-tests for the intervention group classrooms and comparison group classrooms were completed from pre- to post-tests. Independent t-tests were completed comparing the intervention group to the comparison group in both the pre- and post-tests. Correlational analysis was utilized to look at relationships amongst variables.

Figure 1 – Logic and Analysis Model:



METHODS

The focus of this study was Star 3 and Star 4 infant-toddler classrooms within the City of Philadelphia in Pennsylvania focusing on infant and toddler classrooms. There were 47 classrooms with 24 intervention classrooms and 23 comparison classrooms which began the project. Three observers collected the ITERS-3 data on the 47 classrooms. Basic demographic information was collected on each of the classrooms, their programs, teachers and directors, such as: profit/non-profit status, QRIS Keystone Star level (Levels 3 and 4 were included), years of ECE experience, years at present location, educational level of director, etc. Also, weekly coaching logs were completed by the coaches in the Intervention Group. There were 8 coaches in total. Data within the coaching log kept track of the observations made, the length of the coaching session, what was covered, and where it was conducted.

By the end of the intervention nine months later, there were 35 programs with 13 intervention classrooms and 22 comparison classrooms. It is unfortunate with the loss of the intervention classrooms (this will be discussed in the Limitations Section), but not unusual for this type of research.

RESULTS

The most salient result was the analyses between the Intervention and Comparison groups. There were no statistically significant differences between the two groups on the ITERS-3. The overall ITERS-3 score on the pre-test was 3.63 for the intervention group and 3.33 for the comparison group; and 4.57 and 4.19 respectively for the intervention and comparison groups on the post-test. But there were statistically significant differences from pre- to post-tests for both the Intervention and Comparison groups and the Effect Size was large for the Intervention Group (see Chart 1).

Chart 1 – Pre-Test & Post-Test ITERS-3 Scores for the *Intervention* and Comparison Groups

Groups	Pre-Test	Post-Test	Difference	Effect Size
Intervention (I) Group	***3.63***	***4.57***	***P < .01***	***1.21***
Comparison C Group	**3.33**	**4.19**	**P < .01**	**0.96**
Difference	**NS**	**NS**		
Effect Size	**0.36**	**0.46**		

Also, there were no statistically significant differences amongst the three assessors collecting the ITERS-3 data on either the pre- or post-tests (1 = 3.67, 4.62; 2 = 3.32, 4.02; 3 = 3.45, 4.54). All sub-scales and items within the ITERS-3 were non-significant on the pre-test and post-test. However, the t-tests did show significant differences for both the intervention and comparison groups in going from pre- to post-tests (see Charts 2a & 2b for the details related to the ITERS-3 Sub-Scale scores).

Chart 2a – Pre-Test Scores on the ITERS-3 for the *Intervention* & Comparison Groups

ITERS-3 Sub-Scales	*Intervention Group*	Comparison Group
Space and Furnishings	***3.87***	**3.17**
Personal Care Routines	***2.73***	**2.86**
Language and Books	***4.08***	**3.89**
Activities	***3.23***	**2.79**
Interaction	***4.28***	**4.05**
Program Structure	***3.37***	**3.24**

Chart 2b – Post Test Scores on the ITERS-3 for the *Intervention* & Comparison Groups

ITERS-3 Sub-Scales	*Intervention Group*	Comparison Group
Space and Furnishings	***4.75***	**3.93**
Personal Care Routines	***4.31***	**3.58**
Language and Books	***5.01****	**4.58***
Activities	***3.91****	**3.75**
Interaction	***5.13****	**4.91**
Program Structure	***4.70***	**4.36**

On the pre- to post-test comparisons it is evident that the intervention and comparison groups increased in both cases *(* = p < .05; ** = p < .01*). In comparing the Intervention Group to the Comparison Group, only the **Space and Furnishings** Sub-Scale demonstrated a statistically significant difference (I = 4.75; C = 3.93; p < .05), all other sub-scales were not statistically significant however the means were always higher with the Intervention Group.

