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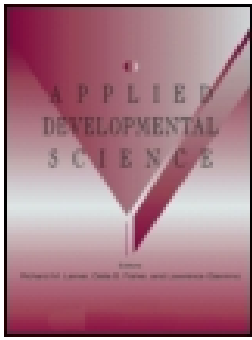
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Afterschool programs, extracurricular activities, and unsupervised time: Are patterns of participation linked to children's academic and social well-being?

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ABSTRACT

Patterns of afterschool activities were studied in low-income, ethnically diverse children ($n = 1796$, M age = 8.7 yrs). Cluster analyses indicated four reliable clusters: (a) regular participation in a high-quality afterschool program, (b) regular participation at the afterschool program combined with other extracurricular activities, (c) unsupervised time afterschool combined with extracurricular activities, and (d) low participation in any of these settings. Children who regularly attended a high-quality afterschool program alone or combined with extracurricular activities were reported by teachers to have higher academic performance, work habits, and task persistence, and less aggression towards peers compared to children whose afterschool hours combined unsupervised time with extracurricular activities. Attending high-quality afterschool programs alone and in combination with extracurricular activities also were associated with child self-reports of less misconduct compared to unsupervised time combined with extracurricular activities. These findings indicate the value of high-quality afterschool programs for children growing up in poverty.

Interest in children's afterschool hours has been sparked by multiple factors, including the needs of working families whose schedules prevent them from being home after school (Halpern, 2005; Mahoney et al., 2009) along with concerns about health and safety of children who are unsupervised during the afterschool hours (Aizer, 2004; Lam et al., 2014). Interest also has been motivated by the potential of the afterschool hours to provide academic enrichment and to nurture life skills such as task persistence and teamwork through sports, music, and service activities (Lareau, 2011; Vandell et al., 2015). National surveys show that children of middle- and high-income families in the United States routinely experience a rich array of organized afterschool activities that are typically funded by fees paid by their families (Duncan & Murnane, 2011; Howie et al., 2010). In contrast, children growing up in low-income families historically have had limited access to afterschool programs and extracurricular activities although parents report that their children would participate in these afterschool activities if they were available at their schools (Afterschool Alliance, 2014; Vandell et al., 2015).

To help address this inequity, federal programs like the 21st Century Community Learning Centers (U. S. Department of Education, 2020) as well as some state and local initiatives (Bodilly et al., 2010; California Department of Education, 2020) provide some support for afterschool programs in high-poverty schools in the United States. The goal of these programs, like the goal of publicly funded early childhood programs such as Head Start, is to break the cycle of poverty by providing low-income children with learning opportunities that will enable them to succeed at school. The aim of the current study is to examine the afterschool settings of low-income children whose schools offered high-quality 5-day a-week afterschool programs and to contrast the academic, social, and behavioral outcomes of children who regularly attended these programs alone and in conjunction with other extracurricular activities after controlling for child and family factors. Drawing on the National Research Council's report that identified key features of programs that successfully support youth development (Eccles & Gootman, 2002), the current study defines high quality in terms of children's experiences at the

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programs, including supportive and positive relationships between staff and students, positive relationships among students, high levels of child engagement in program activities, a range of activities that provide support for children's mastery orientation and cognitive growth, and appropriate levels of program structure (i.e., programs are not chaotic and not over-controlled).

In studying relations between afterschool settings and children's development, the current study is guided by the principles of relational developmental systems (Overton & Lerner, 2014) and bio-ecological theory (Bronfenbrenner, 2005; Bronfenbrenner & Morris, 2006). A central tenet of relational developmental systems is that individual development occurs through dynamic interactions between the child and the environments encountered by the child. This perspective is relevant to studies of afterschool contexts because it draws attention to the multiple environments that can affect children while recognizing children's capacity to shape or influence these environments. To varying degrees, children and parents can elect to participate in particular programs and activities (e.g., attend an afterschool program, sign up for clubs or sports teams on different days, hang out with friends, and spend time home alone) even as they are influenced by their experiences in those settings. Bio-ecological theory has underscored that children's experiences in one setting are affected by and linked to their activities in other settings. According to bio-ecological theory, children's development reflects patterns of experiences, not just experiences in any one setting in isolation. A second principle of bio-ecological theory is that the amounts of time in different settings are important and that settings experienced regularly over longer periods of time are more impactful than settings experienced infrequently or over shorter periods of time.

Drawing on these theoretical insights, the current study focuses on an array of different types of afterschool settings, including high-quality afterschool programs and other types of extracurricular activities such as sports and music as well as time without adult supervision. Although most afterschool research studies have focused on separate afterschool settings in isolation using variable-centered approaches (see Vandell et al., 2015 for a review), pattern-centered approaches such as cluster analysis more accurately capture children's afterschool lives more holistically and the complex associations between multiple settings in relation to children's development. For these reasons, in the current study, we assessed how often

children participated in a wide variety of afterschool settings. Our goal was to identify common patterns of afterschool settings and relate these patterns to children's academic performance, work habits, task persistence, and misconduct at the end of the school year. We selected these child developmental outcomes because prior research, to be reviewed below, had indicated these aspects of child functioning are likely influenced by children's experiences after school. Utilizing a pattern-centered approach enables us to determine if high-quality afterschool programs alone or in combination with other extracurricular activities are linked with positive academic and social functioning relative to other patterns of afterschool settings that may include time that children are unsupervised by adults.

Bio-ecological theory also highlighted the importance of placing children's experiences within the broader socioeconomic contexts of the family and community. In the current study, we focus on elementary schools that serve high proportions of low-income, ethnically diverse students including substantial numbers of Latino/a students, a group traditionally under-served by afterschool programs (Fredricks & Simpkins, 2012). We ask if high-quality afterschool programs and other extracurricular activities are linked to academic and social outcomes among these ethnically diverse, economically disadvantaged children.

Although children often spend time in several afterschool settings (Vandell et al., 2015), largely separate research literatures have evolved that focus on specific types of settings in relation to children's developmental outcomes. One body of research has examined afterschool programs and found better academic performance and stronger approaches to learning in areas such as work habits and task persistence when children regularly attend high-quality programs (Durlak et al., 2010; Pierce et al., 1999, 2010; Roth et al., 2010; Smith et al., 2017). Relations with child outcomes are smaller and sometimes even negative when program quality is lower (Bodilly & Beckett, 2005; Smith et al., 2017). Despite the evidence of the importance of program quality for youth outcomes, relatively few afterschool studies actually assess program quality (for exceptions, see Pierce et al., 2010; Rosenthal & Vandell, 1996; Smith et al., 2017). A strength of the current study is that observational assessments were used to verify that the afterschool programs were high quality as evidenced by supportive relationships with staff and peers and engaging and interesting activities, thereby affording the

opportunity to ask if regularly attending high-quality afterschool programs work in concert with other extracurricular activities or at the expense of participation in other activities. It also is unknown if children who regularly attend high-quality afterschool programs in addition to their extracurricular activities differ from those who only attend afterschool programs.

