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# CONTINUOUS QUALITY IMPROVEMENT IN AFTERSCHOOL SETTINGS:

Impact findings from the Youth Program Quality Intervention study

*Executive Summary*



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## Abstract

**Citation:** Smith, C., Akiva, T., Sugar, S., Lo, Y. J., Frank, K. A., Peck, S. C., Cortina, K. S., & Devaney, T. (2012). *Continuous quality improvement in afterschool settings: Impact findings from the Youth Program Quality Intervention study*. Washington, DC: The Forum for Youth Investment.

**Background:** Out-of-school time programs can have positive effects on young people's development; however, programs do not always produce such effects. The quality of instructional practices is logically a key factor but quality improvement interventions must be understood within a multi-level framework including policy, organization, and point of service if they are to be both effective and scalable.

**Purpose:** To evaluate the effectiveness of the Youth Program Quality Intervention (YPQI), a data-driven continuous improvement model for afterschool systems. Research questions include:

- Does the YPQI increase managers' focus on instruction and the use of continuous improvement practices by site-based teams?
- Does the YPQI improve the quality of afterschool instruction?
- Does the YPQI increase staff tenure?
- Can the YPQI be taken to scale across programs that vary widely in terms of structure, purposes and funding and using resources available to public agencies and community-based organizations?
- Will afterschool organizations implement the YPQI under lower stakes conditions where compliance with the model is focused on the improvement process rather than attainment of pre-determined quality ratings?

**Participants:** Eighty-seven afterschool sites in five diverse afterschool networks participated in the study. Each site employed the equivalent of one full-time program manager and between two and ten direct staff; had an average annual enrollment of 216 youth; and had an average daily attendance of 87 youth.

**Research Design:** This is a cluster randomized trial. Within each of the five networks, between 17 and 21 sites were randomly assigned to an intervention (N=43) or control group (N=44). Survey data were collected from managers, staff, and youth in all sites at baseline prior to randomization (spring 2006), at the end of the implementation year of the study (spring 2007) and again at the end of the follow-up year (spring 2008). External observers rated instructional practices at baseline and at the end of the implementation year. Implementation data were collected from both intervention and control groups. Hierarchical linear models were used to produce impact estimates.

**Findings:** The impacts of the YPQI on the central outcome variables were positive and statistically significant. The YPQI produced gains in continuous improvement practices with effect sizes of .98 for managers and .52 for staff. The YPQI improved the quality of staff instructional practices, with an effect size of .55. Higher implementation of continuous improvement practices was associated with higher levels of instructional quality, with effects nearly three times greater than the overall experimental impact. Level of implementation was sustained in intervention group sites in the follow-up year.

**Conclusions:** This study demonstrates that a sequence of continuous improvement practices implemented by a site based team - standardized assessment of instruction, planning for improvement, coaching from a site manager, and training for specific instructional methods - improves the quality of instruction available to children and youth. The YPQI produces a cascade of positive effects beginning with provision of standards, training, and technical assistance, flowing through managers and staff implementation of continuous improvement practices, and resulting in effects on staff instructional practices. Evidence also suggests that participation in the YPQI may increase the length of staff tenure and that YPQI impacts are both sustainable and scalable.

# CONTINUOUS QUALITY IMPROVEMENT IN AFTERSCHOOL SETTINGS:

Impact findings from the Youth Program Quality Intervention study

## *Executive Summary*

As investments in the afterschool field have grown over the past decade, so too has the body of evidence suggesting that out-of-school time (OST) settings can be important contexts for positive youth development and learning (Mahoney, Vandell, Simpkins, & Zarrett, 2009). Afterschool settings provide childcare for working parents, safe places for youth during nonschool hours, and assistance with homework – services that are highly important to parents and policymakers alike. However, organized activities during out-of-school time can also provide opportunities for youth to experience a rich array of contexts and content – relational, cultural, artistic, scientific, recreational, and natural – which are available in communities but usually not in schools and not to all households due to cost of time, transportation, and tuition (Pedersen & Seidman, 2005). Afterschool settings can also provide exposure to instructional methods that are more responsive to individual youths' needs, interests, imagination and time, and less focused on memorization and test preparation, which increasingly animate school-day routines (Halpern, 2003).<sup>i</sup>

Many studies of human development and learning from outside the afterschool field indicate that the qualities of afterschool settings should matter. Youth experiences of emotional support, competence, and autonomy build youth interest and motivation to engage with the processes and content in a setting (e.g., Deci & Ryan, 2000). Youth experiences of engagement, interest, and motivation are associated with a wide range of learning and developmental outcomes (e.g., Wigfield, Eccles, Schiefele, Roeser, & Kean, 2006), and youth experiences which combine positive affect, concentration, and moderately-difficult effort promote skill development in multiple domains, especially when accompanied by adults' modeling of the learning task (e.g., Fisher & Bidell, 2006). In research on afterschool programs specifically, afterschool experiences are associated with higher levels of youth engagement than either the school day or unstructured time with peers (e.g., Larson, 2000) and can positively influence outcomes over a wide range of cognitive, emotional, and applied skills (e.g., Durlak, Weissberg, & Pachan, 2010).