Chart 3 – Item Scores for the *Intervention (I)* and Comparison (C) Groups Pre-Post-Tests[1]

Item[1]	*Pretest (I)*	Pretest C	*Posttest (I)*	Posttest C	*Difference I*	Difference C
Space 1	*3.54*	2.87	*3.23*	3.05	*NS*	NS
Space 2	*4.29*	3.74	*6.00*	4.23	**	NS
Space 3	*4.00*	4.00	*5.15*	4.86	*NS*	NS
Space 4	*2.79*	1.96	*4.46*	3.59	*	**
Personal 5	*2.33*	2.43	*4.46*	3.27	**	NS
Personal 6	*3.25*	3.39	*4.46*	3.86	*	NS
Personal 7	*1.75*	2.30	*3.85*	3.14	**	NS
Personal 8	*3.38*	3.17	*4.46*	4.05	*	NS
Language 9	*4.42*	4.30	*5.85*	5.23	*	NS
Language 10	*3.38*	3.74	*4.23*	3.77	*NS*	NS
Language 11	*3.96*	3.70	*5.38*	5.09	*	*
Language 12	*4.50*	4.57	*5.69*	5.09	*	NS
Language 13	*3.46*	3.39	*4.46*	4.23	*NS*	NS
Language 14	*3.42*	3.09	*4.46*	4.09	*	*
Activities 15	*3.25*	3.17	*4.62*	4.45	*	**
Activities 16	*2.00*	2.20	*3.08*	3.00	*NS*	NS
Activities 17	*3.00*	3.09	*3.54*	3.68	*NS*	NS
Activities 18	*3.33*	2.26	*3.54*	3.09	*NS*	NS
Activities 19	*3.08*	2.39	*4.39*	3.59	**	**
Activities 20	*3.25*	2.83	*4.92*	3.68	**	NS
Activities 21	*3.29*	2.65	*2.92*	3.36	*NS*	NS
Activities 23	*4.75*	3.83	*4.92*	5.36	*NS*	*
Activities 24	*2.08*	2.39	*3.54*	3.23	**	NS
Interaction 25	*3.92*	4.13	*4.92*	5.41	*NS*	**
Interaction 26	*4.38*	4.52	*5.54*	5.41	*	*
Interaction 27	*3.92*	3.78	*4.77*	4.50	*NS*	NS
Interaction 28	*4.00*	4.13	*6.00*	5.36	**	*
Interaction 29	*4.38*	4.35	*5.62*	5.09	*NS*	NS
Interaction 30	*3.38*	3.00	*3.92*	3.95	*NS*	*
Program 31	*2.92*	2.78	*4.85*	4.64	**	**
Program 32	*3.54*	3.65	*4.77*	4.18	**	NS
Program 33	*3.50*	3.20	*4.45*	4.21	*NS*	NS

[1] *See the Legend at the end of the report for a listing of each item.* (* p < .05; ** p < .01)

In comparing the Intervention Group to the Comparison Group with Post-Test Item Scores, two items were statistically significant, **Space 2 – Furnishings for Care Play and Learning** (I = 6.00; C = 4.23; $p < .01$) and **Activities 20 – Nature/Science** (I = 4.92; C = 3.68; $p < .05$).

In exploring the demographic, teacher, and coaching data elements and the pre- and post-test ITERS-3 data there were some significant differences between the ITERS-3 and these data. Chart 4 provides the basic demographic data displays for the total sample of both the intervention and comparison groups (see Chart 4). The other analyses amongst the demographics and ITERS are reported in the paragraph following Chart 4.