Other variable-centered research has focused exclusively on extracurricular activities and child developmental outcomes. Most of these studies have examined adolescents (Farb & Matjasko, 2012, Feldman & Matjasko, 2005), but there is some evidence that children who consistently participate in extracurricular activities during elementary school have higher academic achievement than children who do not consistently participate in these activities, controlling for child and family factors and children's prior functioning (NICHD Early Child Care Research Network, 2004). One factor, not previously examined is whether effects associated with extracurricular activities vary depending on children's other afterschool settings. For example, extracurricular activities in conjunction with afterschool programs may promote improved task persistence and work habits as well as academic functioning, whereas extracurricular activities in combination with hanging out with unsupervised peers may place children at risk for academic or behavior problems. We test this hypothesis in the current study.

Variable-centered research also has focused on children's unsupervised time. A consistent finding from these analyses is that more time spent without adult supervision is associated with higher rates of misconduct, especially when youth are spending their time socializing with unsupervised peers (Aizer, 2004; Osgood et al., 2005). These studies have focused, for the most part, on adolescents, leaving unanswered whether unsupervised time with peers during middle childhood is also linked to problem behaviors. In addition, other types of unsupervised time such as being home alone or caring for younger siblings have rarely been studied in middle childhood. Notable exceptions are Belle's (1999) qualitative study of unsupervised time and Posner and Vandell's (1994) quantitative analysis, which suggested that these types of unsupervised time are also associated with problem behaviors. In the current study, we ask if children's unsupervised time occurs in combination with other types of afterschool settings and if these combinations of experience are linked to positive or negative child functioning.

To address the question of whether children's development is linked to different patterns of afterschool settings as suggested by bio-ecological theory (Bronfenbrenner & Morris, 2006), person-centered analyses are needed. Several investigators (Metzger et al., 2009, Morris & Kalil, 2006; Oberle et al., 2019; Zarrett et al., 2009) have used pattern-centered analytic techniques to study children and youth who experience different combinations of afterschool settings, which were then related to child developmental outcomes. In a study of low-income, ethnically diverse early adolescent, middle-school students, Metzger et al. (2009) used cluster analyses to identify six profiles of extracurricular activities, which were differentially associated with academic achievement, problem behavior, and adult support. While some forms of organized activity were generally associated with more positive outcomes, the "school and community" and "community and sports" profiles also report the higher levels of delinquency, drug use, and school suspensions. Metzger et al. did not include high quality afterschool programs or unsupervised time as afterschool settings, and these other settings may help to explain levels of misconduct in some of the extracurricular activity groups. Similar to Metzger et al., Zarrett et al. (2009) also found that the benefits of sports participation during early adolescence (5th to 7th grades) depended, in part, on specific combinations of multiple activities in which youth participated along with sports. Participation in a combination of sports and youth development programs was more highly related to positive youth development than sports alone. Zarrett et al. did not include unsupervised time in their analyses.

Other research has focused on the afterschool settings during middle childhood (ages 6 through 12 years, or Kindergarten through fifth grade). This is an important developmental period to study and is the focus of the current study because activities during middle childhood often set the stage for children developing the prerequisite skills for pursuing extracurricular activities in adolescence. Academic and social skills developed in middle childhood also set the stage for adolescent development (Eccles, 1999). In one study involving more than 27,000 4th grade children (mean age = 9 years) in British Columbia, Oberle et al. (2019) identified four profiles of extracurricular activities during middle childhood: children who participated in multiple types of activities, no activities, sports only, and individual activities. Wellbeing and health scores were highest for children in the "All Activities" and the "Sports" clusters, and

lowest for those in “No Activities” and a cluster reflecting “Individual Activities.” These patterns are similar to another cross-sectional analysis of low-income Canadian children (Morris & Kalil, 2006) that found children who participated in several different types of extracurricular activities (sports, lessons, clubs) evinced higher academic achievement and more prosocial behavior than children who participated in a limited subset of extracurricular activities or no activities at all. These prior studies, however, did not specifically consider high-quality afterschool programs in combination with extracurricular activities nor did they include time in unsupervised settings, which is the goal of the current study. To our knowledge, only one prior study has used a pattern-centered approach that included attending afterschool programs. In that work, Mahoney et al. (2005) found that low-income children who consistently participated in an afterschool program displayed higher academic performance than their classmates who were cared for by parents afterschool or who had a mixture of parent or adult supervised care and unsupervised time. Mahoney et al. did not include extracurricular activities in their analyses.

The current study seeks to expand and extend prior research by assessing a range of afterschool settings for ethnically diverse, low-income students. We ask if having access to a high-quality afterschool program at children’s schools is linked to less participation in extracurricular activities such as sports, arts, and music, or if some children participate in both afterschool programs and extracurricular activities. Also unknown is whether ethnically diverse, low-income children derive more benefit from attending a high-quality afterschool alone or if there is greater benefit when attending the programs are combined with other extracurricular activities. Prior research (Bohnert et al., 2010; Oberle et al., 2019) that found positive benefits of greater breadth of activities would suggest that the high-quality program combined with extracurricular activities may be linked to more positive child functioning, but children who are attending the high-quality programs more regularly may benefit from higher exposure to the quality program.

These unanswered questions collectively point to the importance of considering afterschool programs, extracurricular activities, and unsupervised time more holistically as argued by bio-ecological theory. Though researchers can test the relative or unique contribution of each context through variable-centered approaches, the patterns and contingent effects of one afterschool settings depending on another afterschool setting have

demonstrated the utility of pattern-centered approaches. Interaction terms or other variable-centered approaches used to identify such contingencies can quickly become unwieldy as the number of settings increases. Use of interaction terms was not feasible in the current study with seven afterschool settings, and the pattern-centered approach provided a more parsimonious strategy to capture the variety and complexity of children’s lived afterschool settings.

In summary, the current study examines relations between clusters of afterschool experiences and child developmental outcomes in a large sample of low-income, ethnically diverse children. Guided by bio-ecological principles, we obtained reports of the amount of time that children spent in seven different types of afterschool settings - high-quality afterschool programs, several different types of extracurricular activities (coached sports; music, arts and special interest clubs; lessons) and several different types of unsupervised time (hanging out with peers, caring for younger siblings, and being home alone). Cluster analyses were used to identify common, reliable patterns of afterschool settings, which were then examined in relation to children’s academic performance, work habits and task persistence, and problem behaviors at the end of the school year, controlling for child and family factors. We used multi-level modeling to take into account that children were nested within school sites. We were particularly interested in how high-quality afterschool programs alone and in combination with extracurricular activities were related to child developmental outcomes relative to unsupervised time and other activities.

Method

Identification of high-quality afterschool programs and their host schools

During the academic year prior to the current study, the research team reviewed published sources and interviewed experts in the field to identify high-quality afterschool programs located in public elementary schools in the United States. A total of 116 programs were identified and prioritized based on several criteria: evidence that the program was school-based or school-linked, served elementary students from low-income families, met at least three days a week, was free of charge or charged only a modest fee, anticipated being sustained for the next three years, and was not the beneficiary of high levels of funding that could not be replicated. We then contacted these programs for additional information and 75 program

directors agreed to participate in telephone interviews. During these interviews, we confirmed that the programs met the criteria listed above and evaluated the program's suitability for the study based on additional criteria: the program had been in operation at least three years, offered children with opportunities for sustained involvement in substantive activities, had access to resources and materials to support these activities, employed staffing patterns that are conducive to students having positive and supportive relationships with staff and peers (low child-adult ratios, low staff turnover, staff with training and expertise), and served a minimum of 30 elementary students in 3rd and/or 4th grade.