The critical active ingredients of afterschool programs may be defined as manager and staff behaviors that influence the qualities of youth experience. However, it is clear that not all afterschool contexts promote developmentally powerful experiences. Reviews of numerous evaluation studies suggest that afterschool impacts vary and that afterschool settings that lack certain qualities are unlikely to enhance academic or developmental outcomes (Durlak, Weissburg, & Pachan, 2010; Lauer et al. 2006). Evaluations of the largest and most generic program models have found few effects on academic achievement and mixed impacts on other developmental outcomes (Black, Doolittle, Zhu, Unterman, & Grossman, 2008; Gottfredson, Cross, Wilson, Rorie, & Connel, 2010; James-Burdumy et al., 2005). Following literature in the early childhood and school day fields, there is likely a relationship between uneven or low instructional quality in afterschool settings and these weak effects.<sup>ii</sup>

Research, funding, and policy-making communities have endorsed efforts to introduce quality improvement into afterschool networks (Grossman, Lind, Hayes, McMaken, & Gersick, 2009; Metz, Goldsmith, & Arbreton, 2008; Princiotta & Fortune, 2009), and a growing number of intermediary organizations are engaged in supporting these policies (Collaborative for Building Afterschool Systems, 2005; Keller, 2007).

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However, despite this pattern of policy innovation, relatively few intervention models explicitly address the complex, multilevel nature of afterschool systems (Durlak & DuPre, 2008), particularly the role that managers may play as leaders of site-level continuous improvement processes. To date, no experimental studies have examined the impact of quality improvement interventions in the afterschool field (Gardner, Roth, & Brooks-Gunn, 2009), and evidence regarding the impact, sustainability, scalability, and cost of such interventions is scarce in the wider fields of education, human services, prevention and public health.

This report summarizes findings from the three-year *Youth Program Quality Intervention Study* conducted by the David P. Weikart Center for Youth Program Quality, a division of the Forum for Youth Investment. The study was designed to examine the impact of the *Youth Program Quality Intervention* (YPQI), a data-driven continuous improvement model for school and community-based sites serving youth during afterschool hours.

The YPQI Study was designed to rigorously answer several specific questions related to both impact and implementation:

- Does the YPQI increase managers' focus on instruction and the use of continuous improvement practices by site-based teams?
- Does the YPQI improve the quality of afterschool instruction?
- Does the YPQI increase staff tenure?

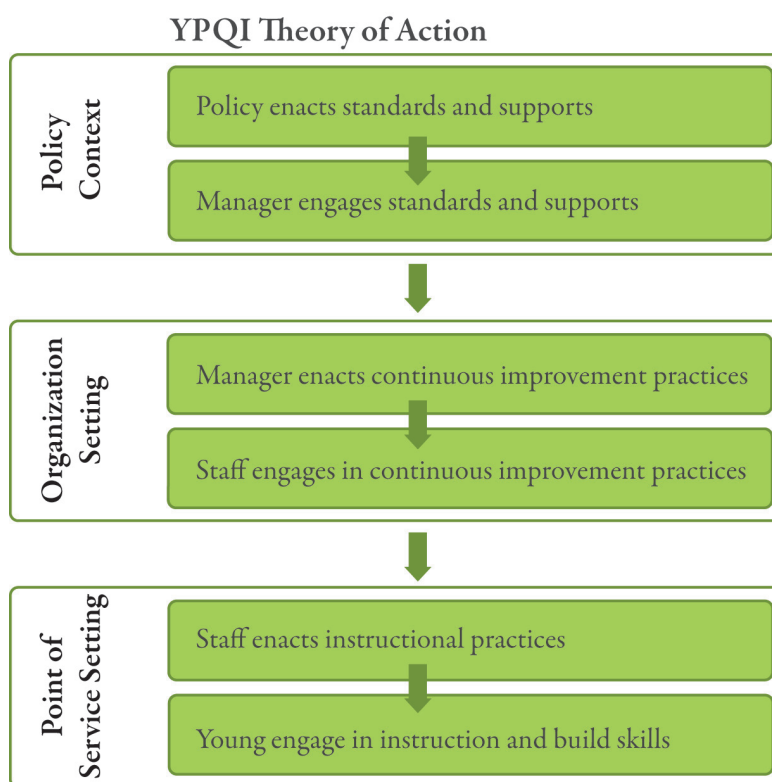
The study was also intended to inform field-level questions that pertain to quality improvement systems currently being created or considered by policy entrepreneurs in public sector agencies, private foundations, and community based organizations. These questions include:

- Can the YPQI be taken to scale across programs that vary widely in terms of structure, purposes and funding and using resources available to public agencies and community-based organizations?
- Will afterschool organizations implement the YPQI under lower stakes conditions where compliance with the model is focused on the improvement process rather than attainment of pre-determined quality ratings?

