Published in final edited form as:

Child Youth Serv Rev. 2016 May ; 65: 156–165. doi:10.1016/j.chilgyouth.2016.04.005.

Decreasing Risk Factors for Later Alcohol Use and Antisocial Behaviors in Children in Foster Care by Increasing Early Promotive Factors

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Abstract

Children in foster care are at high risk for poor psychosocial outcomes, including school failure, alcohol and other substance abuse, and criminal behaviors. Promoting healthy development by increasing broad-impact positive skills may help reduce some of the risk factors for longer-term negative outcomes. School readiness has been linked to a number of positive outcomes across childhood, adolescence, and adulthood, and may also boost intermediary positive skills such as self-competence. This paper presents findings from a longitudinal study involving 192 children in foster care who were 5 years old at the start of the study. They participated in a randomized controlled trial of a school readiness program to prepare them for kindergarten. Outcomes were assessed at third grade (9 years old) on variables associated with risk for later involvement in substance use and delinquency. These included positive attitudes towards alcohol use, positive attitudes towards antisocial behaviors, and involvement with deviant peers. Results showed that the intervention decreased positive attitudes towards alcohol use and antisocial behaviors. Further, the mediating role of children's self-competence was tested. The intervention positively influenced children's third-grade self-competence, which in turn, decreased their involvement with deviant peers. Findings suggest that promoting school readiness in children in foster care can have far-reaching, positive effects and that increased self-competence may be a mechanism for reducing risk.

Keywords

school readiness; foster care; self-competence; antisocial behavior; alcohol use

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1. Introduction

Youth with a history of involvement in the child welfare system are at risk for a number of negative outcomes across their development. As children, they are more likely to have difficulties controlling their own behaviors, making friends, and succeeding in school (Leve, Fisher, & DeGarmo, 2007; Loman et al., 2013; McDermott, Westerlund, Zeanah, Nelson, & Fox, 2012). Consequently, they are more likely to engage in a number of risk behaviors during adolescence and adulthood including alcohol and other substance use and abuse, delinquency, and criminal involvement (Aarons, Brown, Hough, Garland, & Wood, 2001; Pilowsky & Wu, 2006). Such behaviors place the next generation at risk, as youth with a history of foster care are also likely to have children at younger ages (Dworsky & Courtney, 2010), increasing the odds that their offspring will become involved in the child welfare system. Thus, preventing negative outcomes in youth in foster care may have multigenerational consequences.

1.1 Early Intervention to Promote Positive Development

Decades of research have shown that the roots of negative long-term outcomes lie in childhood experiences and that the risks for negative trajectories accumulate over time (Dodge, Greenberg, Malone, & The Conduct Problems Prevention Research Group, 2008). For example, a child who is maltreated and removed from their biological home may show deficits in attention and behavior that lead to early problems in learning and with peers. Such problems might interfere with academic achievement and lead to rejection by prosocial peers in elementary school. This in turn puts the child at risk for association with deviant peers in middle school, which cascades into risks for involvement in substance abuse, risky sexual behaviors, and delinquency in high school. For children in foster care in particular, the earlier the start of adverse events, the more severe the potential damage if steps to intervene are not taken (Loman et al., 2013).

Selecting the most efficient points of involvement is key to early intervention (Bartik, 2014). Programs that target particular behavioral or skill deficits might help to reduce those difficulties. However, by their nature, targeted programs address only specific issues, which may limit their utility for an entire group or population. Rather than taking a problem-focused approach, promoting skills that may help children to become resilient in the face of adversity may protect vulnerable children from negative long-term outcomes. Strengthening positive skills and behaviors early in development can have what Spoth and colleagues (2009) refer to as a “shielding effect” by preventing risks for becoming exposed to or involved in later negative behaviors. Such programs may also be more accessible to children in foster care and their foster caregivers, who already face stigma for their involvement with the child welfare system and thus might avoid problem-focused programs for fear of further stigmatization (Blythe, Jackson, Halcomb, & Wilkes, 2012; Farmer, Selwyn, & Meakings, 2013).

One promising target for early skill-promoting interventions that can have comprehensive and long-lasting positive effects for children is school readiness. Children who begin school with the behavioral, social, and early academic skills necessary for long-term positive school

adjustment have better behavioral and educational trajectories than their less prepared peers (McClelland, Acock, Piccinin, Rhea, & Stallings, 2013; Ramey & Ramey, 2004). In turn, positive school adjustment protects children against a number of risk behaviors such as criminal involvement, substance use, and early parenthood (Campbell et al., 2014; Reynolds, Temple, Ou, Arteaga, & White, 2011). For children in foster care in particular, higher educational attainment appears to confer greater benefits than for youth in the general population (Okpych & Courtney, 2014), and having a high school diploma may decrease the likelihood of arrests for foster care alumni, especially women (Lee, Courtney, & Tajima, 2014).