Chart 4 – Basic Demographic Information on Teachers, Programs, Directors, and Coaching

Number of Profit based Programs	**20**
Number of Non-Profit Programs	**15**
The Number of Years in the Specific Location for the Program (Average)	**23**
QRIS Keystone Stars 3 Program	**20**
QRIS Keystone Stars 4 Program	**15**
Licensed Capacity of the Program (Average)	**141 children**
Director's Years at Program (Average)	**9 years**
Directors with an AA Degree	**11%**
Directors with a BA Degree	**43%**
Directors with a MA Degree	**46%**
Lead Teacher's Years of Experience (Average)	**3 years**
Lead Teachers with a High School Diploma	**61%**
Lead Teachers with an AA Degree	**22%**
Lead Teachers with a BA Degree	**5%**
Pre-Test Average ITERS-3 Comparison Group	**3.33**
Pre-Test Average ITERS-3 Intervention Group	**3.63**
Post-Test Average ITERS-3 Comparison Group	**4.19**
Post-Test Average ITERS-3 Intervention Group	**4.57**
Number of Staff who completed at least 5 required modules	**60**
Percent of Time A Coaching Observation Occurred	**76%**
Percent of Time There Was a Focus for the Coaching Observation	**78%**

There was a significant relationship between ITERS-3 and the Keystone Stars level ($r = .31$; $p < .04$). There were significant relationships between profit vs non-profit status with the following: years in the location ($-.63$; $p < .0001$) and star level ($r = -.33$; $p < .03$) favoring non-profit status. There were statistically significant differences between star levels 3 and 4 (3.20 vs 3.76 respectively)($F = 4.71$; $p < .04$); and a trend for non-profit programs to score higher on the ITERS-3 (3.59) versus profit programs (3.17). There were no ITERS-3 score differences by education of director or teachers. This relationship has been found in previous studies.

There was another confounding staffing issue with turnover in both the Comparison and Intervention Groups. It is widely known that turnover rate in child care staff is a constant problem. The sample for this study was no different than what has been reported in the research literature with a 40+% in the Comparison Group and a much larger 60+% in the Intervention Group. This tremendous turnover (the number of lead teachers who changed between pre- and post-test), it was interesting to look at the ITERS-3 Scores for the two groups. The major finding was that the programs where there was no change in the teachers, the ITERS-3 scores were greater than those programs in which there was a change in teachers (4.41 vs 4.26 on the post-test). The Intervention Group showed a 1.02 increase in their total ITERS-3 score.

In delving deeper into the coaching intervention, there were some interesting findings that did not reach a statistically significant level because of the small number of programs that participated in the Intervention Group from pretest to posttest. For example, those programs that scored highest on the ITERS-3 post-test utilized prior observations more often (77% vs 49%), the sessions were longer (on the average 10% longer), they were more focused (5%), they were more often planned (20%). When coaching occurred under these circumstances ITERS-3 scores were higher (4.50+). When a regression equation was run with ITERS-3 as the dependent variable, prior observations, length of coaching session, and the number of professional development hours had the greatest beta weights ($\beta > 1.90$). And finally, with both the Comparison Group and the Intervention Group, there is a correlation between the number of professional development module hours taken and increases on the post-test ITERS-3 scores ($r = .33$; $p < .05$). Additional evidence that the Better Kid Care modules are effective at improving the overall quality of care. It will be interesting to compare the results from this study with future studies to determine the expected gains on the ITERS-3 with other Coaching Interventions.

And when correlations were run between the number of professional development module hours and the ITERS-3 Subscales, there were statistically significant relationships with the **Language Subscale** ($r = .48$; $p < .01$) and with the **Program Subscale** ($r = .36$; $p < .05$). Within the Subscales in looking at the specific Items, the following ITERS-3 Items were found to have a statistically significant relationship with the number of professional development module hours**: Item 1 – Indoor Space** ($r = .37$; $p < .05$); **Item 9 – Talking With Children** ($r = .33$; $p < .05$); **Item 10 – Encouraging Vocabulary Development** ($r = .35$; $p < .05$); **Item 11 – Responding to Children's Communication** ($r = .51$; $p < .01$); **Item 12 – Encouraging Children to Communicate** ($r = .37$; $p < .05$); **Item 26 - Supervision** ($r = .36$; $p < .05$); and **Item 31 – Schedule and Transitions** ($r = .36$; $p < .05$).

DISCUSSION

The purpose of this report was to provide an overview to the effectiveness of the online coaching program as implemented by the Better Kid Care Project, provide basic descriptive and demographic analyses from a pre-test data collection effort, and provide information about the coaching intervention in particular. The pre-test analyses equivalency testing was within acceptable ranges when comparing the intervention group and comparison groups on t-tests and One-way ANOVA's.