The primary impact of interest in the YPQI Study was the quality of staff instructional practice. As with most youth development researchers, our long-term aim is greater understanding of the relations between program context and youth developmental change.<sup>iii</sup> However, in the current study our strategy was to design an intervention that promotes high quality instructional practices in a coherent, cost-effective way, and then to rigorously study whether this approach affects instruction in the ways intended. We were particularly interested in isolating a sequence of effects that begins at the policy level and extends through several steps of implementation, and which results in improved quality of instruction at the point of service, where adults and youth meet.

## Overview of the Intervention

The YPQI Theory of Action (Figure 1) is an implementation sequence that spans policy, organization, and point-of-service levels of afterschool settings. In this model, actors engage in activities at one level, which leads them to enact behaviors at the level below. In perhaps the most important cross-level step, managers engage site-based teams of staff in continuous improvement practices, leading staff to enact higher-quality instructional practices at the point-of-service with youth. We refer to the Theory of Action as producing a *cascade of effects* because implementation begins with a policy level decision and produces effects both across multiple levels, and from a single site manager to multiple staff and youth. (For additional detail regarding the intervention see Chapter 1 and Appendix A in the full YPQI technical report).



### Standards and Supports

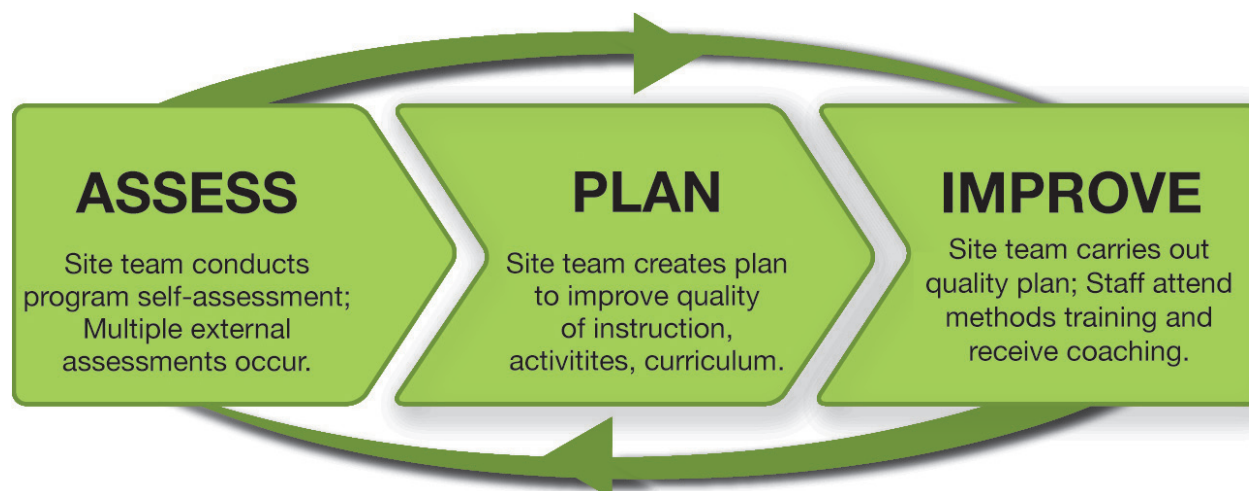
The YPQI begins with a policy level definition of standards both for site managers' continuous improvement practices and for high-quality instruction through adoption of a quality assessment tool. Aligned training and technical assistance (T&TA) supports are introduced to support performance against the standards at all levels of setting. T&TA supports are delivered by contract consultants or local staff using locally available resources and in regional proximity to sites. Recruitment and logistics are handled by network leaders. TA coaches are recruited locally and trained in the TA coaching method specific to the intervention.

### Continuous Improvement Practices

YPQI continuous improvement practices include *quality assessment, improvement planning, coaching by site managers during staff instruction, and staff attendance at targeted trainings for instructional skill building*. These four practices are enacted by site teams in the assess-plan-improve sequence described in Figure 2. The sequence begins with use of the Youth Program Quality Assessment (PQA), a standardized observational measure of instructional practice for afterschool and other settings (HighScope, 2005; Smith, Akiva, & Henry, 2006).