From the information obtained in telephone interviews, 35 elementary programs were identified as potential study sites. After considering geographical diversity and the accessibility of the program locations to the research staff, 29 elementary programs were selected for site visits. Site visits were conducted by trained and reliable observers to verify that the programs were high quality and to secure the cooperation of the programs and their partner public schools. During the site visits, we conducted interviews with program directors, activity leaders, and school principals, and observed program activities during two afternoons. Details of observation protocol and interviews used to measure afterschool program quality are available in [Supplementary Material A](#).

Based on the results of the interviews and observations, 19 elementary school programs were selected for the study. No programs declined to participate in the study although one program subsequently was dropped from the study due its loss of funding. The selected programs reported an average enrollment of 328 students (including 47 3rd graders and 41 4th graders on average); 77% of the program participants were children of color. The programs were located in 13 communities: Los Angeles, CA; Oakland, CA; Seaside, CA; San Diego, CA; San Ysidro, CA; Aurora, CO; Bridgeport, CT; Baldwin, MI; Missoula, MT; New York, NY; Salem, OR; Central Falls, RI; and Pawtucket, RI.

Participants

Early in the fall of the academic year of the current study, letters were sent home to parents of 3rd and 4th grade students at the host schools inviting them and their children to participate in a study of afterschool experiences and child development. In schools with fewer than 500 children in the 3rd and 4th grades,

letters were distributed to the parents of all children in those grades. In schools with 500 or more children in the 3rd and 4th grades, five classrooms at each grade were randomly selected and letters were sent to parents of all of the children in the selected classrooms. School officials assisted in determining if letters should be distributed in English, Spanish, Portuguese, or Khmer. Children were asked to return the signed parental consent forms to their classroom teachers. The research conducted in this study was reviewed and approved by the Institutional Review Boards at XXX (HS # 2006-5331 Project Title XXX) and XXXX (HS # 2003-5265 Project Title XXX). All aspects of the study are in compliance with APA Ethical Principles.

Of the 4,002 children (M age = 8.7 years) who were given letters about the study, signed parental consent was obtained for 1,796 children (a 45% participation rate). The recruited sample had fewer boys than the host schools (47% vs. 51%), $\chi^2(1, N = 14,813) = 7.26, p < .01$, and fewer children receiving free or reduced-price lunch (89% vs. 94%), $\chi^2(1, N = 11,829) = 44.33, p < .001$ although the recruited sample still had a very high proportion of children qualifying for free or reduced-price lunch. The ethnicity of the recruited sample of children (77% Latino/a, 8% Black, 12% White, 3% Asian) did not differ from the ethnicity of the host schools (77% Latino/a, 8% Black, 11% White, and 4% Asian).

Procedures and measures

Measures pertaining to children's afterschool settings are described first, followed by measures of child and family factors (i.e., the covariates). Finally, measures of child functioning are presented.

Afterschool settings

Participation in high-quality afterschool programs

Daily attendance records for individual children were obtained from the afterschool programs. Program attendance ranged from 0 to 182 days ($M = 52.35, SD = 63.32$ among all children in the sample and $M = 91.11, SD = 58.73$ for children who attended the afterschool program for at least one day). To adjust for the skewed distribution, an ordinal rating of the *amount of program participation* for the year was created in which 0 = 0–4 days, 1 = 5–29 days, 2 = 30–59 days, 3 = 60–89 days, 4 = 90 or more days. Children also reported their amount of time at the afterschool programs during the fall and spring using

the same 5-point scale. The child reports of program attendance correlated with the daily attendance data obtained from afterschool programs, $r = .73$, $p < .001$, indicating that the children were reliable reporters of program attendance.

Participation in other extracurricular activities

During the fall and spring of the academic year, children used 4-point scales (0 = *not at all/once or twice*, 1 = *about once a week*, 2 = *2–3 days a week*, 3 = *4 or more days a week*) to report their level of participation in three types of extracurricular activities: (1) organized sports teams; (2) music, arts, and special interest clubs; and (3) lessons in music, art, dance, or sports. These three types of extracurricular activities were assessed so that we could have a more inclusive representation of the children's activities (Lareau, 2011). A total score for each type of extracurricular activity was computed by averaging the fall and spring reports (Sports: $M = 0.75$, $SD = .99$, art/school clubs: $M = 0.51$, $SD = .84$, lessons: $M = 1.04$, $SD = 1.06$).

Participation in unsupervised settings

During the fall and spring of the academic year, children reported the amount of time they spent in three types of unsupervised afterschool settings: (1) home alone after school without an adult present, (2) caring for a younger brother or sister after school without an adult present, and (3) hanging out with friends after school without an adult present using 4-point scales (0 = *not at all/once or twice*, 1 = *about once a week*, 2 = *2–3 days a week*, 3 = *4 or more days a week*). A total score for amount of time in each unsupervised setting was computed by averaging the fall and spring reports (Alone: $M = 0.42$, $SD = .79$, sibling: $M = 0.33$, $SD = .69$, friends: $M = 0.48$, $SD = .84$).

Family and child characteristics

During the fall data collection, a parent or guardian (primarily mothers) reported parental education, family income, household structure (2-parent vs single-parent), maternal employment status, child gender, and child ethnicity. Parents returned the completed surveys to the school in a sealed envelope or mailed the survey directly to the research team using a postage-paid envelope. Parents had the option of completing Spanish, Portuguese, or Khmer versions of the survey, which were developed using back-translation procedures.

Measures of child functioning

Measures of child functioning were obtained from classroom teachers and from child self-reports in late spring of the school year. *Classroom teacher surveys* were delivered by mail or in person, and returned by mail when completed. *Student surveys* were administered to small groups of children by our research staff during the school day or after school. Surveys were administered to children in Spanish as needed, utilizing a back-translated version of the survey. All other surveys were administered in English. All of the individual items are available in Appendix A.

Teacher reports

Children's *academic performance* was reported by teachers using the Mock Report Card (Pierce et al., 1999). Children's performance in six subject areas (reading, oral language, written language, math, science, and social studies) were rated using 5-point scales (1 = *child is performing below grade level*, 5 = *child is performing beyond grade level*). Internal consistency was high (Cronbach's $\alpha = .96$) across the subject areas. Performance in these subject areas was, on average, $M = 2.94$, $SD = 1.03$.

Teachers rated children's *work habits* using a 10-item scale ($\alpha = .97$) composed of six items from the Mock Report Card (Pierce et al., 1999) and four additional items developed for the current study. Items were rated on a 5-point scale (1 = *very poor*, 5 = *very good*) with the sample average being around the mean of the response scale, $M = 3.43$, $SD = 1.10$. Sample items include "Follows classroom procedures" and "Completes work promptly."

Teacher reports of children's *task persistence* were based on eight items adapted from a scale originally developed by Walker and Arbretton (2004). The adapted items were reworded for administration to teachers who used 4-point scales (1 = *not at all true*, 4 = *really true*). Sample items include "This student gives up on things before finishing them" and "This student handles unexpected problems very well." Negatively worded items were reverse coded prior to scoring. Cronbach's α was .93 and the mean and standard deviation were $M = 2.93$, $SD = .72$.

