



Article

Interrelations between After-School Settings and the Delinquency and Emotional-Behavioral Problems of Elementary School Children: Findings from Fragile Families and Child Wellbeing Study

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Abstract: Even though there are different types of after-school settings, numerous studies have focused on formal after-school settings (i.e., after-school programs or ASPs) and their association with children's academic, physical, and social-emotional behaviors. The few findings from informal settings are also outdated. To bridge this gap, our study aimed to locate the interrelations between after-school settings and the behavioral outcomes of children with a particular emphasis on children's delinquency and emotional-behavioral problems. We used the U.S. national dataset, fifth wave of Fragile Families and Child Wellbeing (nine-year follow-up), with the binary logistic and ordinary least square regression analyses. With a sample size of 3320, we found that children in parental care were reported to commit less delinquency than children in ASPs. Also, children in non-adult care were reported to have more emotional-behavioral problems than children in ASPs. Educators, school social workers, and policymakers should consider the impact of ASPs on children whose parents are not able to spend significant amounts of time with them. In particular, public assistance should be utilized in such a way that helps parents to achieve their children's positive behavioral outcomes. At the same time, government and community assistance should be provided to enhance the quality of ASPs for the positive results of emotional-behavioral problems of elementary school students.

Keywords: after-school programs; parental care; race/ethnicity; emotional-behavioral problems; delinquency

1. Introduction

After-school programs (hereafter ASPs) have been designed to provide various enrichment activities (e.g., physical recreation, arts, music) and academic assistance for the development of academic, behavioral, and social-emotional outcomes of school-aged children during the school week (Durlak et al. 2010; Kayalar 2016; Whitson et al. 2020). ASPs' components, such as structured curriculum and adult-supervised environment are attractive to parents who must work during the after-school hours. As a consequence, around 8.4 million U.S. school-aged children participate in some type of ASP (Durlak et al. 2010).

Numerous studies have affirmed the effectiveness of ASPs, with a particular emphasis on academic growth (Mahoney et al. 2005; Durlak and Weissberg 2007; Grolnick et al. 2007; Pierce et al. 2010; Biddle and Mette 2016), physical health (National Center for Health Statistics 2005; Little 2007; Kim and Lochbaum 2017), and social-emotional well-being (Larson 2000; Bartko and Eccles 2003; Pierce et al. 2010; Jones and Deutsch 2011; Whitson et al. 2020). However, there has been a shortage

of research as to ASPs' impact on youth delinquency, defined by "behavior, especially of a young person, that is illegal or not acceptable to most people" (Cambridge Dictionary 2020), such as stealing, fighting, intrusion (e.g., going into somebody's garden, backyard, house, or garage when they were not supposed to be there) (Westat, Inc. 2011),¹ or running away. Additionally, most studies of ASPs are usually conducted through experimental designs or pilot studies that certify specific programs to assess their particular merits. Hence, these types of studies have the potential to lead parents and policymakers to the generalization that all types of ASPs can be effective for children.

Finally, there has been a dearth of studies in terms of finding the association between children's development and other types of after-school settings (e.g., relative or parental care) even though many elementary school-aged children ages of six (kindergarten) to 11 (fifth grade) are left with other people (e.g., family members, relatives, siblings, neighbors) during the after-school hours. This skewed research design can also offer the wrong impression that formal ASPs are the only programs that should be widely used or that other after-school settings are not worth evaluation.

Thus, the goal of this study is to examine specific behavioral areas of elementary school-aged children in after-school settings in the U.S. using the American national dataset, "Fragile Families and Child Wellbeing Study," with particular attention to the involvement in delinquency and emotional-behavior.

2. Literature Review

2.1. Formal Childcare Settings

After-school programs (ASPs). ASPs are known to offer caring and structured environments that aim to support positive child development (Jones and Deutsch 2011). Numerous studies have not only revealed positive outcomes of participants' development, but these programs have also proven effective for low-income children who lack developmental support and experience hardships within their environments (Jones and Deutsch 2011; Kayalar 2016; Khan and Lauzon 2018; Wallace and Palmer 2018).

One of the critical factors for positive outcomes in children who participate in ASPs is the role of relationships among students, peers, and staff/instructors (DuBois and Karcher 2005; Hirsch et al. 2011; McGuinness-Carmichael 2019). Participants who build strong relationships with staff/instructors can apply those relationships when exhibiting prosocial behaviors and building social relationships (Jones and Deutsch 2011; Pierce et al. 2010). That is to say, positive feelings and closeness with staff allow children to bridge developmental contexts and expand them to social settings (Jones and Deutsch 2011). Peers also play a crucial role for participants when creating caring connections with others and developing positive views of themselves in self-evaluation and identity development (Fredricks and Simpkins 2013; Breithaupt et al. 2019). For instance, children between 10 and 18 years of age build strong friendships, establish belongingness, and share emotional and social support while engaging in activities. Therefore, when children do not have many opportunities for engagement activities, they are likely to be involved in delinquency or drug abuse, or experience poor health (specially depression) (Fredricks and Simpkins 2013).

Generally, ASPs take place in school or community settings. Those sites provide specific activities, physical and psychological safety, age-appropriate settings (National Research Council and Institute of Medicine 2002; Smith and Bradshaw 2017), and opportunities to build cognitive and social skills (Hirsch et al. 2011; Huang et al. 2016). In particular, school-based ASPs have resulted in a relatively new context for youth development. This site has been extensively developed by federal, state, and

¹ The term "delinquency" in the Fragile Family and Wellbeing Study is modeled after its usage in the 1997 National Longitudinal Survey of Youth dataset meaning the respondent's history of running away from home and staying away at least overnight (National Longitudinal Surveys n.d.).

local funds (e.g., 21st Century Community Learning Centers) (U.S. Department of Education, Office of the Under Secretary 2003; Afterschool Alliance n.d.).