Figure 2. YPQI continuous improvement sequence



The Youth PQA is used in two ways during the first step of the sequence: (a) a reliable rater conducts two or more *external assessments* and (b) the manager leads a site team to conduct *program self-assessment*, which is a process of multiple peer observations and team-based scoring of a single assessment for the entire program.<sup>iv</sup> Data from both applications of the Youth PQA are used for improvement planning, in which the team interprets the meaning of their data and selects areas to improve. During the months when site teams enact their improvement plans, staff members attend training modules for targeted instructional practices and receive performance coaching from their site manager. Both training and coaching align with and reinforce the site's quality improvement plan.

Training and technical assistance supports for the YPQI continuous improvement practices consist of training and one or more visits by a Technical Assistance (TA) coach. The *Youth Work Management* training sequence consists of three 6-hour workshops for site managers: Youth PQA Basics prepares managers to lead the site team through internal assessment and to generate on-line quality profiles. *Planning with Data* prepares managers to lead the site team through improvement planning and to manage a change process. *Instructional Coaching* prepares managers to deliver feedback to staff following observation of staff instruction. *TA coaches* lightly support managers to enact the assess-plan-improve sequence (averaging 10 hours per site).

### *Instructional Practices*

The YPQI standards for instructional quality are depicted in Figure 3 and include a range of specific instructional practices grouped in four domains of quality: safety, support, interaction, and engagement. These practices, when enacted together as an instructional approach, provide youth with opportunities for positive developmental experiences in afterschool settings. Further, as a result of exposure to higher-quality instructional practices we expect youth to become more engaged with content.<sup>v</sup> Both of these elements – intentional infusion of higher quality instructional practices and corresponding higher levels of engagement from youth – are expected to drive an upward spiral of youth engagement and staff proficiency at implementing higher-quality instructional practices.

Figure 3. Pyramid of Youth Program Quality

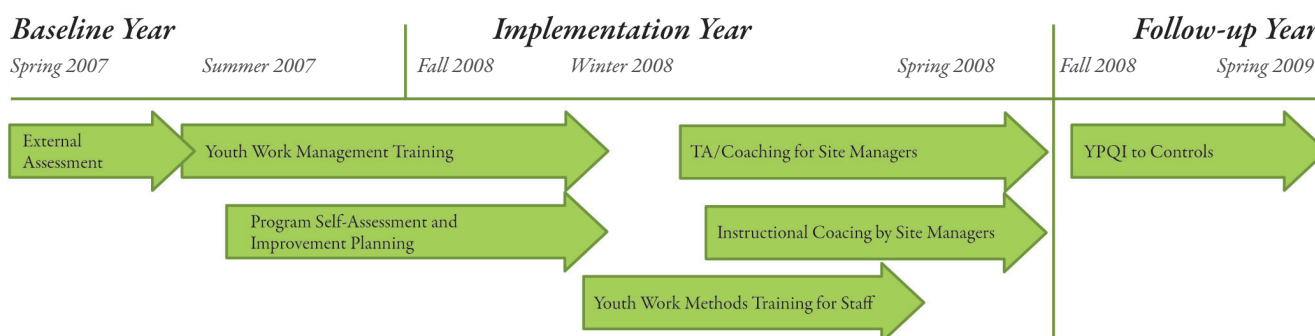


Training and technical assistance supports for these instructional practices consisted of the *Youth Work Methods* training portfolio of 10 two-hour workshops rooted in the HighScope active participatory approach to youth development (Smith, 2005): *Voice and Choice*, *Planning and Reflection*, *Building Community*, *Cooperative Learning*, *Active Learning*, *Scaffolding for Success*, *Ask-Listen-Encourage*, *Reframing Conflict*, *Structure and Clear Limits*, and *Homework Help*. These workshops were selected based on improvement plans and delivered at an all-site event in each network. Managers were encouraged to attend with their staff.

### Timeline

Implementation of the study and intervention occurred over three years: baseline (year 1), implementation (year 2), and follow-up (year 3). The timeline is depicted in Figure 4. During the follow-up year, the wait-listed control group was granted access to the YPQI and T&TA supports were offered again in each network, although attendance was not mandatory for either the control or intervention group.

Figure 4. Implementation Timeline





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## About the Study

The YPQI study was implemented in 87 afterschool sites (i.e., buildings that housed afterschool programs) in five networks in four states. The five networks were selected to include a mix of rural and urban settings and diverse set of afterschool policies including fee-based school-age child care, 21<sup>st</sup> Century Community Learning Centers, and community-based providers with both local and national affiliations. The sample also included substantial variation in the educational characteristics of program staff and in characteristics of the youth sample in terms of income, ethnicity, and risk.

Networks also shared important characteristics such as sites operating during the entire school year, full-time site managers, average attendance of at least 30 youth each day, and a program model that included distinct program offerings. In addition, participating network leaders agreed that the Youth PQA was an appropriate standard for high-quality instruction. Finally, most site managers in the study reported that academic support was the primary objective of the overall program, although a wide range of aims were reported.