The three central components of school readiness (early literacy, prosocial skills, and self-regulation) have all been linked to better long-term adjustment for children. Early literacy skills positively predict later reading and math outcomes across elementary and middle school (Duncan et al., 2007). Children who read proficiently by Grade 3 are more likely to graduate from high school (Hernandez, 2012). Conversely, poor reading ability has been linked to behavioral difficulties at school (Halonen, Aunola, Ahonen, & Nurmi, 2006; McIntosh, Reinke, Kelm, & Sadler, 2013). Prosocial skills are also key to school readiness, and individuals who show greater prosocial skills at school entry are more likely to graduate from high school, complete college, and obtain full and stable employment in young adulthood (Jones, Greenberg, & Crowley, 2015). Further, higher levels of prosocial skills in kindergarten predict lower rates of being on medication for emotional or behavioral issues in high school, and of being arrested or binge drinking in young adulthood (Jones et al., 2015). Finally, self-regulation, or children's abilities to voluntarily regulate emotions and behaviors in different situations to prevent themselves from disrupting academic performance and social relationships, are fundamental to learning both early literacy and prosocial skills (Brock, Rimm-Kaufman, Nathanson, & Grimm, 2009; Graziano, Reavis, Keane, & Calkins, 2007). In the long term, self-regulation predicts a number of positive outcomes. For example, higher self-regulation prior to school entry is associated with a higher likelihood of completing college in young adulthood (Casey et al., 2011; McClelland et al., 2013). Conversely, poor self-regulation in childhood is predictive of a higher likelihood of adverse long-term outcomes such as drug use (Ayduk et al., 2000).

Notably, early school readiness may increase other positive skills that in turn promote better outcomes. One such corollary of early school readiness is self-competence. Confidence in one's own abilities has been linked to lower rates of delinquency and substance use in adolescents (Barry, Grafeman, Adler, & Pickard, 2007; Church et al., 2012; Veselska et al., 2009; Wheeler, 2010). Additionally, higher self-competence can protect at-risk youths from becoming involved with deviant peers, leading to decreases in such associations across time (Stepp, Pardini, Loeber, & Morris, 2011). For children in foster care in particular, self-competence appears to have promotive effects, contributing to positive academic and employment outcomes, peer relations, and relationships with adults (Drapeau, Saint-Jacques, Lépine, Bégin, & Bernard, 2007; Legault, Anawati, & Flynn, 2006).

Based on prior findings that early achievement is positively associated with later self-competence (Chapman & Tunmer, 1997; Guay, Marsh, & Boivin, 2003), interventions to increase school readiness might also be expected to promote self-competence. Children who

understand the expectations of the school environment and can meet those expectations are likely to have higher feelings of competence in general. In fact, for older children, self-competence mediates the association between lower academic achievement in early grades and increased externalizing behavior in later grades (Zimmermann, Schütte, Taskinen, & Köller, 2013). Thus, it might be a link in the association between improving school readiness and decreasing risky behavior for children in foster care.

1.2 Early Risk Factors for Alcohol and Other Substance Use, Antisocial Behavior, and Deviant Peer Association

Early intervention is particularly important in preventing some of the most common negative outcomes for children in foster care because the roots of these problems lie in early development. Although young children might not directly display substance use and antisocial behavior, their early attitudes and beliefs may place them at risk for later involvement in these behaviors (Andrews, Hampson, Barckley, Gerrard, & Gibbons, 2008). Thus, early interventions to promote positive skills that impact these early norms and attitudes could reduce the long-term risks for developing these behaviors during adolescence and adulthood.

For example, alcohol seems to be the most commonly used and abused substance for youth in foster care (Aarons et al., 2001; Keller, Salazar, & Courtney, 2010). More positive subjective norms about alcohol use in childhood (e.g., believing in wider use among peers) predict greater willingness and intention to use alcohol (Andrews, Tildesley, Hops, Duncan, & Severson, 2003; Nargiso, Friend, & Florin, 2013) and higher actual use in middle and high school (Andrews et al., 2008). Children in foster care might be at particularly high risk for developing positive norms about alcohol and other drug use (Haight, Ostler, Black, Sheridan, & Kingery, 2007) because they frequently have been exposed to substance use in their home environments (Young, Boles, & Otero, 2007).

Similarly, early positive attitudes towards and overestimates about how many of their peers are engaging in antisocial behaviors (e.g., stealing) can influence the likelihood that children will later engage in these behaviors (Dishion, Spracklen, Andrews, & Patterson, 1996; Jacobs & Johnston, 2005). Overestimation and endorsement of antisocial behavior may be expressed in deviant peer talk, which predicts escalation of antisocial behavior in both childhood (Snyder et al., 2005) and adolescence (Dishion et al., 1996). Children who have been placed in foster care may be at greater risk for forming such positive attitudes towards antisocial behaviors because they have been exposed to criminal activities and behavior in their biological families (Haight et al., 2007). This is borne out in their higher risk for engaging in antisocial behaviors at early ages (Courtney & Dworky, 2006), leading to higher rates of delinquency in adolescence and engagement with the criminal justice system in adulthood.

Another well-documented early marker for later negative outcomes is association with peers who are engaged in antisocial behavior (see Dishion & Tipsord, 2011 for a review). The contagion of disruptive and antisocial behavior from one peer to another begins in early childhood (Hanish, Martin, Fabes, Leonard, & Herzog, 2005; Snyder et al., 2005) and continues through adolescence (Dishion, Véronneau, & Myers, 2010; Dodge et al., 2008).

Children in foster care are no exception to the general trend; association with deviant peers predicts increased substance use, delinquency, and risky sexual behaviors in children in the child welfare system and those aging out of the foster care system (Leslie et al., 2010; Shook, Vaughn, Litschge, Kolivoski, & Schelbe, 2009; Thompson & Auslander, 2007).