Teachers reported children's *aggressive behaviors* toward peers using nine items from the Child Behavior Scale (Ladd & Profilet, 1996), which were rated using 3-point response scales ($\alpha = .93$). The mean score was $M = 0.35$, $SD = .48$, which is between *not true* (0) to *sometimes true* (1). Sample items measuring aggressive behavior included "Is an aggressive child" and "Annoys or irritates classmates."

Table 1. Correlations among the activity indicators.

Indicator	1	2	3	4	5	6	7
1. Afterschool program ^a	–						
2. Coached sports ^b	.04	–					
3. Music, Arts & club activities ^b	.24***	.17***	–				
4. Lessons ^b	.21***	.36***	.37***	–			
5. Home alone ^b	–.04*	.14***	.01	.09***	–		
6. Caring for siblings ^b	–.01	.26***	.06**	.16***	.35***	–	
7. Hang out with peers ^b	–.04	.13***	.07**	.09***	.32***	.31***	–

Note.

^aTime spent in the afterschool program is an ordinal variable: 0 = 0–4 days, 1 = 5–29 days, 2 = 30–59 days, 3 = 60–89 days, 4 = 90 or more days across the school year.

^bTime spent in other afterschool contexts is an ordinal variable: 0 = not at all/once or twice, 1 = about once a week, 2 = 2–3 days a week, 3 = 4 or more days a week.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Child self-reports

Children reported their work habits using the 6-item Mock Report Card (Pierce et al., 1999) with items reworded for the self-report and the response scale was modified (1 = not at all true, 4 = really true). Sample items include “I follow the rules in my classroom” and “I finish my work on time.” Cronbach’s α was .76 and the mean score was $M = 3.30$, $SD = .61$, which is between *somewhat true* (3) to *really true* (4). In other studies, student reports of work habits, using similar items, were associated with academic performance and school attendance (Walker & Arbreton, 2004).

Children also completed the 11-item *Misconduct Scale*, an adaptation of the *Self-Reported Behavior Index* (Brown et al., 1986). The measure utilizes a 5-point response scale (0 = never, 4 = 4 or more times a week). On average, children reported a mean score of $M = 0.52$, $SD = .62$, which is between *never* (0) to *once or twice* (1). Sample items include “Gotten into a fight at school,” “Taken something from a store without paying for it,” and “Done something your parents told you not to do.” Cronbach’s α was .84.

Analysis plan

Data analyses proceeded through three parts: (1) identifying the afterschool clusters, (2) examining the demographic characteristics of the clusters, and (3) relating the clusters to child developmental outcomes at the end of the school year.

Identification of the afterschool clusters

In the first part, cluster analyses were conducted to ascertain if meaningful groups of children who shared common sets of afterschool experiences could be identified. Seven measures of afterschool experiences were included in the cluster analyses: (1) amount of time at the *afterschool program*, (2) amount of time in *coached sports*, (3) amount of time in *afterschool*

music, arts, or clubs, (4) amount of time in *lessons*, (5) amount of time *home alone* without adult supervision after school, (6) amount of time at home *caring for a sister or brother* after school without adult supervision, and (7) amount of time *hanging out with peers* after school without adult supervision. The bivariate correlations between these indicators are presented in Table 1.

A hierarchical agglomerative cluster analysis was carried out using ROPstat version 2.0 (Bergman et al., 2003; Vargha et al., 2015). Following standard procedures (Bergman et al., 2003; Bergman & El-Khoury, 2002), we estimated the clusters through four sequential steps within ROPstat. First, we imputed missing data using the IMPUTE procedure if a student was missing data on only one of the seven afterschool experience variables, which uses the threshold of missing less than 25% of the data which is the program default. We used the twin or nearest neighborhood approach where the data for the student missing one variable is based on another student in the sample with the most similar pattern of responses across the other six indicators. We used the average squared Euclidian distance of .1 to define who is a nearest neighbor. Second, multivariate outliers were identified and removed with the RESIDUE procedure. Third, hierarchical cluster analysis with Ward’s method was employed to identify homogenous clusters through ROPstat’s CLUSTER procedure. In this step, individuals start in their own cluster. The program then sequentially merges the two most similar units (e.g., individuals or groups of individuals) using Ward’s method until all individuals are in one cluster. Fourth and finally, misfitting observations were then reclassified using the RELOCATE procedure so that all observations were positioned closest to their nearest cluster. In this final step, the program starts with the classification the user selects and moves individual observations from one cluster to another if it reduces

the total error sum of squares. The relocate procedure helped maximize both within-cluster homogeneity and between-cluster heterogeneity.

The optimal cluster solution was selected based on several criteria, including the theoretical relevance of the clusters, the explained error sum of squares (EESS), point-biserial correlations, and the homogeneity coefficients (Vargha et al., 2015). Experts have argued that optimal solutions account for around 50% or more of the EESS (Vargha et al., 2015). A solution with a larger point-biserial correlation is optimal as this correlation is higher when the distance between pairs within a cluster is smaller than the distance between pairs from different clusters. A solution with lower homogeneity coefficients (HC) relative to the 1-cluster solution is optimal as HC's represent the distance between pairs within a cluster.

Because replication of pattern-centered approaches is a common concern, we randomly split the sample in half and replicated these four steps within each subsample independently to see if similar patterns emerged. Finally, we repeated all four steps on the full sample to identify each participant's cluster to use in the subsequent analyses.

We chose cluster analysis over model-based clustering (e.g., latent profile analysis) because Monte Carlo simulations suggest that cluster analysis performs as well or better than model-based clustering under the current conditions of this study (e.g., small number of clusters, the number of clusters was unknown; Steinley & Brusco, 2011). Moreover, model-based clustering methods with time use data, like the data used in the current study, can have convergence issues because groups can emerge that have zero variance on an indicator as none of the youth in that group may participate in a particular afterschool setting and dichotomizing the indicators for a latent class analysis eliminates some of the natural variation among youth in terms of how much time they spend in different afterschool settings.

In the second part of the analyses, we examined the demographic characteristics of children and families across the clusters. The demographic characteristics of the clusters were examined to situate the clusters within a broader social-ecological context. These differences were tested with chi-square and analysis of variance techniques with follow-up Bonferroni comparisons.

The third part of the analyses was our primary analysis. Here, we examined differences in child functioning at the end of the school year across the clusters. Two-level random-intercept MLM models were fit in

SPSS in which children (Level 1) were nested within schools (Level 2) for each child outcome. The school rather than afterschool program was used as the site-level factor because it enabled us to include all children, regardless of program attendance, in the analyses. When statistically significant differences between clusters were found on an outcome, effect sizes were computed using the following formula

$$d = (M_1 - M_2) / SD_{\text{pooled}}$$

where M_1 , M_2 denote the means of the clusters on the outcome, and SD_{pooled} denotes the average residual variance within cluster (controlling for school effects and other covariates). In the context of a MLM analysis, the quantity $M_1 - M_2$ reflects the estimated cluster effect, and SD_{pooled} is the estimated level-1 residual standard deviation. Following Cohen (1988), we interpret $d = .2$, $.5$, and $.8$ as small, medium, and large effect sizes, respectively.

A primary advantage of MLM relative to standard single-level regression models is an ability to study effects associated with afterschool clusters controlling for the broader school/community context in which these effects occur. MLM also accounts for the statistical dependence that emerges among observations collected in multilevel samples, a common source of model misspecification when applying single-level models.