The following outcomes were analyzed in order to determine the impact of the YPQI:

- *Site Improvement Focus* is a manager-reported binary measure, indicating whether a site's improvement focus included an instructional topic during the implementation year.
- *Continuous Improvement Practices* were measured using an index of practices: implementation of program self-assessment, improvement planning, instructional coaching, and participation in training on instructional methods.
- *Staff Instructional Practices* was the primary outcome of interest in the study and was constructed as a composite score for nine equally weighted scales describing distinct staff instructional practices: Staff Disposition, Welcoming Atmosphere, Inclusion, Conflict Resolution, Active Skill Building, Support for Group Participation, Opportunities to Make Choices, Opportunities for Planning, and Opportunities for Reflection.<sup>vii</sup>
- *Staff Employment Tenure* is indicated using two variables: a binary measure of the presence or absence of staff employment at the site during the past 10 months, and staff employment of two years or greater.

In addition to these primary outcomes, we used data from on-site observations, surveys, interviews, and training and technical assistance records to assess managers' and staff members' attitudes, background, knowledge, and exposure to the intervention. Implementation data were also collected in the control group at all time points to determine the extent to which control sites were implementing YPQI-like practices or utilizing YPQI-like T&TA supports.

The study employed a cluster randomized design (Bloom, 2004; Raudenbush, Martinez & Spybrook, 2007) with random assignment of sites within networks. This design created a group of sites exposed to the intervention and an equivalent control group within each of the five networks. The basic strategy for assessing the impact of the YPQI was to estimate impact within each network, and then pool these estimates as an overall estimate of impact. We also conducted tests to see if impact estimates differed significantly across networks, and in most cases they did not. Because multiple staff were nested within each site, two-level statistical models were used to produce the impact estimates.

Impact estimates for the YPQI study reported here provide an intent-to-treat analysis of the impact of the intervention because they reflect the effects on the entire baseline sample, regardless of participation and implementation (both of which were uneven). Although participating networks were discouraged from providing YPQI-like supports to the control group during the baseline and implementation years, the control group sites were not prevented from engaging in YPQI-like practices or from seeking out YPQI-like T&TA supports from other sources. For this reason, we characterize the control condition as “business as usual” and interpret impact estimates as effects over and above quality improvement practices already widespread in the field.

## Findings

There are two types of findings in the YPQI study. *Impact* findings are those based on estimation of an experimental contrast between the randomly assigned intervention and control groups. *Implementation* findings represent our best effort to extend our understanding of the impact findings by asking questions like, “how much?” and “under what conditions?” These questions lie outside of the experimental design but are critical for potential adopters of the YPQI. (For additional detail regarding YPQI study findings see Chapters 4 and 5 and related appendices in Smith et al. [2012].)

### Impact Findings

In this section we consider each step in the YPQI Theory of Action and describe the “amount” of YPQI impact at each step. In general, we describe the impact in terms of the original metric but for some of the impact estimates we also present a standardized effect size<sup>viii</sup> to facilitate comparison across measures and studies. The impact of the YPQI was positive and statistically significant ( $p < .01$ ) for all primary outcome variables except staff employment tenure which was positive but only marginally significant for both the 10-month ( $p = .08$ ) and 2-year ( $p = .09$ ) measures.

*Manager Participation in YPQI T&TA Supports (site manager “dose”).* During the implementation year, managers in the intervention group were more likely than those in the control group to receive T&TA supports for: data collection using an observational assessment (76% vs. 12%); improvement planning (76% vs. 19%); coaching staff on instructional practices (88% vs. 21%); and on-site assistance from TA/coach to strategize and plan about quality improvement (78% vs. 23%). Each of these differences was statistically significant ( $p < .01$ ). This evidence warrants subsequent impact analyses because random assignment caused the intervention group sites to receive a substantial dose of YPQI T&TA supports in marked contrast to the much smaller dose received by the control group.

*Site Improvement Focus.* It is important to know if the site team is actually focused on instructional quality, because it is possible for site teams to focus on other issues (e.g., parent involvement) and that may weaken the cross-level cascade of effects. At baseline, 10% of intervention group managers (and 13% of control) indicated any instructional improvement focus. During the implementation year, 43% of intervention group managers (24% of control) indicated that their site’s improvement efforts were focused on an instructional issue.

*Manager Continuous Improvement Practices.* Site managers assigned to the YPQI enacted in continuous improvement practices at higher rates than their control group peers (standardized effect size = 0.98,  $p < .001$ ). In practical terms, on average, site managers in the YPQI implemented one more of the continuous improvement practices than controls. If we consider implementation fidelity, substantially more intervention group managers were high implementers of continuous improvement practices<sup>ix</sup> in comparison to their control group peers (53% vs. 16%), and fewer intervention group managers were not implementing any such practices in comparison to their control group peers (4% vs. 16%).