Overall, children in foster care are much more likely than their peers to become involved in a number of negative behaviors in adolescence and adulthood (Courtney & Dworsky, 2006; Keller et al., 2010). Given that the risk factors for such involvement may be present early in development, preventive interventions that begin in childhood seem particularly warranted. Further, interventions focused on building children's positive skills, with the intent of shielding them from risk factors for later negative behaviors, might have the broadest effects. As is noted in section 1.1, school readiness may be a particularly effective target for such efforts.

1.3 Goals of the Study

This study examines both the direct and indirect (through increases in self-competence) effects of an intervention designed to promote school readiness in children in foster care on third grade indicators of risk for becoming involved in alcohol use and delinquency (e.g., positive expectations about alcohol use, endorsement of antisocial activities, and associations with deviant peers). The Kids In Transition to School (KITS) Program (Pears et al., 2013) was designed to be a focused, short-term intervention to increase school readiness prior to kindergarten entry and to promote better subsequent school functioning in children in foster care. The program features a 16-week, group-based school readiness curriculum for children and groups for caregivers. It occurs in the 2 months before kindergarten entry and the first 2 months of kindergarten.

The KITS Program is based on the underlying rationale that efficacious interventions should be *developmentally timed* to occur at the critical transition to school, an optimal period for intervention as children are in the process of reorganizing their competencies and might be particularly open to influence (Pianta & Cox, 1999). Although children in foster care may receive other services such as early childhood special education or Head Start, these services typically follow an academic calendar. This may cause a "summer services gap", during which children may fail to gain or even lose critical skills necessary for school success (Alexander, Entwisle, & Olson, 2001). Another important feature of the KITS Program is its *focus on self-regulatory skills* in addition to foci on early literacy and social skills. As is noted in section 1.1, such skills are increasingly linked to long-term academic and social success (McClelland et al., 2013). Within the KITS curriculum, self-regulation skills are explicitly taught, modeled, and reinforced. Participating children receive explicit instruction to increase skills and caregivers receive training on developing these skills in their children. In addition, the KITS Program includes a *caregiver component* focused on helping caregivers both to learn positive, effective skills for managing their children's behavior and to become more involved in learning activities at home and at school. Decades of research have shown that caregiver involvement in school increases positive school adjustment (Barnard, 2004; Jaynes, 2005).

In an earlier study of the immediate effects of the KITS Program, children in foster care who received the program showed gains in their early literacy and self-regulatory skills just prior to kindergarten entry compared to children who received foster care services as usual (Pears et al., 2013). Moreover, children who received the intervention engaged in less teacher-reported disruptive behavior at the end of kindergarten (Pears, Kim, & Fisher, 2012), suggesting that there may be longer-term intervention effects on later, more serious risk behaviors.

This study focuses on the effects of the KITS Program on third grade attitudes towards alcohol use and antisocial behaviors as well as involvement with deviant peers. The focus on attitudes and deviant peer association, rather than on actual use of alcohol and engagement in delinquent behavior, reflects the young age of the children and the links between these attitudes and later engagement in risk behaviors (Andrews et al., 2008; Dishion et al, 1996; Jacobs & Johnston, 2005). Specifically, we hypothesized that an intervention to increase school readiness and school adjustment would be directly linked to decreases in favorable attitudes towards alcohol use and antisocial behaviors and involvement with deviant peers. Further, given the links between positive school adjustment and self-competence and the latter skill's potential preventive effects on later risk behaviors, we hypothesized that self-competence would partially mediate intervention effects on later positive attitudes towards alcohol and antisocial behavior as well as deviant peer involvement. If increasing promotive factors can decrease risk factors for later engagement in substance use and delinquency, this could highlight a potentially powerful tool in improving outcomes for a vulnerable population.

2. Material and Methods

2.1 Participants

This randomized controlled trial of the KITS Program involved 192 children in foster care and their caregivers. Eligibility requirements included being in nonkinship or kinship foster care at the time of enrollment into the study, a monolingual or bilingual English speaker who was entering kindergarten in the fall, and not involved in another treatment protocol closely associated with the KITS intervention. Once enrolled, children participated in treatment activities (if applicable) and follow-ups regardless of whether they were in foster care at those timepoints. To enroll the children at the beginning of the study, a staff member first contacted an eligible child's caseworker (i.e., the legal guardian while the child is in foster care) to request consent for the child to participate and then contacted the caregiver(s) to invite them to participate. Both the caseworker and caregiver(s) had to consent for the child to participate in the study. Because of the complexity of this multistep process, all families were randomized to the KITS group or to a foster care comparison (FCC) group prior to contacting the caseworker and caregiver(s). Children in the FCC group did not receive the intervention but continued to receive other services for which they were eligible. If the child changed placements during the course of the study, the staff contacted the new caregivers and went through the consent process. Every effort was made to follow children across placements whenever possible, including out-of-state travel to conduct assessments. A number of methods were used to stay in contact with the families throughout the study,

including birthday and seasonal greetings, newsletter updates, contact with the local child welfare system to track placement changes, and frequent in-person assessments.