School-based programs are typically open daily throughout the school year. They offer a variety of activities such as sports, arts and crafts, games, music, drama, academic enrichment activities (e.g., hands-on science projects), and homework help (Shernoff and Vandell 2007). Participants in those programs report spending more time involved in academic and art enrichment activities, sports, community services, and homework than watching TV and eating food in their own homes. They also responded that they feel highly motivated, challenged, and are more likely to maintain positive mood states than youth not in after school provision (Vandell et al. 2005). Community-based after-school programs, such as the YMCA, Boys and Girls Club, and religious-based affiliations, are more likely to connect to facilities in the communities, such as organizations, museums, parks, and libraries, which aim to assist participants in learning and engagement (Lee and Hawkins 2008).

While school-based programs are more likely to emphasize children's academic areas, community-based programs focus on improving children's overall development. For instance, some programs contain specific goals to improve youths' developmental domains, promote social skills, increase community involvement, or combat substance abuse problems. Other ASPs provide a safe place for children during the time they spend outside of the regular school environment (Riggs and Greenberg 2004; Brecher et al. 2009). Collaborating with educators, parents, organizations, and public sectors will help acquire qualified staff/instructors, and it will enable ASPs to use a variety of resources for improving programs (Brecher et al. 2009).

Sustainability is another factor of ASPs that enhances their participants' developmental areas. Frequent ASP attendance leads participants to a wide variety of positive outcomes (Little 2008; Behtoui 2019). In general, formal enrollment is necessary for the proper evaluation and sustainability of such programs (Brecher et al. 2009). For instance, youth with the highest level of attendance demonstrated the fewest course failures and higher graduation rates than those who did not participate in the programs. In particular, academic achievement (such as reading, math, language arts, and work habits) is likely to show a significant association with the attendance rate of ASPs (Jenner and Jenner 2004; Huang et al. 2017; Jenson et al. 2018).

The first study carried out by Sherman et al. (1997) examining the relationship between community-based programs and the prevention of youth crime disclosed that ASPs were effective in reducing juvenile offending (as cited in Taheri and Welsh 2016, p. 273). Gottfredson et al. (2004) additionally reported that there was an insufficient outcome to prove that ASPs were effective in preventing delinquency or other problem behaviors for elementary-aged students. Furthermore, the study also revealed that only children of 10 years or older reduced delinquent behavior after becoming involved in ASPs. D'Agostino et al. (2019) also found the potential of park-based programs in promoting the resilience and mental health of at-risk youths and preventing violence.

However, a study by Taheri and Welsh (2016)—one of the studies that attempted to find a behavioral outcome (i.e., delinquency) of children in ASPs—found that ASPs had an insignificant impact on the reduction of delinquent behavior. Furthermore, a study by Park and his colleagues (Park et al. 2015), using the national dataset, discovered that there was no difference between low-income Latinx immigrant children in ASPs and non-ASPs on behavioral outcomes. In addition, another study by Park and Zhan (2017) using a national dataset released that low-income school-aged children in non-ASPs (parental care) showed lower levels of behavioral problems than their counterparts in ASPs. In summary, more recent studies found fewer positive associations between ASPs and children's behavioral development.

2.2. Informal Childcare Settings

While ASPs are considered formal childcare settings, there are different types of childcare settings regarded as informal care. Historically, informal care has been viewed in a negative light, and the government has encouraged parents to seek more formal childcare settings instead of relying on

informal childcare arrangements such as relative care by providing financial assistance for the purpose of improving labor market outcomes (Bernal and Keane 2011). However, the impact of informal care, particularly by grandparents and other relatives, needs to be examined more carefully.

Parental care. Children in parental care are taken care of by both or either of their parents after school hours. Compared with children in ASPs, many studies confirmed that children in parent care did not show positive outcomes (Posner and Vandell 1994; Pettit et al. 1997b; Mahoney et al. 2005). For example, Posner and Vandell (1994) stated that children in parental care (in particular, maternal care) displayed lower academic and social-emotional adjustment than children in ASPs.

Adult care. Adult care is considered care by neighbors, relatives, or babysitters. Aizer (2004) examined a lack of adult supervision in after-school settings on school-aged children and found that children without adult supervision were more likely to use substances, skip school, or steal. This study found the importance of adult supervision after-school care for school-aged children. In contrast, Goodfellow and Lavery (2003) found that grandparents perceived providing childcare for their grandchildren as being physically demanding and stressful. Another study pointed out that reliance on grandparents for childcare may cause children to miss out on the cognitive stimulation they would receive from formal care settings (Bernal and Keane 2011). Additionally, Posner and Vandell (1994) found that children in parental care (in particular, mother care) and other informal adult supervision after-school care showed poorer social/emotional adjustment than those in formal ASPs. Parents' perception on their children's emotional readiness was measured by the Self-Care Checklist, a scale developed by Posner and Vandell (1994).

Sibling care. Historically, the role of sibling caretakers was the norm in the United States, especially among working-class families until the mid-20th century (Pollack 2002). Among certain racial/ethnic groups such as Native Hawaiians and Native American tribes, sibling caretaking remains a common practice (Hafford 2010). More recent studies found that immigrant children also have familial obligations, which included sibling caretaking (Orellana 2003). Previous literature also found that caretaking cultivated prosocial development for children by providing self-esteem, companionship, and informational support (Marietietjen 1989).

On the other hand, unsupervised sibling caretaking could lead to a heightened risk of abuse and neglect (Hafford 2010). Knox et al. (2003) found that if elder siblings were irresponsible or immature, the quality of sibling caretaking was poor. If the elder sibling already felt overwhelmed by other daily demands, the responsibility of caring for siblings could overwhelm them even more. Children in sibling care also showed more significant externalizing problems than children in ASPs (Marshall et al. 1997). While sibling caretaking could be an option for after-school care, previous literature demonstrates the importance of its careful use, along with adult supervision.