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*Staff Continuous Improvement Practices.* Staff in afterschool sites assigned to the intervention engaged in continuous improvement practices at significantly higher rates than their control group counterparts (standardized effect size = .54,  $p = .003$ ). In practical terms, on average, site staff in the YPQI group implemented approximately one more practice at two-thirds of the sites in each network. If we consider implementation fidelity, 40% of the intervention group staff reported engaging in all four continuous improvement practices while only 21% reported equally high fidelity in the control group.<sup>x</sup>

*Instructional Quality.* Staff in afterschool sites assigned to the intervention group had higher levels of instructional quality than staff in the control group (standardized effect size = .55,  $p = .003$ ). In practical terms, this effect size can be interpreted as an average increase of one level on two of the nine practices (or an increase of two levels on one practice) measured in the composite score used to assess instructional practices. For example, this change could represent a site extending skill-building practices from some to all youth or introducing youth planning opportunities where none had existed before. If we consider offerings that achieved high fidelity for staff instructional practices, 65% of intervention group staff received a mean Staff Instructional Practices Total Score of 4 or higher, while only 39% reported equally high levels of instructional quality in the control group.

*Staff Employment Tenure.* Participation in the YPQI had a positive but marginally significant ( $p = .08$ ) effect on short-term staff tenure. At the end of the implementation year, participating in the YPQI increased the odds that staff were employed at the site for 2 months or more (84% staff in intervention group vs. 74% control) and that staff were employed at the site for 2 years or more (69% intervention vs. 57% control).

## *Implementation Findings*

In this section we address several questions related to implementation of the YPQI. While none of these questions can be answered with the level of certainty provided by the experimental design, we did collect data specifically to address these key issues related to how and why the YPQI achieved impact.

*Does higher fidelity implementation of continuous improvement practices produce higher quality instruction?* Yes. Staff engagement in the four continuous improvement practices is positively related to the quality of staff instruction. This finding also supports an important cross-level link in the cascade of effects described in the YPQI Theory of Action. Managers who engage more staff in more of the continuous improvement practices can expect those staff to enact higher quality instruction in point-of-service settings with youth.

*Is the effect on instructional quality robust across program conditions that are common in the field?* Yes. We examined the extent to which the association between continuous improvement and instructional quality was moderated by high manager turnover, low staff education levels, and youth-adult ratios. None of these features had a statistically significant moderation effect. This evidence suggests that even in settings characterized by some of the field's most challenging conditions, the YPQI may still be effective.

*Were YPQI practices sustained in the follow-up year when participation was not required or requested?* Yes. Using data collected from intervention group sites during the baseline, implementation, and follow-up years, we analyzed trends on three outcome measures over time: site improvement focus, staff continuous improvement practices, and staff employment tenure. In each case, the difference between baseline performance and the level of performance sustained in the follow-up year was positive and statistically significant. This finding suggests that YPQI T&TA supports have a sustained effect in subsequent years.

*How much time did it take for site managers and staff to participate in YPQI T&TA supports and then implement continuous improvement practices at their site?* Based on service logs from the YPQI study and subsequent deployments of the intervention, we estimated that a site manager spends an average total of 52 hours over 18 months: 25 hours attending training, 12 hours implementing continuous improvement practices, and 15 hours with a coach or conducting miscellaneous tasks. On average, three additional staff on the site team spent a combined total of 71 hours.<sup>xi</sup>

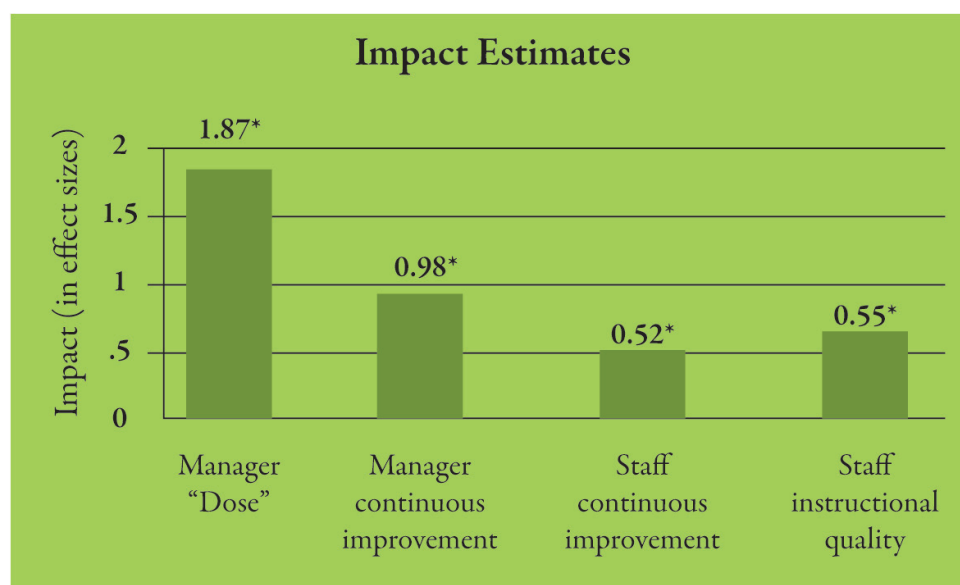
*What was the cost of the T&TA supports in the YPQI Study?* The estimated cost for YPQI T&TA supports was \$333 per staff member, or \$3,028 per site during the implementation year.