Of the 339 families who were eligible to participate, 219 (65%) initially verbally agreed to participate (113 KITS; 106 FCC). Twenty-seven of these families (11 KITS; 16 FCC) withdrew from the study before baseline data were collected. Demographics of the 192 participating families (102 KITS; 90 FCC) are presented in Table 1. The proportions of participants in each ethnic category are very similar to those of the children in foster care in the state in which this study was conducted (Child Welfare League of America [CWLA], 2012). There were no statistically significant differences between groups on any of the demographic variables.

2.2 Study Design and Procedures

Children and their caregivers participated in center-based assessments that employed standardized testing, questionnaires, and structured interviews at the beginning of the summer before kindergarten prior to the intervention, at the end of the summer just prior to kindergarten entry (5 years old), at the end of the kindergarten year (6 years old), and at subsequent school years through third grade (9 years old). Most assessments lasted from 1.5 to 2 hr. Caregivers were compensated for their time with a stipend and children received a small gift at the end of each assessment. Teachers completed questionnaires on the child's behaviors at the end of each school year and were given a stipend for their time (about 1 hr per child).

2.3 Intervention Protocol

The KITS intervention occurs during the 2 months of summer prior to kindergarten entry and the first 2 months of kindergarten in the fall. It consists of two primary components: child school readiness groups and caregiver groups. The 24-session school readiness groups for the children (2 hr, twice weekly in the summer, 16 sessions; 2 hr, once weekly in the fall, 8 sessions) focus on promoting early literacy, prosocial, and self-regulatory skills. The caregiver groups meet for 8 sessions total, every other week during the summer and fall (2 hr), and focus on effective parenting techniques as well as promoting caregiver involvement in early literacy and school. Caregiver group meetings coincide with the children's school readiness group meeting times.

2.3.1 School Readiness Group Structure and Curriculum—The KITS school readiness group sessions are held in center- or school-based classrooms and have a highly structured, consistent routine similar to that of a typical kindergarten classroom. The manualized curriculum covers three critical skill areas: (1) self-regulatory skills (e.g., handling frustration and disappointment, paying attention, following multistep directions, and making appropriate transitions); (2) prosocial skills (e.g., reciprocal social interaction, social problem-solving, and emotion recognition); and (3) early literacy skills (e.g., letter names, phonological awareness, conventions of print, and comprehension). The curricular objectives for each skill domain and the activities to promote these skills are clearly specified for each session. For example, the early literacy activities include a letter of the day (letter naming and letter-sound knowledge), a poem of the week (phonological

awareness, concepts about print, and language), and storybook and dramatic activities (understanding of narrative). Self-regulatory and prosocial skills are taught using a blend of instruction (e.g., teachers define *calm bodies*, and provide verbal examples), role-playing (e.g., teachers model being calm and not being calm), and activity-based intervention (e.g., children must maintain a calm body during a very exciting activity such as causing a homemade volcano to erupt); the children receive high rates of encouragement, feedback, and guided practice in using the target skills. Multiple opportunities for using inhibitory control, maintaining attentional focus, and practicing skills are embedded across activities. A lead teacher and two assistant teachers conduct the school readiness groups with 12–15 children.

2.3.2 Caregiver Group Structure and Curriculum—Each KITS caregiver group is led by a facilitator and an assistant. The manualized curriculum includes foci on parenting skills (e.g., evidence-based behavior management techniques that parallel those used in the school readiness groups) and caregiver involvement in preparing for school (e.g., helping children to develop their early literacy skills, developing routines around school activities), and becoming involved at school (e.g., how to volunteer in the classroom). The facilitator presents information, leads structured group discussions, facilitates caregiver-to-caregiver support, and addresses questions and concerns. Skill acquisition is reinforced via role-plays and opportunities to practice new skills. Supplemental materials to support the implementation of new skills include weekly homework assignments to complete together, weekly *Home–School Connection* newsletters outlining the school readiness group topics for a given week, and home practice activities. A caregiver who misses a session receives a home visit (or a phone call, if necessary) from the facilitator to cover the content and materials for that session.

If the child changed placements during the course of the treatment, the new caregiver was invited to participate in the groups. The facilitator provided the information from any sessions that the new caregiver had missed in home- or phone-sessions. If the child returned to the biological parents, the parents were invited to participate. However, to minimize the possible discomfort of being in a group with foster caregivers, some of whom may have cared for their children in the past, the facilitator administered the curriculum to the biological parents via home visits.

Training for implementing the KITS intervention consists of a 20–30 hr standardized program. At weekly intervention team meetings, the progress of individual children and families within the three school readiness domains is discussed, and strategies to address children’s behavioral and literacy needs and caregivers’ engagement within the broader curriculum are planned.

2.3.3 Dosage and Implementation Fidelity—Attendance at school readiness groups and caregiver groups (or caregiver home visits and phone calls) was documented. On average, the children attended 69% of the group sessions, and 57% of the children attended 75% or more of the sessions. The caregivers received 61% of the sessions on average, and 55% received 75% or more of those sessions. Of all of the content that caregivers received, 37% was delivered via a home visit or phone call. Implementation fidelity for the school

readiness groups was determined by trained coders in vivo or via videotape based on systematic coding of the presence or absence of key elements of the curriculum (98% of the curriculum components were covered; range = 75–100%). Additionally, coders rated the teachers on implementation of key behavior management strategies (e.g., “Pre-taught expectations”, “Ignored or re-directed child non-compliance”) on a 3 point scale: 1 (none of the time), 2 (some of the time), and 3 (all of the time). On average, teachers received a rating of 2.86. Implementation fidelity for the caregiver groups was determined through caregiver ratings of whether the weekly topics had been covered (100% of the components were covered).