2.3. Family and Social Factors Affecting Choices of After-School Settings and Child Behavior

Previous research has found that there were significant differences in the family income and racial background in terms of ASP participation (Wu and Van Egeren 2010) and child development (Pungello et al. 2009). First, families with higher income and mothers with higher education are more likely to enroll their children in ASPs (Riggs and Greenberg 2004). Children in lower socioeconomic status (SES) showed a slower rate of academic and behavioral development than those in higher SES (Pungello et al. 2009). African American children demonstrated lower skills of self-expression than Caucasian children (Pungello et al. 2009). In the study, children's language development (i.e., expressive communication) was measured by the Preschool Language Scale-4 (Zimmerman et al. 2004). Furthermore, race moderated the association between negative-intrusive parenting and rate of growth. For African American families, this association was weaker. Finally, parental homeownership was associated with the children's likelihood to drop out of school before the age of 17 (Green and White 1997).

Perkins et al. (2007) found that youth from various racial/ethnic groups had different reasons to participate in ASPs. In particular, male Latinx children preferred ASPs because of the opportunity

to play sports, while Arab males wanted to gain educational benefits. Another explanation revolved around the possible impact of racial discrimination (Wu and Van Egeren 2010). Since numerous studies have explored racial-minority students' perceptions of inter-racial interactions (Tatum 1997), racial-minority students might prefer ASPs with more racial diversity.

Regarding the family structure, mothers without husbands or partners in low-wage jobs had various vulnerabilities (Jackson et al. 2000). For instance, these mothers with a lower level of education were more likely to earn less than their counterparts, and this financial strain influenced the mothers' depressive symptoms. Furthermore, the mothers' depressive symptoms were related to parenting quality, and in turn, led to their children's behavioral problems.

The number of household members (most significantly, the number of siblings) was associated with children's positive emotional-behavioral adjustments (Burke et al. 2012; Goudie et al. 2013; Walton 2016; Hayden et al. 2019). Most notably, an increase in the number of siblings led to fewer parental influences, which made children resort to antisocial peers. This ultimately affected their increased delinquency (Tygart 1991). The effect of the number of siblings in a family on the emotional-behavioral development of children can depend on the SES of the family. In other words, as long as there is sufficient amount of resources to care for all the children, the positive relationship between the number of children and their emotional-behavioral problems can be minimized or diminished. However, in a single parent household, such an effect may be rather enhanced due to the low SES (Pettit et al. 1997a).

Within the children's social context, school connectedness or school bonding is regarded as crucial to impact their social and behavioral areas (e.g., delinquency) (Bandura 1986). School connectedness promotes secure attachment and trustworthy relationships with prosocial adults and peers. It also fosters involvement in activities that help acquire adaptive skills and competencies and control of delinquency (Catalano et al. 2004). Studies found that stronger school connectedness led to fewer mental health problems and decreased risk of delinquency (Catalano et al. 2004; Bond et al. 2007), and there was a bidirectional effect between school connectedness and emotional-behavioral adjustments (Mrug and Windle 2009). Hawker and Boulton (2000), with a meta-analysis of 23 cross-sectional studies examining relationships between peer victimization, reported that child victims of bullying had significantly higher levels of psychosocial problems, such as depression, loneliness, and anxiety.

2.4. Conceptual Framework: Social Learning Theory

Social learning theory stresses that socialization with primary group members (i.e., family, friends, and teachers/instructors) plays a vital role in children's behavioral areas (Akers 1985; as cited in Norman and Ford 2015, p. 530). Interacting with family members, peers, and teachers/instructors, also called significant others, establishes an understanding of acceptable and normative behaviors providing positive or negative reinforcement in proximal contexts. For instance, when a child exhibits desirable deviant behavior and is differentially reinforced by significant others, then the likelihood of repeating the abnormal behavior is increased (Norman and Ford 2015). There are three main components that social learning theory emphasizes—differential association, imitation, and differential reinforcement (Norman and Ford 2015).

Differential association is face-to-face interactions with significant others. This component is based on how long children have been exposed to significant others (duration), how soon they are exposed (priority), how often they are exposed (frequency), and how salient the exposure is (intensity). Such factors indicate whether children will learn deviant behavior. Therefore, children who have peers, instructors, and teachers in their close environments that display deviant behaviors will be prone to show similar behaviors (Norman and Ford 2015).

Imitation is the modeling of significant others' behaviors. If individuals observe that others are rewarded for a specific action, then he/she will be more likely to imitate said behavior. However, if punishment is given due to that behavior, then the observer will be less likely to mimic the behavior. Hence, children who see their primary group's members rewarded for positive actions or punished for bad behavior will learn how they need to behave to receive rewards (Norman and Ford 2015, p. 530).

The last proposition is *differential reinforcement*, which causes actual and perceived consequences of behavior (Akers 1985; as cited in Norman and Ford 2015, p. 530). For instance, if children receive positive reinforcement after a particular action, then they will consider it an acceptable behavior and expect to obtain favorable outcomes for engaging in that action again. On the other hand, when children are given negative reinforcement—punishment, after displaying an individual action—the children will perceive that they will be punished again if they are to repeat the same behavior (Norman and Ford 2015).

Overall, programs which adopt social learning theory will result in participants who perceive certain types of behaviors as positive, and who will also develop themselves into more positive people through the reduction of childhood anxiety, depression, emotional distress, conduct problems, and aggressive and antisocial behavior, as well as improving attitudes toward school (Durlak et al. 2011). This outcome takes place through face-to-face, direct, and frequent interactions, both with peers who show positive behaviors, as well as staff/instructors who can be role models for participants by giving feedback on positive and negative reinforcement in social settings.

Given previous literature reviews that demonstrate the effectiveness of ASPs on child behavioral development, as well as the significant role of social learning theory, this study hypothesizes that children in ASPs will have more positive relationships with participants' delinquency and emotional-behaviors than their counterparts in non-ASPs—parental, adult, non-adult, and sibling care. In order to achieve a more practical sense of ASPs' association with the behavioral areas of elementary school children, we utilized the national dataset, fifth wave (nine-year-old children) from the Fragile Families and Child Wellbeing (FFCW) Study.