## Discussion

This study finds a preponderance of evidence that the YPQI works. When afterschool site managers implement a sequence of continuous improvement practices with site teams, the quality of instructional practices available to youth improves. Furthermore, the positive and near significant impact on staff tenure hints at the effect of the YPQI on building a positive organizational culture and climate that increases staff retention. These findings are the product of a rigorously designed intervention and provide some of the first experimental impact estimates regarding quality improvement systems in the afterschool field.

As described in the YPQI Theory of Action (see Figure 1), the intervention was designed to produce a cascade of effects across multiple levels of afterschool settings: from a single site manager engaging with standards and supports in the policy setting, to the creation of a site-based improvement team with multiple staff in an afterschool organization, and, finally, to transfer of improvement plans into point-of-service level instructional performances. Importantly, the YPQI Study design produced an experimental estimate at each step in this model, providing rare “black box” impact estimates that suggest how the intervention mechanism produces effects across multiple actors and levels of afterschool settings. Figure 5 presents standardized effect sizes for each of the outcomes described in the YPQI Theory of Action.<sup>xii</sup>

Figure 5. Cascading Effects



\* indicates statistical significance at the  $p < .01$  level

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Non-experimental analyses supported the hypothesis that one critical link in the chain of effects – the opportunity for staff to engage in continuous improvement practices – was associated with variation in the quality of instruction.<sup>xiii</sup> This association provides strong non-experimental evidence supporting the YPQI Theory of Action and a specific cross-level effect: When site staff are more deeply engaged in a continuous quality improvement process, the quality of their instruction improves.

Additional implementation analyses support further important conclusions. First, the YPQI has robust impact across widely varied afterschool systems and achieves effects despite challenging structural features which characterize individual sites, including staff education, youth-adult ratios, and staff turnover. Second, analyses across three years suggest that levels of staff participation in continuous improvement teams are sustained over time.

Finally, we asked if the YPQI could be carried out using resources normally available to public agencies and community-based organizations. While we could not answer this question directly, we calculated time estimates and costs for the intervention as delivered in the study, noting that the YPQI was carried out using human resources already available in each of the networks. Elsewhere, we have attempted to compare the intensity of the YPQI to other interventions producing similar standardized effect sizes, suggesting that the YPQI is cost-effective for the afterschool field.<sup>xiv</sup>

## *Conclusions*

The YPQI Study makes a much needed contribution to our understanding of how a site-level continuous improvement intervention can work and be implemented at scale in quality improvement systems. Of particular interest to policymakers is the fact that the policy-level performance standards for continuous improvement and instruction in the YPQI model were “lower” stakes. Sites were not penalized by their leadership or by their customers if they failed to attain a certain level of quality. Despite this lack of either performance data publicity or direct sanction, program quality still improved in response to standards and supports that were designed first and foremost to empower site managers to enact the four continuous improvement practices.

## *Limitations of the Study*

The primary limitation of this study is that it does not examine in detail the relations between the intervention and child-level changes in engagement and skill building. For reasons of both design feasibility and cost, child-level change was not the object of evaluation in this study. Nevertheless, extension of the concept of a “cascade” of intervention effects across levels in future studies should ultimately include detailed longitudinal assessment of child engagement in afterschool settings and long-term skill building. Another limitation raised by several reviewers is that the intervention group was trained on the outcome measure; that is, the Youth PQA was both a standard for performance in the intervention and supplied the focal outcome measures. Although it is possible that staff in randomly sampled afterschool offerings could have performed for the rater who observed their offering because they were familiar with the Youth PQA (raters were blind to condition), this kind of peak performance response is difficult to achieve. A final weakness of the study was our inability to more thoroughly track effects into subsequent years. Our follow-up year data collection did not include observation of instructional quality as it only focused on measures that could be completed using manager and staff self-reports on surveys. A major unanswered question for the YPQI relates to cumulative effects over time. It seems likely that both manager continuous improvement skills and staff instructional skills could improve over multiple years, increasing the increment added to instructional quality each year until a threshold or ceiling is reached. Our study did not allow us to evaluate these questions.