2.3.4 Foster Care Comparison Group—Children in this group received services commonly offered by the child welfare system. These could include individual child psychotherapy, participation in Head Start or another early childhood education program, and services such as speech therapy. No attempt was made to influence the type or amount of services received by children or their families in either the comparison or the KITS groups.

2.4 Measures

2.4.1 Intervention Status—In these analyses, intervention status was represented by a dichotomous variable: 1 (*KITS intervention group*) or 0 (*FCC group*).

2.4.2 Baseline Control Variables—A number of control variables assessed at baseline were included in the analyses. First, the child’s gender was included as a dichotomous variable: 0 (*male*) or 1 (*female*). Second, whether the child was in kinship foster care was included: 0 (*no*) or 1 (*yes*). Third, the average of the raw scores for the Block Design and Vocabulary Subscales of the Wechsler Preschool and Primary Scales of Intelligence–Third Edition (WPPSI-III; Wechsler, 2002) was used to control for the possibility that deficits in general cognitive abilities might account for later difficulties. Finally, to control for the possibility that the children had shown early behavior problems that continued into positive attitudes towards alcohol use and antisocial behavior as well as involvement with deviant peers, the child’s level of oppositional and aggressive behaviors at baseline was measured using raw scores on the aggression ($\alpha = .91$) and delinquency ($\alpha = .67$) subscales of the Child Behavior Checklist/4-16 (CBCL; Achenbach, 1991) completed by the child’s caregiver. The two subscales were strongly positively correlated ($r = .69, p < .01$), so the scores were standardized and combined to produce one caregiver rating of oppositional and aggressive behaviors score.

2.4.3 Third Grade Control Variables—In order to control for a number of co-occurring factors that could influence either the child’s risk factors for negative behaviors or their self-competence, two variables assessed at the third grade timepoint were included in the analyses. First, some of the children may have been receiving psychological or educational services that might have affected both their self-competence and their attitudes towards risky behaviors. We used the Service Utilization Interview (Fisher, Greenley, & Pears, 1999) to measure the type and frequency of services that the child or other family members received during a given time period. This caregiver interview includes 21 types of services, such as

doctor and dentist visits, psychological assessment and therapy, and special education services. Caregivers indicate whether the child and other family members have received a number of services in the past year. For this study, a variable indicating the total number of the following services that the child had received in the past year was computed: psychological testing; family, individual, or group therapy; special education evaluation, services, or tutoring; and case management (standardized $\alpha = .52$). (Receipt of substance abuse counseling was originally included in the variable but none of the children were receiving this service.) Second, because placement changes may negatively affect behavior (Rubin et al., 2004; Thompson & Auslander, 2011), the number of placement changes that the child had experienced between baseline and the third grade assessment was controlled. These were assessed using a combination of child welfare records and caregiver reports.

2.4.4 Positive Attitudes Towards Alcohol use in Third Grade—Children answered a series of questions on their beliefs about substances and substance use in a structured interview format. Questions were adapted from the Monitoring the Future National Survey Questionnaire (Johnston, O'Malley, Bachman, & Schulenberg, 2009). The positive alcohol belief construct included three items: how many adults they believed used alcohol (“none” to “all”), whether they believed that it would be okay for people to drink alcohol (“no”, “sometimes”, “yes”), and how likely it was that they would use alcohol when they were teens (“definitely not”, “probably not”, “probably”, “definitely”). For each item, children were provided with pictorial representations of the answer choices. In general, the “smallest” answer was depicted as a small block with other blocks increasing in size to the “largest” answer. All of the items were positively correlated with one another ($r_s = .18-.31$). Thus, they were standardized and averaged to form the positive attitudes towards alcohol use construct (standardized $\alpha = .50$) with higher scores indicating more positive attitudes.

2.4.5 Positive Attitudes Towards Antisocial Behavior in Third Grade—Children’s attitudes towards antisocial behavior were assessed by determining the rate at which they endorsed antisocial activities in answer to two questions; “What are some the things you think teenagers do for fun with their friends?” and “What are some the things you think teenagers do when their moms or dads are not there?” Children could provide up to six answers for these open-ended questions, which were then classified into one of several categories of antisocial and prosocial activities. Antisocial activities included smoking, using marijuana or other drugs, sexual activities (but not dating), rule-breaking (such as swearing, “getting in trouble”), and delinquent behaviors (such as hurting others, getting arrested). The alcohol use category was left out of this construct to avoid overlap with the positive attitudes towards alcohol use construct. For the question about what teenagers do when their parents are not there, “partying” was also considered an antisocial response. Examples of prosocial responses were playing games, sports, spending time with family, eating, and in-home recreation (like watching TV or movies). The child’s total number of answers to each question was computed as well as the number of antisocial answers. The total antisocial answers for the two questions were significantly positively correlated ($r = .39, p < .001$) and were thus summed as were the total answers for both questions ($r = .63, p < .001$). The total number of antisocial answers to both questions was then divided by the total number of answers to produce a rate of endorsement of antisocial behaviors.