3. Methods

3.1. Data and Sample

We conducted a cross-sectional analysis using data from the Fragile Families and Child Wellbeing (FFCW) Study. The FFCW is a longitudinal birth cohort study of 4898 children born between 1998 and 2000 from 20 large cities across the USA (Reichman et al. 2001). The study over-sampled children born to unmarried parents but also includes children with married parents. Mothers were included in the study if they met the following requirements: They were healthy enough to complete the interview, they were not planning to place the child up for adoption, they could speak English or Spanish well enough to understand and answer interview questions, and their children's father was living. Baseline in-person interviews were conducted in the hospital shortly after the child was born. Additional data were collected via a telephone survey at 1-, 3-, 5-, 9-, and 15-year follow-ups. Interviews were conducted with mothers, fathers, and primary caregivers, collecting information on a variety of domains, including demographic characteristics, social and economic status, parental attitudes, relationships, parenting behavior, behavioral problems, neighborhood characteristics, and program participation. Thus, this data set is well-suited for examining the associations between after-school settings and the behavioral outcomes of children.

In the current study, we used the follow-up data collected when the children were nine years of age. The sample comprised 3353 mother-child dyads of the 4898 total participants. To handle the missing data, multiple imputations (MI) with a chained equation method of multiple multivariate data, imputation was employed to generate and merge 30 datasets. Although MI is a good approach for addressing missing data, imputing data that are not missing at random may produce biased estimates of coefficients and standard errors (Allison 2001). A more conservative approach was used in our study (Von Hippel 2007) since families who left the study are not missing at random. Specifically, outcome variables (i.e., children's delinquency and emotional-behavioral and problems) were used to impute values for all the independent variables. Still, ultimately 1552 cases with imputed values for outcome variables and variables of after-school settings were excluded from the analyses. Also, a set of auxiliary variables was included in the imputation model to reduce potential bias in estimates

of missing values (Graham 2009). We conducted both pre- and post-MI analyses and found that the results were not significantly different. Following these techniques, the final analytic sample included 3320 children with complete data on their outcome variables and variables of after-school settings.

3.2. Measurement

3.2.1. Dependent Variables

Delinquency. Children's delinquency was measured by asking whether the child had ever engaged in the following varied delinquent behaviors in the past 12 months: "Purposely damaged or destroyed property," "taken or stolen something," "hurt an animal on purpose," "taken money at home," "cheated on a school test," "had a fistfight with another person," "gone into somebody's garden/yard/house/garage when not supposed to," "ran away from home," "skipped school without an excuse," "secretly taken a sip of wine, beer, or liquor," "smoked marijuana, grass, pot, weed," "smoked a cigarette or used tobacco," "been suspended or expelled from school," "written things or sprayed paint on walls or sidewalks or cars," "purposely set fire to building, car, or other or tried to do so," "avoided paying for things such as movies, bus or subway, or food," and "thrown rocks or bottles at people or cars." We added all of these acts together and then created a dichotomous variable of delinquency, in which 0 = no participation in any delinquent acts and 1 = participation in any delinquent acts. The variable indicated good internal consistency reliability ($\alpha = 0.71$).

Emotional-behavioral problems. This variable capturing children's emotions and behaviors was measured by 14 items derived from internalizing and externalizing subscales of the self-description questionnaire. The child was asked to rate their frequency of emotion and behaviors from 0 (Not at all true) to 3 (Very true) in the following statements: "I have trouble learning something," "I often argue with other kids," "I worry about taking tests," "It's hard for me to pay attention," "I often feel lonely," "I get distracted easily," "I feel sad a lot of the time," "It's hard for me to finish my schoolwork," "I worry about doing well in school," "I worry about finishing my work," "I worry about having someone to play with," "I feel ashamed when I make mistakes at school," "I get in trouble for talking and disturbing others," and "I get in trouble for fighting with other kids." The variable had good internal consistency reliability ($\alpha = 0.83$). A composite variable ranging from 0 to 3 was constructed by taking the mean of the studied items, in which higher values reflected greater behavioral and emotional problems.

3.2.2. Independent Variables

After-school settings. The variable was measured by asking the child to report who he/she is usually with right after school. There were five categories created: ASP care, offering organized activities (reference group); parental care (cared by either mom or dad); adult care (cared by another adult); sibling care (cared by family members who are under 18 years old); and non-adult care (with a friend, but no adult present or home alone). These categories were further coded as dummy variables indicating whether the child is under the specific after-school setting (0 = No, 1 = Yes).

3.2.3. Covariates

School connectedness. The variable was constructed by items asking the children to report how frequently they felt a part of their school, felt close to people at their school, felt happy to be at their school, and felt safe at their school. These items measured the degree of inclusiveness, closeness, happiness, and safety the child experienced at school. Each item was rated on a five-point Likert scale ranging from 0 (not once in the past month) to 4 (every day). A higher value indicated a greater school connectedness. There was a good internal consistency coefficient for this variable ($\alpha = 0.74$).

Peer bullying. The variable was measured by asking the child to report whether he/she was bullied by other kids in the following acts: "Picked on you or said mean things to you," "hit you," "take your things, like your money or lunch," and "purposely left you out of activities." The internal

consistency coefficient for this variable was good ($\alpha = 0.68$). Responses were based on a five-point Likert scale ranging from 0 (not once in the past month) to 4 (every day), in which higher values reflected high levels of peer bullying.

Demographics. In our regression analyses, we accounted for a set of sociodemographic characteristics that may confound the relationship between after-school settings and children's problem outcomes. Annual household income and mother's race/ethnicity, education, and age were included in our analyses. Annual household income was treated as a continuous variable ranging from \$0 to \$900,000. The mother's race/ethnicity was recorded as African American, Hispanic, and Other, with Caucasian being the reference group. The mother's marital status with the focal child's biological father was captured by six categories: Married (reference group), separated, divorced, cohabiting, romantic but not living together, and not romantic. The categories for the mother's education consisted of high school or equivalent, some college/technical training, and college or graduate degree, with less than high school being the reference group. Finally, the mother's age was measured in year nine and ranged from 23 to 56 years old.