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## Notes

- <sup>i</sup> Our data suggest that “academic support” is the most widely endorsed priority of afterschool program managers and that an amazingly diverse set of academic enrichment and non-academic enrichment activities are delivered to support school-related content using methods that complement rather than replicate those used during the school day.
- <sup>ii</sup> This conclusion has been reached in a number of related fields where the qualities of how adults interact with children has been associated with child effects. In the early childhood and school day fields, numerous high quality studies, reviews, and meta-analyses conclude that “process quality” or “instruction” are important determinants of child learning and development. See Cohen, Raudenbush & Loewenberg Ball, 2003; Hattie, 2010; Masburn et al., 2008, Pianta & NICHD ECCRN, 2009; Zazlow, Anderson, Redd, Wessel, Tarullo, & Burchinal, 2010.
- <sup>iii</sup> The YPQI study was designed to assess context-level effects, not child-level outcomes. In pragmatic terms, the sample size necessary to detect context level effects in relation to the quality of manager behavior and staff instruction was very large (e.g., N=100 sites in the original design). Further, given the transience of afterschool program participation, our ability to adequately track individual subjects across so many sites was beyond the available resources. However, we did collect unidentified child-level data at several points in this study to establish group equivalence at baseline and to examine the proximal association between quality and youth engagement. These and other correlational findings using child-level data are discussed elsewhere (e.g., Akiva, Brummet, Sugar, & Smith, 2011).
- <sup>iv</sup> In theory, other behavior-focused measures of practice could be inserted into this intervention model, depending on the definition of high quality practice that is used.
- <sup>v</sup> Akiva, Brummet, Sugar, & Smith (2011) and Hansen & Skorupski (2012) describe the relation between the quality of afterschool offerings and youth engagement in several independent samples. According to our theory of change, high quality instruction produces youth engagement during a given session. Simultaneous presence of high quality instruction and high youth engagement across multiple sessions produces mastery experiences in a number of domains, depending on content of the offering sessions. These content-specific mastery experiences in the afterschool context produce longer-term skill development and corresponding skill transfer outside of the afterschool setting.
- <sup>vi</sup> Program offerings are defined as micro-settings with the same staff, same youth, and same learning purpose being pursued over multiple sessions. The YPQI sample of offerings was designed to exclude activities characterized primarily as homework, tutoring, competitive sport, and unstructured time.
- <sup>vii</sup> These scales were selected as the most reliable and representative subset of the published Youth PQA. For details and confirmatory analyses see Smith et al. (2010).
- <sup>viii</sup> The standardized effect sizes presented for all outcomes (except staff tenure) are based on Cohen’s *d*: The mean difference between intervention and control group divided by the pooled standard deviation for the control group at baseline. See Chapter 4 and Appendix F in Smith et al. (2012) for details on how a two-level statistical model was used to produce adjusted means and variance estimates necessary to calculate standardized effect sizes.
- <sup>ix</sup> High implementation for managers was defined as implementing all three practices counted in the Manager Continuous Improvement Practices Score. See Chapter 3 of Smith et al. (2012) for full details.
- <sup>x</sup> See Chapter 3 in Smith et al. (2012).
- <sup>xi</sup> These estimates do not include time spent implementing higher quality instruction during point-of-service offerings with youth.
- <sup>xii</sup> Although the declining size of standardized effects is clearly intriguing, the stronger claims that effects more proximal to the intervention are either (a) the direct cause of impacts at subsequent levels or (b) larger because they are more proximal to the intervention cannot be experimentally substantiated in this study. However, the critical cross-level effect of staff continuous improvement on instruction is explored directly in Chapter 5 of Smith et al. (2012).
- <sup>xiii</sup> Because staff engagement in continuous improvement practices introduced by the site manager is a critical link in the hypothesized chain of effects, we conducted an instrumental variables analysis using assignment to the YPQI as an instrument to remove unwanted error variance from the staff continuous improvement practices score. This score was a positive and statistically significant predictor of the quality of staff instruction.
- <sup>xiv</sup> We did compare the YPQI standardized effect on instruction to several other studies and meta-analytic findings that employed rigorous designs and observational assessments with some similarity to the Youth PQA to produce comparable outcome estimates on classroom and setting instruction. Across studies, YPQI impact estimates on instruction were of similar magnitude. The critical difference being that in each of these studies the intensity of the training and coaching interventions was much greater and there was no “cascading” effect, meaning that these interventions directly targeted staff instructors and care givers. These comparisons suggest that the YPQI may be more cost-effective than other more traditional intervention models, but future research will be necessary to adequately address this question.