2.4.6 Involvement With Deviant Peers in Third Grade—The children answered a series of questions about whether “none”, “some”, or “all” of their friends were involved in five rule-breaking or deviant behaviors (“cheat on tests”, “ruin or damage something that doesn’t belong to them”, “talk back to adults”, “hit or threaten to hit someone”, “suggest that you do something that could get you into trouble”). All children were given a card with a pictorial representation of the answer choices. “None” was shown as the smallest block and “all” as the largest with “some” in the middle. Items were averaged to form a scale of involvement with deviant peers (standardized $\alpha = .73$). Teachers completed a series of questions about the child’s social skills, including questions about how well the child was liked and accepted, how often the child associated with peers who misbehave, how often the child exerted a negative influence on peers, and how influenced by peers the child was compared to other peers of his or her age. These four items showed good internal reliability (standardized $\alpha = .65$) and so were averaged to produce a teacher rating of deviant peer association. This was significantly positively correlated ($r = .38, p < .01$) with the child report of negative peer association and thus the two scores were standardized and averaged to produce an involvement with deviant peers construct. Higher scores indicate higher involvement.

2.4.7 Self-Competence in Third Grade—Children answered six questions on their self-competence (e.g., whether they liked the person they were) on the Global Self-Worth Scale (standardized $\alpha = .78$) of the Self-Perception Profile for Children (SPPC; Harter, 1985; 1988). This was used as the global measure of self-competence.

2.5 Data Analysis Plan

Bivariate correlations among study variables were examined first. Data were then analyzed using path analysis in Mplus 7.3 (Muthén & Muthén, 1998–2012). Group status (KITS vs. FCC) was the main predictor of interest and the child’s third grade reports of positive alcohol attitudes towards alcohol use and antisocial behavior, and their involvement with deviant peers were the three outcome variables in the model. The mediating role of children’s third grade self-competence in the association between treatment status and each of the outcomes was addressed by testing the significance of the mediated (indirect) paths in Mplus. These tests accommodate paths involving multiple variables, estimating the significance of the total effect of the entire path. Additionally, the child’s gender, cognitive ability, and level of oppositional and aggressive behavior at baseline, the child’s use of psychological and educational services at third grade, and the number of placement transitions the child experienced between baseline and third grade were included in the model as control variables.

As expected in a longitudinal sample involving high-risk, highly mobile children, there was missing data ranging from 0–41% across measures. The highest amount of missing data was for the positive attitudes towards alcohol. For this variable, 113 children provided data. This was primarily because the children who did not provide data were not available for data collection at the third grade timepoint. Analyses showed that there was no differential attrition by group status and that these children did not significantly differ from those in the rest of the sample on the predictor and control variables. The exception was that the children

in the group who provided data on this variable showed lower scores on the caregiver ratings of the child's level of oppositional and aggressive behaviors at baseline ($t = 2.27, p < .05$). In order to retain all of the children in the analyses and thus perform intent-to-treat analyses, we used full information maximum likelihood (FIML) estimation to accommodate missing data.

3. Results

3.1 Descriptive Analyses

As can be seen in Table 2, children who received the KITS intervention had lower scores on their positive attitudes towards alcohol use and higher levels of self-competence in third grade compared to the FCC children. The KITS children also had lower mean positive attitudes towards antisocial behavior and involvement with deviant peers although the differences were not statistically significant. There were no significant group differences on the control variables collected at baseline and third grade. Bivariate analyses (shown in Table 3) indicated that, as expected, being in the KITS Program was negatively associated with positive attitudes towards alcohol and positively associated with self-competence. Notably, the risk outcomes were not significantly associated with each other. However, as expected, self-competence was negatively associated with all of the risk outcomes. It was also positively associated with being in kinship care at baseline and negatively associated with the services that the children were receiving in third grade. Boys were more likely than girls to have positive attitudes towards antisocial behavior at third grade and had higher scores on oppositional and aggressive behavior but were less likely to be in kinship care at baseline. General cognitive abilities were not significantly associated with any of the other variables. The number of placement changes that the child experienced between the baseline and third-grade assessments was significantly associated only with the number of services that the child was receiving at third grade.

3.2 Path Analyses

In order to test the hypothesis that having been in the KITS intervention prior to kindergarten might decrease third-grade factors related to later risk behaviors, a path analysis was conducted using Mplus 7.3 (Muthén & Muthén, 1998–2012). Child gender, general cognitive abilities, the child's oppositional and aggressive behavior, and whether they were in kinship care at baseline, as well as the child's use of psychological and educational services at third grade, and the number of placement transitions the child experienced between baseline and third grade were included as control variables. Additionally, we tested the hypothesis that there would be an indirect link between the KITS intervention and risk behaviors through self-competence.

The model pictured in Figure 1 fit the data well, $\chi^2 = 30.88, p = .75$, CFI = 1.00, TLI = 1.16, RMSEA = .00 (CI = .00–.04). The final model pictured is trimmed for ease of presentation. This model was not statistically different from a model with all possible paths included ($\chi^2 = 4.04, df = 3, p > .05$).

As hypothesized, being in the KITS intervention decreased the children's mean positive attitudes towards both alcohol and antisocial behavior in third grade. There was no significant direct path from the intervention to involvement with deviant peers. However, as hypothesized, the intervention had a significant and positive effect on self-competence, which was then negatively associated with involvement with deviant peers.