Treatment of missing data

Missing data occurred in this longitudinal study due to attrition and failure to complete all assessments. To address these missing data in the MLM analyses, 30 datasets were imputed with multiple imputation in Mplus v8 (Enders, 2010). The variables in the multiple imputation included all indicators reported by children and teachers on child functioning as well as the child and family demographic indicators included as control variables and children's afterschool settings. The pooled (averaged) MLM results across imputed datasets were estimated in SPSS and were the basis for the testing of cluster effects (Peugh & Enders, 2005).

We computed a series of comparisons to understand the differences between (a) children who had all data reported in spring ($n = 1,466$ children) and (b) children who were missing any teacher-reported or child-reported data in spring ($n = 330$ children). Chi-square and t -tests were used to test differences between these two groups on indicators of family and child demographics (6 indicators) and the time use indicators included in the cluster analysis (7 indicators). All tests except one between children with

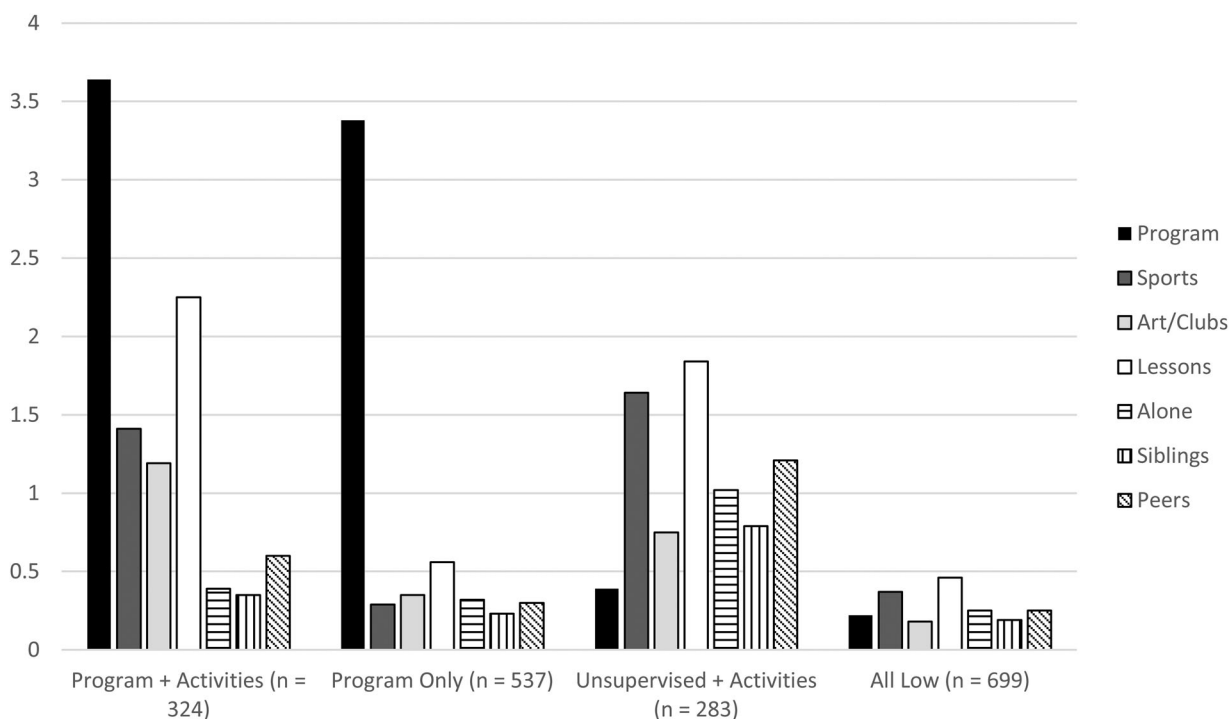


Figure 1. Unstandardized means of children's activities for each activity cluster.

spring data and those missing some spring data were not statistically significant (i.e., 92% of the tests). The one significant difference was small in size: Children with missing data in the spring had lower attendance at the afterschool program ($d = .40$).

Our main analyses include imputed missing data for all children as recommended by Enders (2010). Because there is some controversy about whether imputing missing data on the outcomes biases the analyses (Young & Johnson, 2015), we also re-estimated all of the MLM with participants who had teacher-reported outcomes at the follow-up ($n = 1,487$) or who had student-reported outcomes at the follow-up ($n = 1,583$) and these findings are reported as a robustness check.

Results

Identification of afterschool clusters

As noted in the analysis plan, the first part of the analysis was to identify the afterschool clusters. We first identified the optimal cluster solution in each of the two random subsamples; then once a solution was replicated and selected in the subsamples, we identified the optimal cluster solution on the full sample. In each sample, we completed the four steps of cluster analysis as described in the plan of analysis, including data imputation, removal of multivariate outliers, cluster analysis, and relocation. Full details of the

subsample analyses are presented in [Supplementary Material B](#). Here, we provide an overview of the findings from the two subsamples on the identification of optimal cluster solution. For the identification of the afterschool clusters using the full sample, details on all four steps are reported in this section.

Subsample analysis

Within each subsample, we used the EESS%, point-biserial correlations, and homogeneity coefficients (HC) to help identify the optimal cluster solution. These indicators suggested we should further examine the 3-cluster to 5-cluster solutions in Subsample A and the 4-cluster to 6-cluster solutions in Subsample B. Upon further consideration of the solutions within Subsamples A and B, we decided to retain the 4-cluster solution because these clusters reflected meaningful patterns of common afterschool experiences in both subsamples and was the only solution that replicated across the two subsamples. We compared the means for the seven afterschool indicators within each cluster across the two subsamples through independent t -tests (see [Supplementary Table B1](#)). Overall, 71% of the differences (20 out of 28 comparisons) were not statistically significant.

Full sample analysis

After finding that the four-cluster solution was obtained in the two subsamples, we repeated the four

Table 2. Descriptive statistics for afterschool clusters.

Indicator	Program + Activities <i>n</i> = 324	Program Only <i>n</i> = 437	Unsupervised + Activities <i>n</i> = 283	All Low <i>n</i> = 699	Statistical significance
	M(SD)	M(SD)	M(SD)	M(SD)	
Afterschool program ¹	3.64 ^a (0.66)	3.38 ^b (0.84)	0.39 ^c (0.66)	0.22 ^d (0.42)	$F_{(3, 1739)} = 3726.28^{***}$
Coached sports ²	1.41 ^b (1.13)	0.29 ^c (0.56)	1.64 ^a (1.02)	0.37 ^c (0.67)	$F_{(3, 1739)} = 279.07^{***}$
Music, Arts & club activities ²	1.19 ^a (1.05)	0.35 ^c (0.66)	0.75 ^b (0.94)	0.18 ^d (0.48)	$F_{(3, 1739)} = 152.46^{***}$
Lessons ²	2.25 ^a (0.75)	0.56 ^c (0.65)	1.84 ^b (0.96)	0.46 ^c (0.69)	$F_{(3, 1739)} = 601.36^{***}$
Home alone ²	0.39 ^b (0.76)	0.32 ^{bc} (0.65)	1.02 ^a (1.08)	0.25 ^c (0.59)	$F_{(3, 1739)} = 78.67^{***}$
Caring for siblings ²	0.35 ^b (0.70)	0.23 ^c (0.56)	0.79 ^a (0.94)	0.19 ^c (0.52)	$F_{(3, 1739)} = 62.97^{***}$
Hang out with peers ²	0.60 ^b (0.88)	0.30 ^c (0.66)	1.21 ^a (1.13)	0.25 ^c (0.55)	$F_{(3, 1739)} = 119.69^{***}$

Note. Within rows, means with dissimilar superscripts are significantly different at $p < .05$.