3.3. Data Analysis

We first estimated descriptive analyses to calculate the distributions of the studied variables. Binary logistic regression was used to examine the relationships between after-school settings and children's delinquency. Ordinary least square (OLS) regressions were employed to investigate the associations of after-school settings with children's emotional-behavioral problems. The regressions for two outcome variables were conducted in the same manner in which after-school settings were entered in Model 1, followed by covariates in Model 2. All analyses were performed using Stata statistical software.

4. Results

4.1. Descriptive Analysis

As indicated in Table 1, other than parental care (54.46%), 13.68% of children were in ASPs, 18.24% of children were under adult care, 10.43% of children used sibling care, and 3.19% of children were not cared for by any adults or family members. The mother's racial/ethnic composition was 20.32% Caucasian, 50.82% African American, 25.41% Hispanic, and 3.44% Other. A total of 21.73% of mothers had less than high school education, 21.19% had a high school diploma or equivalent, 41.54% had some college or technical training school experience, and 15.54% had a college degree or graduate school diploma. The majority of mothers (71.10%) were not married. The average age of mothers was 34.29 years ($SD = 5.97$, range = 23–56) and the mean household income was \$44,502.90 ($SD = \$49,430.06$). The detailed characteristics of the sample are displayed in Table 1.

Table 1. Percentages, mean, and standard deviation of the sample.

	N	%	M (SD)	Range
Delinquency	3230			
No (0)	1528	47.31		
Yes (1)	1702	52.69		
Behavioral and emotional problems	3230		1.05 (0.63)	0–3
After-school settings	3230			
ASP (Reference group)	442	13.68		
Parental Care	1759	54.46		
Adult Care	589	18.24		
Sibling Care	337	10.43		
Non-adult Care	93	3.19		

Table 1. Cont.

	N	%	M (SD)	Range
Mother's education	3120			
Less than high school (Reference group)	678	21.73		
High school or equivalent	661	21.19		
Some college/technical training	1296	41.54		
College or graduate degree	485	15.54		
Mother's marital status	3059			
Married (Reference group)	884	28.90		
Separated	55	1.80		
Divorced	8	0.26		
Cohabiting	1061	34.68		
Romantic but not living together	778	25.43		
Not romantic	273	8.92		
Mother's race/ethnicity	3223			
Caucasian (Reference group)	655	20.32		
African American	1638	50.82		
Hispanic	819	25.41		
Other	111	3.44		
Mother's age	3119		34.29 (5.97)	23–56
Household income	3114		44,502.9 (49,430.06)	0–900,000
Number of children (<18) in mother's household	3105		2.69 (1.34)	0–8
School connectedness	3177		3.10 (0.96)	0–4
Peer bullying	3212		2.39 (3.03)	0–16

4.2. Regression Models

Table 2 presented binary logistic regression estimates predicting children's delinquency from after-school settings and the other control variables. In Model 1, only two after-school settings—parental care ($b = -0.40, p < 0.001$) and non-adult care ($b = 0.57, p < 0.05$)—were significantly related to children's delinquency. After controlling for relevant covariates (Model 2), non-adult care became insignificant. Still, excluding these covariates, children under parental care were 30% less likely to engage in delinquency than children in ASPs ($b = -0.36, OR = 0.70, p < 0.01$). However, other after-school settings were not significantly different from the ASPs. Additionally, the mother's education, household income, and the number of children under 18 years old in the mother's household were not correlated with children's delinquency. Compared to children of married mothers, children under the care of mothers who were not in any romantic relationships were 43% more likely to engage in delinquent acts ($b = 0.36, p < 0.05$). Mother's race/ethnicity also played an important role in the likelihood of childhood delinquency. Compared to children with Caucasian mothers, children with African American mothers were 61% more likely to be involved in delinquency ($b = 0.47, p < 0.001$), whereas children with Hispanic mothers were 32% less likely to engage in delinquent behaviors ($b = -0.39, p < 0.001$). Each age increase in mother's age was associated with a 2% decrease in the odds of children's delinquency ($b = -0.02, p < 0.01$). Furthermore, each unit increase in school connectedness and peer bullying was related with a respective 17% decrease ($b = -0.19, p < 0.001$) and a 21% increase in the likelihood of children's delinquency ($b = 0.19, p < 0.001$).

Table 2. Binary logistic regression estimates on delinquency (N = 3230).

Variables	Model 1			Model 2		
	b (SE)	OR	CI	b (SE)	OR	CI
After-school programs (ASPs)						
Parental care	-0.40 *** (0.11)	0.67 ***	[-0.61, -0.19]	-0.36 ** (0.12)	0.70 **	[-0.59, -0.13]
Adult care	-0.25 (0.13)	0.78	[-0.50, 0.00]	-0.27 (0.14)	0.77	[-0.53, 0.00]
Sibling care	-0.09 (0.15)	0.91	[-0.37, 0.20]	-0.15 (0.16)	0.86	[-0.46, 0.16]
Non-adult care	0.57 * (0.24)	1.77 *	[0.10, 1.04]	0.47 (0.25)	0.60	[-0.03, 0.97]
Mother’s education (Less than high school)						
High school or equivalent				-0.16 (0.12)	0.86	[-0.39, 0.08]
Some college/technical training				-0.05 (0.11)	0.95	[-0.26, 0.16]
College or graduate degree				-0.15 (0.15)	0.86	[-0.44, 0.14]
Mother’s marital status (Married)						
Separated				-0.08 (0.30)	0.92	[-0.67, 0.51]
Divorced				-0.46 (0.79)	0.63	[-2.02, 1.08]
Cohabiting				0.00 (0.11)	1.00	[-0.22, 0.21]
Romantic but not living together				0.15 (0.12)	1.16	[-0.08, 0.39]
Not romantic				0.36 * (0.17)	1.43*	[0.04, 0.69]
Mother’s race/ethnicity (Caucasian)						
African American				0.47 *** (0.11)	1.61 ***	[0.25, 0.69]
Hispanic				-0.39 *** (0.12)	0.68 ***	[-0.62, -0.16]
Other				-0.03 (0.22)	0.86	[-0.46, 0.39]
Mother’s age				-0.02 ** (0.01)	0.98 **	[-0.03, -0.01]
Household income				-1.07 × 10 ⁻⁶ (9.80 × 10 ⁻⁷)	1.00	[-2.99 × 10 ⁻⁶ , 8.55 × 10 ⁻⁷]
Number of children (<18) in the mother’s household				0.03 (0.03)	1.03	[-0.03, 0.09]
School connectedness				-0.19 *** (0.04)	0.83 ***	[-0.27, -0.11]
Peer bullying				0.19 *** (0.03)	1.21 ***	[0.16, 0.22]
Constant	0.37 ***			1.08 **		