As suggested by Preacher and Hayes (2008), we conducted significance tests on the mediating effects of three potential paths: (1) from intervention status to self-competence to positive attitudes toward alcohol, (2) from intervention status to self-competence to positive attitudes toward antisocial behavior, and (3) from intervention status to self-competence to involvement with deviant peers, using bias-corrected bootstrapping confidence intervals (Efron & Tibshirani, 1993). Only one of the three paths was significant. Based on 95% confidence intervals, the KITS intervention had a significant indirect effect on involvement with deviant peers through self-competence (unstandardized beta = $-.11$, confidence interval = $-.26$ to $-.02$).

4. Discussion

Children and youth in foster care face increased odds of engaging in a number of risky behaviors including alcohol and other substance use and delinquency. Youth who become involved in such behaviors may, as adults, repeat a cycle of dependence on social and child welfare systems that will then negatively affect their offspring. However, it may be possible to mitigate these risks by promoting the early development of positive skills with broad potential impacts.

In this study, school readiness skills were targeted due to the vulnerability of children in foster care for long-term poor academic outcomes and the by-products of such outcomes, including alcohol and other drug abuse and delinquency. School readiness skills have also been shown to have broad educational, occupational, psychosocial, and health impacts (Campbell et al., 2014; McClelland et al., 2013; Ramey & Ramey, 2004; Reynolds et al., 2011). The KITS intervention is specifically aimed at improving children's early literacy, prosocial, and self-regulation skills, as well as caregiver involvement and parenting skills. Being in the KITS intervention prior to kindergarten entry was associated with having less positive attitudes towards alcohol use and antisocial behavior in third grade, 4 years after children participated in the intervention. As children's early norms about alcohol, other substance use, and antisocial behaviors have been tied to their engagement in risky behaviors in middle and high school (Andrews et al., 2008; Dishion et al., 1996), the main effect of the intervention on attitudes towards alcohol and antisocial behaviors suggests that it may shield children from early involvement in health-risking behaviors.

This study also made a significant contribution to the evidence that self-competence can be a promotive factor for children in foster care. Higher self-competence, which was predicted by involvement in the intervention, was associated with lower involvement with deviant peers. While other studies have suggested that self-competence may play a role in resilience for children in foster care (Drapeau et al., 2007; Legault et al., 2006), they have often been based on the retrospective self-reports of youths aging out of care. This study used

prospective longitudinal data to confirm prior speculation that increasing self-competence in younger children in foster care might reduce risk factors for later involvement in negative behaviors. Further, the study demonstrated that increasing school readiness at an early age is a way to increase later self-competence.

The identification of school readiness and self-competence as promotive factors for children in foster care suggests important targets for ongoing preventive efforts for these children. Importantly, these are also two foci that could be appealing as targets for universal interventions. For example, school readiness is a relatively easily agreed upon benefit for all children, not simply targeted populations. Agencies may be more likely to implement and families more likely to participate in interventions that have potential universal benefits, and thus may be less stigmatizing than those targeted at specific populations (Challen, Machin, & Gillham, 2014).

Findings suggest that early preventive efforts focused on a specific skill set can have a range of long-term implications for children in foster care. As is noted above, previous studies have demonstrated the shorter-term effects of the KITS intervention specific to school-related skills (Pears et al., 2013; Pears et al., 2012). This study shows that the intervention also has long-term effects on broader psychosocial outcomes. In terms of cost-effectiveness, an intervention that can impact multiple domains may be much more affordable in the long-term than multiple programs for specific behaviors. This is not to suggest that this or other programs should be considered to be single, “magic bullets” in preventing negative outcomes for these children. Given that many of them may have faced high levels of early adversity, they are likely to require a number of services. Findings from this study suggest that the KITS intervention can be a promising option for practitioners and policymakers to consider.

Although this is one of the few prospective longitudinal studies to focus on a preventive intervention for children in foster care, there are some limitations. First, our sample was moderate in size compared to other randomized trials of prekindergarten interventions. However, this reflects the challenges inherent in recruiting participants in this highly vulnerable population. Second, there were missing data for a number of the children on the positive attitudes towards alcohol use variable. This reflects the high mobility of the sample and the fact that it was not always possible to gather data for all of the children at each timepoint. For example, although we attempted to recruit any new caregivers, if a child was changing placements during a given data collection timepoint, it might not have been possible to gather information about the new placement in time to collect data. The fact that the children for whom these data were not available had higher scores on the caregiver measure of oppositional and aggressive behavior at baseline does suggest that these findings may not generalize to the most behaviorally-challenged children. However, there was reasonable variation in the variables indicating positive attitudes towards alcohol use, antisocial behavior, and involvement with deviant peers. This suggests that the missing data did not preclude children who had higher scores on the outcome variables. Additionally, through the use of FIML, all of the children were included in the analyses. Finally, although our sample was somewhat diverse (i.e., about one third Latino), the sample did not include many African-American children, a group that makes up a substantial proportion of the

foster care population nationwide (Magruder & Shaw, 2008). Thus, these findings could be replicated with a more diverse sample.

4.1 Future Directions

In addition to collecting a more ethnically diverse sample, future work should also focus on exploring even longer-term outcomes of intervention participation. The children who participated in the original RCT have been followed through the end of elementary school. It would also be important to examine outcomes in middle and high school. Additionally, although this study examined the possibility that self-competence mediated the association between the KITS intervention and outcomes, future studies could explore other potential mechanisms through which the intervention might reduce risk factors for long-term negative outcomes.