¹Time spent in the afterschool program is an ordinal variable: 0 = 0–4 days, 1 = 5–29 days, 2 = 30–59 days, 3 = 60–89 days, 4 = 90 or more days across the school year.

²Time spent in other afterschool contexts is an ordinal variable: 0 = not at all/once or twice, 1 = about once a week, 2 = 2–3 days a week, 3 = 4 or more days a week.

*** $p < .001$.

steps of the cluster analysis on the full sample of 1,796 children. In the imputation step, 7 children (0.3%) had one variable imputed, 2 children (0.1%) were dropped because although they were missing data on just one variable a nearest neighbor was not identified, and 46 children (2.5%) were missing more than one variable and were dropped. In the second step with 1,748 children, 5 additional children were dropped because they were multivariate outliers. In the third step, Ward's method of linkage was employed to identify homogenous clusters with the 1,743 children. As with the subsample analysis, the 4-cluster solution was optimal. The 4-cluster solution had a reasonable EESS% (i.e., 45%), had the second highest point-biserial correlation ($r = .56$), had a lower mean HC than the 1-cluster solution (i.e., 1.19 versus 1.42), had theoretically meaningful groups, and replicated the 4-cluster solution from the two subsamples. The 3-cluster solution had the highest point-biserial ($r = .59$) but a lower EESS% (39%) and combined theoretically distinct groups as had also been found in the subsample analysis. Solutions with five or more clusters did have higher EESS%'s but the increases were incremental, the point-biserial correlations dropped with the 5-cluster solution ($r = .41$) and continued to decline with the addition of more clusters, and often included two or more patterns that were not theoretically distinct.

In the fourth and final step, misfitting observations were reclassified using the RELOCATE procedure so that all observations were positioned closest to their nearest cluster. After this step, there was improvement in the EESS% (i.e., 45% before reclassification, 51% after reclassification), and in the HC mean and range

(i.e., mean HC = 1.19 and range HC = .84 to 2.16 before reclassification, mean HC = 1.06 and range HC = .64 to 1.89 after reclassification); the point-biserial correlations remained equally strong after reclassifying cases (i.e., $r = .56$).

Figure 1 and Table 2 presents descriptive statistics for each of the variables used to create the afterschool clusters. The significant differences among the clusters on these variables are to be expected because the variables were used to construct the clusters. Nonetheless, the scores are informative in describing the most important variables in distinguishing groups. The first cluster, accounting for 18% ($n = 324$) of the participants, was comprised of children who had high levels of involvement in the afterschool program and extracurricular activities. We labeled this cluster the *Program + Activities* group. In the second cluster, children were characterized by high attendance at the afterschool program but low scores on the other clustering variables. Twenty-four percent of the children ($n = 437$) comprised the second cluster, which we labeled *Program Only*. A third cluster, which we labeled *Unsupervised + Activities*, included children who spent moderate time in settings without adult supervision (especially hanging out with peers), low levels of attendance at the afterschool program, and moderate involvement in extracurricular activities. It encompassed 16% ($n = 283$) of the children. The final cluster was the largest ($n = 699$), comprising 40% of the children. This cluster manifested relatively low scores on all the clustering variables, meaning that they engaged in few organized activities and also had little unsupervised time after school.

Table 3. Child and family characteristics of the afterschool clusters.

Indicator	Program + Activities <i>n</i> = 324	Program Only <i>n</i> = 437	Unsupervised + Activities <i>n</i> = 283	All Low <i>n</i> = 699
Child gender, $\chi^2_{(3, N=1739)} = 30.56^{***}$				
% Female	54	59 ^H	38 ^L	54
Child ethnicity, $\chi^2_{(9, N=1729)} = 28.82^{***}$				
% Asian/other	1 ^L	4	3	4
% Black	8	9	10	7
% Latino/a	83 ^H	76	74	75
% White	8 ^L	12	13	14 ^H
Family structure, $\chi^2_{(3, N=1474)} = 24.56^{***}$				
% Two-parent households	58 ^L	56 ^L	66	70 ^H
Maternal employment, $\chi^2_{(3, N=1329)} = 28.82^{***}$				
% Full time	45	54 ^H	45	36 ^L
Maternal education, $F_{(3, N=1354)} = 2.93^*$				
<i>M(SD)</i> maternal education ^c	2.14(1.65)	2.19(1.42) ^b	1.83(1.57) ^a	2.17(1.47) ^b
Family income, $F_{(3, N=1388)} = 0.55, ns$				
<i>M(SD)</i> family income ^d	4.04(2.79)	4.27(2.69)	4.18(3.01)	4.30(2.85)

HDenotes when the percentage was significantly higher than expected by chance based on the adjusted standardized residuals.

LDenotes when the percentage was significantly lower than expected by chance based on the adjusted standardized residuals.

^{a,b}Denotes that mothers in the Unsupervised + activities group had lower levels of education compared to the Program only and All low groups.

^cMaternal education was measured with the following scale: 1 = 8th grade or less, 2 = some high school, 3 = high school graduate or GED, 4 = some college, 5 = graduates from a 2-year college, 6 = 4-year college degree or other advanced degree.

^dFamily income was measured with the following scale: 1=\$0–\$4,999 to 4=\$11,000–\$14,999 to 11=\$60,000 or more.

****p* < .001.

We labeled this cluster *All Low*. Bivariate correlations between the cluster groupings, demographic variables, and indicators of children's adjustment are in Appendix B.

Demographic characteristics associated with the afterschool patterns

Next, we considered the associations between demographic factors (child gender, child ethnicity, household structure, maternal employment status, maternal education, and family income) and cluster membership (Table 3). Children in the *Program Only* cluster were more likely to be female, whereas the *Unsupervised + Activities* group were more likely to be male. Consistent with the overall sample, there was a high proportion of Latino/a children in all of the clusters, but this proportion was highest (83%) in the *Program + Activities* cluster. The majority of the families in the study were two-parent households, but the *Low Group* was more likely than the *Program + Activities* and *Program Only* clusters to be two-parent households. Mothers were more likely to be working full time in the *Program Only* group relative to the *All Low* group. Because the *All Low* group included a higher proportion of two-parent households and a lower proportion of employed mothers, we surmise that the children in this group spent their time supervised by parents or other adults in informal settings such as their home, but we do not know this for certain.

Afterschool patterns and children's academic, social, and behavioral functioning

Associations between afterschool clusters and child functioning in late spring of the school year were tested using two-level random-intercept MLM models in which children (Level 1) were nested within schools (Level 2). Child gender (female = 1), child ethnicity (scored as White, Black, Asian/Other, with Latino/a as the reference group), household structure (two-parent household = 1), maternal work status (employed full time = 1), maternal education, and family income were included as fixed effect covariates.