Post-test analyses demonstrated that both the intervention and comparison groups increased on the ITERS-3 by the same amount, approximately a full 1 point increase. Actually this was not un-expected because the Comparison group received the Better Kid Care online modules which is, in itself, an

innovative training delivery system short of actual online coaching. As demonstrated in the above Results Section, the number of professional development modules taken via the Better Kid Care Online delivery system correlated with increases on the post-test ITERS-3.

The coaching analyses which looked at the focus of coaching, the time, the location, and if observations were done with the coaching prior to the coaching did not show any significant differences; however, it did demonstrate trends showing more time spent in observations and these observations were more focused and goal oriented in those classrooms which had higher ITERS-3 scores.

So, the bottom line is, if you want to increase the quality of care, using either the Online Coaching or the Better Kid Care Online Modules appear from this study to have similar positive results for the programs in increasing their ITERS-3 scores, with the Online Coaching being a tad better at increasing the scores, especially for the Space and Furnishings Sub-Scale. So longer, planned, & focused coaching observations produced the best results related to the ITERS-3.

LIMITATIONS

Sample size would have been sufficient but with the loss of almost 50% of the intervention classrooms, sample size became an issue and impacted the statistically analyses. With a more sufficient sample size, based on the trends in the data, levels of significance would have been attained.

All programs were high performing programs, STAR 3 or 4 as well as scoring 4.93 on average with an earlier version of the ITERS-R, were seasoned programs with a long history of operating in their local communities, and the comparison group was able to take Better Kid Care Online Modules which was a good thing. However, statistically it appears that we started out at a much higher ITERS-3 score level than what would have been generally expected which left less variance in the data for improvement. This led to scale compression in which score increases becoming more difficult. Both the intervention and comparison groups increased at about the same rate from pre to post-test, 1 point on the ITERS-3. It would have been interesting to have a third group which did not get the online coaching nor the online modules offered by the Better Kid Care project but just the run of the mill type of training offered in the Pennsylvania training system.

FUTURE RESEARCH

For future research, the online coaching intervention needs to be utilized with lower performing programs, more at a Star 1 and 2 levels as well as having a comparison group that is truly a control group and does not receive the Better Kid Care online modules. Because the programs selected for this study were such high performers at the upper end of the Pennsylvania QRIS Keystone STARS protocol, there was very little movement that was possible. The programs were starting at a higher level than the average ECE program.

Also, comparing the BKC Online Modules and the Coaching Programs to a group of programs that were receiving the usual run of the mill training would be an interesting comparison. This is where it is hypothesized that highly significant differences would be detected between either the BKC Online Modules or the Coaching Programs when compared to the Control Group.

Note [1] = Legend for Chart 3:

Space 1 = Indoor Space
Space 2 = Furnishing for care play and learning
Space 3 = Room arrangement
Space 4 = Display for children
Personal 5 = Meals/snacks
Personal 6 = Diapering/toileting
Personal 7 = Health practices
Personal 8 = Safety practices
Language 9 = Talking with children
Language 10 = Encouraging vocabulary development
Language 11 = Responding to children's communication
Language 12 = Encouraging children to communicate
Language 13 = Staff use of books with children
Language 14 = Encouraging children's use of books
Activities 15 = Fine motor
Activities 16 = Art
Activities 17 = Music and movement
Activities 18 = Blocks
Activities 19 = Dramatic play
Activities 20 = Nature/science
Activities 21 = Math/number
Activities 23 = Promoting acceptance of diversity
Activities 24 = Gross motor
Interaction 25 = Supervision of gross motor play
Interaction 26 = Supervision
Interaction 27 = Peer interaction
Interaction 28 = Staff-child interaction
Interaction 29 = Providing physical warmth/touch
Interaction 30 = Guiding children's behavior
Program 31 = Schedule and transitions
Program 32 = Free play
Program 33 = Group play activities

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