5. Conclusions

Overall, given the high risk for engagement in alcohol use and other negative behaviors for youth in foster care, interventions that prevent the early risk factors for such behaviors should be a major focus of research on child welfare policies and practice. This study demonstrates that an early intervention to promote school readiness in children in foster care has long-reaching effects into third grade on both promotive factors for positive development and risk factors for problematic behaviors. The study also confirms that self-competence is an important promotive factor for children in foster care. Thus, by strengthening children's skills early in their school careers, we may prevent some pernicious long-term behavioral problems as well as increase opportunities for better outcomes.

Acknowledgments

The contents of this article were developed under grants R01DA021424 and P50DA035763 from the National Institute on Drug Abuse, U.S. PHS. The content of this article is solely the responsibility of the authors and does not necessarily represent the official views of the funding organization.

Katherine Pears and Philip Fisher are developers of the Kids In Transition to School Program. The authors thank Deena Scheidt for project management, Diana Strand for editorial assistance, and the staff and families of the Kids In Transition to School project for their ongoing dedication and participation.

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Highlights

- We examine the effects of an intervention to improve school readiness skills in children in foster care who were 5-years-old at the start of the study on their third grade (age 9 years) risk behaviors including positive attitudes towards alcohol use, positive attitudes towards antisocial behaviors, and involvement with deviant peers.
- We examine self-competence in third grade as a potential promotive factor and mediator in the association between the intervention and third grade risk behaviors.
- The school readiness intervention had a direct effect of reducing positive attitudes towards alcohol and antisocial behavior in third grade.
- The school readiness intervention led to increased self-competence in third grade, which then reduced involvement with deviant peers.
- Both school readiness and self-competence may be important promotive factors in preventing children in foster care from becoming involved in risk behaviors.

Figure 1.

Path Model of Associations Between the KITS Intervention and Third Grade Self-Competence and Risk Behaviors

Notes. Betas are unstandardized.

Paths not pictured:

Child oppositional and aggressive behavior → positive attitudes towards alcohol, $B = .03$, $p = .06$

Transitions during study ↔ positive attitudes towards alcohol, $B = .14$, $p = .19$; transitions during study ↔ involvement with deviant peers, $B = .17$, $p = .16$

Psychological and educational services ↔ positive attitudes towards antisocial behavior, $B = .06$, $p = .12$

** $p < .01$; * $p < .05$.

Table 1

Demographic Characteristics

Demographic variable	KITS group	FCC group
<i>M</i> age at study start (years)	5.26	5.25
<i>SD</i> (years)	0.33	0.35
Male (%)	52	46
Nonkinship foster care (%)	62	61
Ethnicity (%)		
European American	55	51
Latino	30	31
African American	1	0
Native American	2	0
Pacific Islander	2	0
Mixed race	10	18
<i>M</i> age at 3 rd grade follow-up (years)	9.39	9.43
<i>SD</i> (years)	0.36	0.38

Note. KITS = Kids In Transition to School; FCC = Foster Care Comparison.

Table 2

Means for Outcome and Control Variables by Treatment Group

Variable	KITS group		FCC group		<i>t</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
<i>Outcome variables</i>					
Positive attitudes towards alcohol	-.13	.58	.17	.82	2.21*
Positive attitudes towards antisocial behaviors	.22	.26	.31	.31	1.66
Involvement with deviant peers	-.07	.88	.12	.89	1.24
Self-competence	20.55	3.45	18.64	4.18	-2.67**
<i>Control variables</i>					
General cognitive abilities at baseline	18.57	4.17	18.50	3.99	-0.12
Oppositional and aggressive behavior at baseline	8.28	4.52	8.52	5.69	0.33
Total psychological and educational services at 3 rd grade	1.41	1.22	1.24	1.36	-0.72
Placement changes between baseline and 3 rd grade	1.54	1.88	1.10	1.37	-1.84

Note. KITS = Kids In Transition to School; FCC = Foster Care Comparison.

* $p < .05$;

** $p < .01$.

Table 3

Correlations Among Predictor, Outcome, and Control Variables

	1	2	3	4	5	6	7	8	9	10
1. Intervention status (1 = KITS)	—									
2. Positive attitudes towards alcohol	-.22*	—								
3. Positive attitudes towards antisocial behavior	-.16	.17	—							
4. Involvement with deviant peers	-.11	.16	.04	—						
5. Self-competence	.25**	-.16	-.22*	-.24**	—					
6. Gender (1 = female)	-.06	-.06	-.22*	.04	.04	—				
7. General cognitive abilities	.01	-.02	.05	-.08	.16	.07	—			
8. Oppositional and aggressive behavior at baseline	-.02	.14	.07	.03	.13	-.16*	.03	—		
9. In kinship care at baseline (1 = yes)	-.01	-.10	-.01	.02	.20*	.18*	.07	-.13	—	
10. Total psychological and educational services at 3 rd grade	.07	-.03	.21*	.08	-.19*	-.18	-.04	.08	.02	—
11. Placement changes between baseline and 3 rd grade	.13	.10	-.002	.15	.01	-.11	-.03	.05	-.07	.28**

**
 $p < .01$;*
 $p < .05$.