Note. Reference categories are in parentheses. b = unstandardized coefficient, SE = standard error, OR = odds ratios, CI = 95% confidence interval * p < 0.05, ** p < 0.01, *** p < 0.00.

Table 3 displays OLS regression estimates predicting emotional-behavioral problems from after-school settings and the other control variables. In Model 1, children in parental care were less likely to have emotional-behavioral problems than those in ASPs ($\beta = -0.06, p < 0.05$), and children under non-adult care were more likely to have emotional-behavioral problems than those in ASPs ($\beta = 0.05, p < 0.01$). In Model 2, controlling for covariates, parental care became insignificant. Also, children under non-adult care were more likely to have emotional-behavioral problems than those in ASPs ($\beta = 0.04, p < 0.05$). Other after-school settings were not associated with children’s emotional-behavioral problems. The results were different from what has been found in the relationships between after-school settings and children’s delinquency.

Table 3. OLS regression estimates on emotional-behavioral problems.

Variables	Model 1			Model 2		
	<i>b</i> (SE)	β	CI	<i>b</i> (SE)	β	CI
After-school programs (ASPs)						
Parental care	-0.07 * (0.03)	-0.06 *	[-0.14, -0.01]	-0.05 (0.03)	-0.04	[-0.11, -0.01]
Adult care	-0.03 (0.04)	-0.02	[-0.10, 0.05]	-0.02 (0.04)	-0.01	[-0.09, 0.04]
Sibling care	-0.01 (0.05)	-0.00	[-0.10, 0.08]	-0.02 (0.04)	-0.01	[-0.10, 0.06]
Non-adult care	0.19 ** (0.07)	0.05 **	[0.06, 0.33]	0.13 * (0.06)	0.04 *	[-0.01, 0.25]
Mother’s education (Less than high school)						
High school or equivalent				-0.06 * (0.03)	-0.04 *	[-0.12, 0.00]
Some college/technical training				-0.07 * (0.03)	-0.05 *	[-0.12, -0.01]
College or graduate degree				-0.09 * (0.04)	-0.05 *	[-0.16, -0.01]
Mother’s marital status (Married)						
Separated				0.16 (0.08)	0.03	[0.00, 0.31]
Divorced				-0.34 (0.20)	-0.03	[-0.74, 0.05]
Cohabiting				0.05 (0.03)	0.04	[-0.01, 0.11]
Romantic but not living together				0.00 (0.03)	0.00	[-0.06, 0.06]
Not romantic				0.12 ** (0.04)	0.05 **	[0.04, 0.20]
Mother’s race/ethnicity (Caucasian)						
African American				0.12 *** (0.03)	0.10 ***	[0.07, 0.18]
Hispanic				-0.01 (0.03)	-0.01	[-0.07, 0.05]
Other				-0.03 (0.06)	-0.01	[-0.14, 0.08]
Mother’s age				-0.01 *** (0.00)	-0.06 ***	[-0.01, 0.00]
Household income				-7.00×10^{-7} ** (2.46×10^{-7})	-0.06 **	$[-1.18 \times 10^{-6}, -2.18 \times 10^{-7}]$
Number of children (<18) in the mother’s household				0.02 * (0.01)	0.03 *	[0.00, 0.03]
School connectedness				-0.07 *** (0.01)	-0.11 ***	[-0.09, -0.05]
Peer bullying				0.07 *** (0.00)	0.36 ***	[0.07, 0.08]
Constant	1.09 ***			1.27 ***		

Note. OLS = ordinary least square; reference categories are in parentheses. *b* = unstandardized coefficient, SE = standard error, β = standardized coefficient, CI = 95% confidence interval. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

In addition, there were significant relationships between mothers’ education and children’s emotional-behavioral problems, in which a mother’s high school, college, or graduate degree was significantly associated with the reduced risk of emotional-behavioral problems (high school or equivalent: $\beta = -0.04$, $p < 0.05$; some college/technical training: $\beta = -0.05$, $p < 0.05$; college or graduate: $\beta = -0.05$, $p < 0.05$). An increase in a mother’s age ($\beta = -0.06$, $p < 0.001$), household income ($\beta = -0.06$, $p < 0.01$), and school connectedness ($\beta = -0.11$, $p < 0.001$) also predicted the reduced likelihood of emotional-behavioral problems. In addition, children with African American mothers had a higher possibility of emotional-behavioral problems than children with Caucasian mothers ($\beta = 0.10$, $p < 0.001$), and children with mothers who were not involved in romantic relationships were also significantly related to an increased possibility of emotional-behavioral problems when compared to children with

married mothers ($\beta = 0.05, p < 0.01$). Similarly, an increase in the number of children under 18 years old in the mother's household ($\beta = 0.03, p < 0.05$) and peer bullying ($\beta = 0.36, p < 0.001$) were correlated with an increase in emotional-behavioral problems.

5. Discussion

Although prior studies have documented the effectiveness of ASPs in various aspects of children's development, the effects of ASPs on youth behavioral outcomes remain unclear. Using a national American sample, our study aimed to identify the relationships between after-school settings and children's delinquency and emotional-behavioral problems, by considering both ASPs and informal care (e.g., parental, adult, sibling, and non-adult care) that have been rarely examined in previous studies simultaneously. The findings of the study were not only supported by the prior studies but also contributed to the existing literature, which will be further discussed below.