The particular focus in the MLM analyses was on contrasts between three afterschool clusters (*Program Only*, *Program + Activities*, *All Low*) with respect to the fourth cluster, the *Unsupervised + Activities* cluster. *Unsupervised + Activities* group was selected as the comparison group because unsupervised time has been linked to less optimal outcomes for children and adolescents. What is not known is whether activities coupled with unsupervised time is also problematic relative to other patterns of afterschool care. These analyses are presented in the text as well as Table 4. We also contrasted the *Program Only* and *Program + Activities* groups because of our substantive interest in youth who attended afterschool programs; this contrast was estimated by making *Program Only* the reference group and rerunning the MLM analyses. Results from the *Program Only* and *Program + Activities* group comparisons are only

Table 4. MLM analyses of factors associated with child outcomes.

Predictors	Teacher report				Student report	
	Academic performance B(SE)	Work habits B(SE)	Task persistence B(SE)	Aggressive w/peers B(SE)	Work habits B(SE)	Misconduct B(SE)
Fixed effects						
Intercept	2.28(.09)***	2.58(.10)***	2.46(.07)***	.62(.05)***	3.12(.06)***	1.10(.06)***
Afterschool clusters						
Program + Activities	.20(.08)*	.29(.09)***	.20(.06)**	-.10(.04)*	.19(.05)***	-.27(.05)***
Program Only	.25(.08)**	.28(.08)***	.17(.06)**	-.11(.04)**	-.00(.05)	-.33(.05)***
All Low	.29(.07)***	.42(.08)***	.24(.05)***	-.18(.04)***	.10(.04)*	-.35(.04)***
Covariates						
Female	.14(.05)**	.53(.05)***	.19(.04)***	-.19(.02)***	.21(.03)***	-.35(.03)***
White	.16(.09)	-.02(.09)	-.07(.06)	.07(.04)	.01(.05)	.06(.05)
Black	-.06(.10)	-.32(.10)**	-.14(.07)*	.19(.05)***	.00(.06)	-.02(.06)
Asian	.22(.14)	.14(.15)	.05(.10)	-.06(.06)	.03(.09)	.01(.08)
Two-parent households	.14(.06)*	.24(.06)***	.15(.04)***	-.11(.03)***	.05(.04)	-.13(.04)***
Maternal full time work	.00(.06)	.00(.08)	.01(.04)	.01(.03)	-.01(.03)	-.04(.04)
Maternal education	.04(.06)	-.01(.02)	.02(.01)	.00(.01)	-.01(.01)	.01(.01)
Family income	.05(.01)***	.03(.01)**	.01(.01)	-.00(.01)	-.00(.01)	-.00(.01)
Random effects						
School variance component	.040	.014	.004	.009	.014	.005
Level-1 effect variance component	.934	1.06	.486	.204	.350	.322

Note. $N = 1,743$. Clusters are compared against the *Unsupervised + Activities* cluster.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

presented in the text. In addition to the specific contrasts, omnibus tests of the overall effects of afterschool clusters were estimated.

Teacher reports

An overall effect associated with afterschool clusters was found for teacher reports of children's academic performance, $F(3, 1740) = 6.07$, $p < .001$, work habits, $F(3, 1740) = 10.76$, $p < .001$, task persistence, $F(3, 1740) = 8.06$, $p < .001$, and aggression with peers, $F(3, 1740) = 11.13$, $p < .001$. Specifically, the *Program Only* cluster showed higher academic performance ($B = .25$, $p < .01$, $d = .16$), work habits ($B = .28$, $p < .001$, $d = .21$), and task persistence ($B = .17$, $p < .01$, $d = .18$), as well as lower aggression with peers ($B = -.11$, $p < .01$, $d = .15$) in comparison to the *Unsupervised + Activities* cluster. Children in the *Program + Activities* group had similar outcomes with higher academic performance ($B = .20$, $p < .05$, $d = .15$), work habits ($B = .29$, $p < .001$, $d = .28$), and task persistence ($B = .20$, $p < .01$, $d = .24$), as well as lower aggression with peers ($B = -.10$, $p < .05$, $d = .17$) in comparison to the *Unsupervised + Activities* cluster. The *All Low* cluster also displayed higher academic performance ($B = .29$, $p < .001$, $d = .19$), work habits ($B = .42$, $p < .001$, $d = .33$), and task persistence ($B = .24$, $p < .001$, $d = .26$), and lower aggression ($B = -.18$, $p < .001$, $d = .25$) in the spring compared to the *Unsupervised + Activities* cluster.

In addition, we compared the teachers' reports of children in the *Program Only* and *Program + Activities* clusters on these same outcomes. These two clusters

did not significantly vary in terms of teacher-reported outcomes (p 's = .48 to .79).

Child reports

An overall effect associated with afterschool clusters was also found for child self-reports of work habits, $F(3, 1740) = 8.66$, $p < .001$, and misconduct, $F(3, 1740) = 26.66$, $p < .001$. Children in the *Program + Activities* ($B = .19$, $p < .05$, $d = .25$) and *All Low* ($B = .10$, $p < .05$, $d = .11$) clusters reported higher work habits in comparison to children in the *Unsupervised + Activities* cluster, controlling for child and family factors. The *Program Only* ($B = -.33$, $p < .001$, $d = .44$), *Program + Activities* ($B = -.27$, $p < .001$, $d = .46$), and *All Low* ($B = -.35$, $p < .001$, $d = .47$) clusters reported less misconduct in comparison to the *Unsupervised + Activities* cluster, controlling for child and family factors.

The *Program + Activities* and *Program Only* cluster differed on one of the child-reported outcomes. Children in the *Program + Activities* cluster reported higher work habits ($B = .19$, $p < .001$, $d = .21$), but similar levels of misconduct ($B = .06$, $p = .16$) compared to children in the *Program Only* cluster.

As shown in Appendix C in the [Supplementary Material](#), we re-estimated the MLM models shown in [Table 4](#) to include participants who had complete teacher-reported or student-reported outcomes. The patterns of significant findings replicate in this subsample.

Discussion

Researchers, educators, and policymakers have turned their attention to children's afterschool programs and extracurricular activities as possible settings to promote academic achievement and approaches to learning and to reduce problem behaviors, especially for young people growing up in poverty (Duncan & Murnane, 2011; Eccles & Gootman, 2002; Vandell et al., 2015). Others have focused on the risks associated with unsupervised time afterschool, especially hanging out with peers but also being home alone or caring for younger siblings (Aizer, 2004; Belle, 1999; Osgood et al., 2005). For the most part, these different settings have been studied separately. The current study contributes to our understanding of the role of different types of out-of-school time that were experienced by more than 1700 ethnically diverse, low-income children.

Rather than studying high quality afterschool programs, extracurricular activities, and unsupervised time in isolation, we conceptualized time afterschool in terms of common patterns of experiences. Using cluster analyses, we identified four meaningful and robust patterns, which were replicated in two subsamples. Some children regularly attended high-quality afterschool programs at their school and had little involvement in other extracurricular activities. Others combined regular attendance at high-quality programs with extracurricular activities such as coached sports, music groups, and special interest clubs. A third group combined their extracurricular activities with time in unsupervised settings with peers, younger siblings, or home alone. A fourth group had little involvement in the afterschool programs or extracurricular activities, and spent little time in unsupervised settings. Other researchers (Mahoney et al., 2005; Morris & Kalil, 2006) who have used pattern-centered approaches to examine the afterschool settings of low-income children that included afterschool programs, extracurricular activities, and unsupervised time have reported similar patterns of afterschool experiences, suggesting that they are common ones in North America although the proportions of children in these groups likely vary depending on community and family contexts.