Our findings partially support social learning theory, which stresses that positive interactions with peers and teachers in a structured environment and organized activities help children develop positive behaviors of reducing emotional-behavioral problems.

As mentioned in previous findings, it is a widely known fact that formal ASPs provide organized activities (e.g., academic activities, enrichment lessons, less time watching TV, frequent interactions with peers and adults) (National Research Council and Institute of Medicine 2002; Shernoff and Vandell 2007; Lee and Hawkins 2008; Smith and Bradshaw 2017). Participation in such activities is proven to be valuable for younger children in their behavioral, academic, and emotional development (Posner and Vandell 1994).

Behavioral regulations (i.e., controlling emotions and behaviors) cannot be achieved by independent practices, but rather by interactions with others over time. In particular, children's self-control is significantly influenced by parenting skills and discipline (Gifford 2001). Parenting practices are a crucial moderator for out-of-school care and child development (Levine et al. 2004). Our study findings demonstrated that children in parental care showed less likelihood of engaging in delinquency.

Additionally, even though our study controlled for social-demographic variables, we found that the conditions of the mother's race/ethnicity and mother's age were significantly associated with children's behavioral areas. Specifically, Hispanic mothers were more positively related to reducing a child's delinquency than Caucasian mothers. This finding raises the matter of Hispanic parenting. In particular, the associations between children's race/ethnicity and child delinquency need further exploration. Our study discovered that Hispanic children showed more positiveness in reducing delinquency than Caucasian children. This finding calls attention to the potential for racial/ethnic subgroup processes on a child's behavioral areas. Quintana and his colleagues (Quintana et al. 2006) explained that cultural application and parenting characteristics within racial/ethnic groups significantly influence child development. If racial/ethnic minority parents have a high level of racial/ethnic identity, they encourage their children to achieve emotional resiliency and socialization. However, it still prompts the need for future investigation on how racial/ethnic identity within two racial/ethnic groups—African American and Hispanic families—is constructed and what its distinctive influence is on child delinquency.

Our study finding of the positive association between mother's age and child's lower level of delinquency behavior needs to be further examined. There have been many conflicting results as to parenting knowledge and behaviors of young mothers. While some studies emphasized the importance of mothers' maturity on child behaviors (Roosa and Vaughan 1984; Garcia Coll et al. 1986; Baranowski et al. 1990), other studies did not find associations between mothers' age and child development (Philliber and Graham 1981; Parks and Smeriglio 1983). In fact, instead of mothers' age, the cultural, social, or economic background would reflect mothers' parenting skills, which in turn lead to a child's positive behavioral outcomes (Geronimus et al. 1994).

Concerning the child's emotional-behavioral problems, our study found that children in ASPs were more likely to reduce emotional-behavioral problems than those in non-adult care. These results

support the previous studies' findings (Posner and Vandell 1994; Gifford 2001). The discrepancy of the previous outcome—children in parental care were more positively associated with delinquency than those in ASPs—would lead to different instruction skills between parents and instructors. In other words, children's delinquency can be effectively prevented through direct instruction and supervision from their parents at home. At the same time, their emotional-behavioral problems can be treated more effectively through ASPs by instructors in school settings.

Our study discovered that mothers' education level had a positive relationship with their children's emotional-behavioral areas. This outcome supported the study by Ertem et al. (2007) that children with higher educated mothers might receive better treatment from their mothers because they are more likely to be aware of child development and child treatment than mothers who have lower education. It would also support that mothers with higher education tend to send their children to structured ASPs, which are positively associated with reducing a child's emotional-behavioral problems (Riggs and Greenberg 2004).

Our study additionally found that children whose mothers were African American had a higher likelihood of emotional-behavioral problems than those whose mothers were Caucasian. Although this finding has to be further investigated, it appears that there must be culturally distinct characteristics of African American mothers' parenting skills compared to Caucasian mothers (Quintana et al. 2006). As mentioned earlier, race/ethnicity is often related to the other factors, such as economic factors, single motherhood, and number of children. Such exogenous factors might work more positively or negatively while developing a child's behavioral areas. The positive effect of the mother's age on a child's fewer emotional-behavioral problems was also introduced as a previous study reported (Roosa and Vaughan 1984; Garcia Coll et al. 1986; Baranowski et al. 1990).

In addition, children who came from families with higher levels of household income were less prone to display emotional-behavioral problems. The highly organized activities (i.e., concerted cultivation activities) that middle and upper-class parents tend to engage in with their children are key processes through which parents guarantee their children's early success (Lareau 2003). According to Lareau (2003), children in middle- and upper-middle class families spend much of their leisure time in structured activities administered by adults (art and music classes, sports, drama, clubs, etc.), which foster the development of children's skills, behaviors, and attitudes that protect them from emotional-behavioral problems and lead to their greater success compared to working-class and poor children (Lareau 2003; Bodovski and Farkas 2008).

Our study's finding on the positive effect of the number of children in a family on their emotional-behavioral problems supports the previous studies' findings (Burke et al. 2012; Goudie et al. 2013; Walton 2016; Hayden et al. 2019). Controlling for household income, the number of children still had an impact on their emotional-behavioral areas. This means that a lack of parental influences due to the increased number of children to take care of, especially for a single-mother family, would turn to children's negative behavioral outcomes.

We found effects of school connectedness and peer bullying in the same direction on both delinquency and emotional-behavioral areas. As children have better school connectedness and less peer bullying, the likelihood of engaging in delinquency and frequencies of emotional and behavioral problems decrease. These findings support social learning theory and are consistent with findings in the previous studies (Catalano et al. 2004; Bond et al. 2007). Practitioners and educators in schools need to work on promoting better environmental settings for their students, as having a sense of school connectedness and less peer bullying has significant impacts on delinquency and emotional-behavioral areas, holding other effects constant.

6. Implication

Based on our study findings, we made suggestions at the federal, state, district, community, school, and parent levels to improve current and standard ASPs in the United States.

At the federal level, it is essential to examine diverse characteristics of each state and design after-school arenas that meet each state's needs. There is no one unified standard of ASP quality. When considering the quality of ASPs, the educational department in each state needs to design adaptive and flexible quality standards that meet the state needs of school-aged children. Additionally, the collaboration with particular cities will be assistive to build effective and efficient ASPs (Little 2007). Most importantly, our study implied that the way to provide federal investment (e.g., the Child Care and Development Fund, Temporary Assistance for Needy Families funds, Workforce Development funds) in ASPs (Little 2007) should be more diversified by considering individual incentives to parents who take care of children after school hours. Even though family is a major institution for social, economic, and emotional support for the well-being of family members (Gilbert and Terrell 2013), their effort of taking care of their children has been viewed as an obligation and not necessary to be credited. However, since parental care showed more positive associations with children's lower engagement in delinquency than formal ASPs, the childcare support or parental education especially for low-income households could be a selective avenue which can optimize children's development.

At the state level, policymakers need to ensure alignment between licensing, quality rating systems (QRS), and program quality assessment. As opposed to regular school curriculum, the ASP assessment has been overlooked and less updated to meet the dynamics of educational settings. There should be a statewide quality improvement effort to facilitate enough to ease the burden on local programs and obtain consistent and updated data on a regular basis (Little 2007).

At the community level, ASPs can be implemented by community-based organizations such as public agencies, libraries, and youth organizations, the YMCA/YWCA, and 4-H (Gootman 2000). While ASPs primarily provide children with programs to promote social skills, community involvement, and academic achievement, they can also be used as safe places for children when they are not under parents' supervision (Brecher et al. 2009). Based on our findings, community-based ASPs can be improved by providing more programs involving parents to reduce children's engagement in delinquent behaviors. Given that a large number of participants in ASPs are racial/ethnic minorities (Table 1), this is especially important because racial/ethnic minority children are more likely to engage in delinquency. The programs also need better-trained workers to accommodate the diversity of the population in their programs.

At the school level, as observed in this study, other than parental care, many children (14%) are enrolled in ASPs, and the relationship between delinquency behaviors and program participation does not show more positive outcomes compared to other informal arrangements. In order to improve ASPs' quality and children's positive results, it is crucial to investigate the quality of current ASPs (public school-wise). At the same time, school instructors and staff should consider promoting school services, such as workshops for parents, counseling services for poorly educated parents and single parents who spend time with their children after school. This will help them more easily apply positive parenting skills and home education for children's development, hopefully leading to a reduction in both childcare burdens and employment concerns. Particularly, school personnel should consider creating better educational settings for students, as school connectedness and peer bullying have great impacts on delinquency and emotional-behavioral areas. Not only are the quality of the programs, instructors, and staff key components of successful ASPs, but partnerships with parents, educators, community-based organizations, educational institutions, and public sectors are also key players in creating a better-structured and safe educational settings through appropriate and positive activities with children (Chung 2000; Brecher et al. 2009).

They should also promote increasing the feelings of connectedness for those at greater risk, such as students with disabilities, students with marginalized sexual orientations, and homeless students as these tend to be vulnerable to the victimization of bullying. Furthermore, policymakers should also provide professional development and support for school educators and other staff to fulfill students' diverse needs as school workers certainly have tremendous influences on their students.

For school social workers and educators, they need to assess and evaluate their ASPs' environment to observe whether their components (quality of staff/instructors, educational materials, activities) are satisfactory for a child's developmental necessity. They should also help students stay motivated in necessary academic, emotional, and social skills to be actively engaged in school activities. It is also vital to create caring relationships with school personnel, such as administrators, teachers, students, families, and communities.

At the parent level, as our study findings indicated, parental care plays an important role in reducing children's possibility of engaging in delinquency. Parents need to supervise their children and demonstrate consistent interest in them because delinquent behavior and emotional-behavior problems are easily influenced by the structure and status of their family. As much as it is important to promote parents' involvement in ASPs for better outcomes for children, it is also crucial for parents to actively participate in programs and communicate with school workers. By doing so, it will, in turn, maintain an atmosphere where school workers and children can create strong bonds at school and improve their behavioral areas.

For future research, qualitative studies are recommended to observe how parents interact with their elementary school-aged children after school, inside and outside the home, in order to understand their positive associations with parental care and delinquency. This component will supplement the limitations of the dataset that does not consist of quality measurement or rationale to capture either parental care or ASPs to offer answers to this study's findings. At the same time, since this study is conducted by a cross-sectional dataset, using longitudinal data to find the effectiveness of parental care on children's delinquency and emotional-behavioral problems is recommended. Finally, our research finding of racial/ethnic differences with regard to children's behavioral areas should lead to further investigation into understanding the mechanism of the establishment and process of racial/ethnic identity and children's development.

7. Conclusions

This study is one of the few that used the U.S. national dataset to locate the interrelation between after-school settings and elementary school-aged children's behavioral areas, in particular, delinquency areas and emotional-behavioral problems. Even though the current investigation provides empirical support for the ASPs on children's emotional-behavioral issues, the finding—no positive associations between ASPs and positive children's delinquency—suggests an urgent need for further investigations of the current ASPs implemented in both school and community settings in order to improve the effectiveness and efficiency of ASPs, as well as their ability to bolster children's emotional-behavioral areas. At the same time, this study's outcome necessitates further assessments of mothers' age and children's emotional-behavioral problems. Overall, social and financial support to aid parental care would maximize child behavioral outcomes. Additionally, parental care has been viewed as less significant since it is defined as part of informal childcare settings, and previous studies have not found the impact on child development compared to formal ASPs. However, this study outcome brings new insight into the importance of parental care for school-aged children and this should draw ordinated attention from policymakers and educators by giving it full acknowledgement.

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