In the current study, the children who regularly attended the high-quality afterschool programs (either alone or in conjunction with extracurricular activities) approached 43% of the children in the sample. This proportion is substantially higher than the 18% of school-aged children reported in national surveys as attending afterschool programs (Afterschool Alliance,

2014; Laughlin, 2014), but similar to the 41% of low-income families who report that their children would attend an afterschool program if one were available. The higher proportion of program participation in the current study likely reflects the availability and the quality of the programs at the children's schools providing support for arguments that high-quality programs are utilized by low-income families when they are available. In the absence of the high-quality programs, it seems likely that the proportions of children who are unsupervised alone or in combination with extracurricular activities would be higher.

Our primary research question was to ask if the patterns of children's afterschool settings were linked to their academic performance, approaches to learning, and misconduct, controlling for child and family factors. We were particularly interested in ascertaining whether attending high-quality afterschool programs alone and in combination with extracurricular activities were associated with academic functioning and approaches to learning, relative to unsupervised time combined with extracurricular activities. Differences were evident in both the teacher reports and the child self-reports. According to teachers, children in the *Program Only* and the *Program + Activities* groups displayed higher academic performance, work habits, and task persistence as well as less aggressiveness with peers at the end of the school year in comparison to children in the *Unsupervised + Activities* group. With respect to the child self-reports, children in both the *Program Only* and the *Program + Activities* groups reported less misconduct in comparison to the *Unsupervised + Activities* group. Children in the *Program + Activities* group also reported better work habits relative to children in the *Unsupervised + Activities* group. These findings, in conjunction with other research that has examined high-quality afterschool programs serving low-income children (Durlak et al., 2010; Posner & Vandell, 1999; Smith et al., 2017; Vandell et al., 2005), underscore the potential value of high-quality afterschool programs, alone and in combination with extracurricular activities, as a strategy to promote academic performance and behavioral dispositions that support learning and reduce problem behaviors for children growing up in poverty. The effect sizes associated with these differences ranged from small for teacher reports of children's academic performance ($d = .16$) to moderate for child self-reports of lower misconduct ($d = .46$). The effects are somewhat smaller than reports of the effects of high-quality early childhood education programs on academic performance of low-income

children, but they are larger than the behavioral effects reported for high-quality early education programs (Yoshikawa et al., 2013), suggesting that after-school programs may be a useful complement to early childhood programs in supporting the development of children growing up in poverty.

In general, we did not find differences in the academic and social functioning of the *Program Only* and *Program + Activities* clusters, with one exception. Children in the *Program + Activities* group self-reported higher work habits than did the children in the *Program Only* group. Prior research has found that activity breadth, defined as participation in a several different types of activities, is linked to higher academic and social outcomes (Bohnert et al., 2010). The current findings suggest that the benefits of activity breadth, especially on work habits, are evident when participation in high-quality afterschool programs is coupled with extracurricular activities. The results do not indicate any detrimental effects of combining extracurricular activities with the afterschool programs.

The current analyses did find that extracurricular activities in combination with unsupervised time was associated with lower academic performance and social functioning. Some of the conflicting findings in the literature regarding relations between sports and problem behaviors (Metzger et al., 2009; Zarrett et al., 2009) may be explained by children's unsupervised time, which is not typically measured in studies of extracurricular activities and which may co-occur with extracurricular activities for some children.

All low group

Although it was not originally a research focus, the reports of amounts of time in the seven afterschool settings revealed a fourth group of children who spent little time in any of these settings. We labeled this group, *All Low*. The family circumstances of the children in the *All Low* cluster differed from the other three clusters in that they were more likely to be two-parent households and less likely to have mothers who were employed full time. These differences underscore a key principle of Bronfenbrenner's bioecological theory that children's microsystems, such as their afterschool settings, are embedded within the larger contexts of their family and community. Single parents and employed mothers report using afterschool programs and extracurricular activities to help keep their children safe and busy during the afterschool hours (Afterschool Alliance, 2014; Belle, 1999),

and that is consistent with what was found in the current study.

Additional research is needed to illuminate the afterschool experiences of low-income children like those in the *All Low* cluster who are not participating in afterschool programs, extracurricular activities, or unsupervised time. Lareau's detailed ethnographic work (Lareau, 2011) and Posner and Vandell's time-sampling diaries (Posner & Vandell, 1994) suggest that time after school for some children involves a relaxed pace of socializing and watching television, which was associated with lower academic performance and lower time management skills. However, in the current study, we did not find the *All Low* group to be disadvantaged relative to the *Program Only* and *Program + Activities* groups. They, like those groups, were rated by teachers to have higher academic performance and work habits and less misconduct relative to the *Unsupervised + Activities* group. Other studies of Latino/a youth, who comprise the majority of this sample, show that their participation in organized afterschool activities varies based on other factors including cultural values and socioeconomic status (Simpkins et al., 2013). For example, Latino/a families who hold high familism values expressed concern about sacrificing family time for organized afterschool pursuits. The positive outcomes for the *All Low* group may be because the children in this group are spending quality time with families in afterschool informal pursuits, which could include family mealtime, reading, schoolwork, or playing in a park. Further research is necessary to delve into what informal afterschool activities children in the *All Low* group, in different cultural contexts, are doing.

Study limitations and implications

The current study has several limitations. First, because of its correlational design, causal relationships could not be tested. Future research, using experimental and quasi-experimental designs, might test the impacts of *Program* and *Program + Activities* on child outcomes following the roll-out of high quality programs in high poverty schools and communities. Second, all of the afterschool programs in the current study were selected because they manifested processes that reflect high-quality programming. As a consequence, the current study was not able to examine effects associated with variations in program quality because of the truncated ranges on these factors. The current study does, however, highlight the utility of considering afterschool settings as a "package" of

activities and programs. The fact that more than 40% of the children attended high-quality afterschool programs either alone or in combination with extracurricular activities has implications for those who operate programs as well as those who evaluate programs. Programs must be aware of irregular attendance—youth who come a couple of days a week or who attend regularly for several weeks and then disappear for a period of time—in designing specific programs or activities. More importantly, needs for collaboration between afterschool programs and other extracurricular activities should be recognized. Rather than being “all things to all children,” afterschool programs can be more attentive to how their strengths can be coordinated with other afterschool settings in which young people in their community are engaged. Afterschool programs as well as other institutions, such as schools, can serve as information hubs for parents to provide them information on various afterschool pursuits in the local community. To contrast children who attend afterschool programs with children who participate in other activities after school may be less meaningful than consideration of sets of experiences, as we have done here.

The current study also highlights that some 40% of the children in the sample participated in extracurricular activities. For some children, extracurricular activities were coupled with unsupervised time while for others extracurricular activities were coupled with high-quality afterschool programs. The relations between extracurricular activities and child functioning were found to depend on whether children were also regularly attending afterschool programs or were regularly unsupervised after school. From an evaluation perspective, program effects on child outcomes may be more likely to be detected if evaluators consider this bundling of activities at the program and beyond in their measures and statistical models. Finally, parents can use the current findings to consider how they can bundle or package their children’s afterschool experiences to support positive youth development and fit within family’s schedules.

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Data availability statement

The data that support the findings of this study are available from the corresponding author, Deborah Lowe Vandell, upon reasonable request.

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