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A family-centered prevention ameliorates the associations of low self-control during childhood with employment income and poverty status in young African American adults

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Objective: Children with low self-control who grow up in poverty are at elevated risk for living in poverty when they are adults. The purpose of this study was to further understanding of the intergenerational continuity of poverty by (a) examining the likelihood that children with low levels of self-control at age 11 earn less employment income and are more likely to live in poverty 14 years later, at age 25; and (b) determining, via a preventive intervention, whether enhancing supportive parenting during childhood will ameliorate these associations. **Methods:** Parents and their 11-year-old children from 381 families participated in the Strong African American Families (SAAF) program or a control condition. Teachers assessed children's self-control at 11 years; parents reported their use of supportive parenting when children were 11 and 13 years; emerging adults provided data on cognitive and emotional self-control at 19, 20, and 21 years; and young adults indicated their employment income at 25 years. **Results:** Significant two-way interactions were detected between children's self-control and prevention condition for employment income ($b = -183.18$, 95% CI [−363.82, −2.53], $p < .05$) and poverty status ($b = 0.257$, 95% CI [0.018, 0.497], $p < .05$). Low self-control at age 11 forecast less employment income and a greater likelihood of living in poverty among children in the control condition, but not among low self-control SAAF participants. Mediated moderation analyses confirmed that enhanced supportive parenting accounted for SAAF's effects on employment income (indirect effect = 63.057, 95% BCA [19.385, 124.748]) and poverty status (indirect effect = −0.071, 95% BCA [−0.165, −0.016]). **Conclusions:** This study is unique in using a randomized controlled trial to show that preventive interventions designed to enhance parenting and strengthen families can buffer the long-term economic consequences of low self-control. **Keywords:** African American; Parent–child relations; preventive intervention; self-control.

Introduction

Poverty is a powerful variable that forecasts cognitive development, psychosocial development, and health throughout life (Shonkoff, Boyce, & McEwen, 2009). In the United States, 20% of all children live in poverty and another 20% live near the poverty line. These figures are higher for African American youth, whose poverty rates hover around 50%. The highest poverty rates in the nation exist among African American children and youth living in the rural southeastern United States, where 60% or more live in poverty (DeNavas-Walt & Proctor, 2014). Many of these young people face the prospect of continuing to live at or near poverty after leaving high school and entering adulthood. Recent evidence shows that children who spend half or more of their lives in poverty have a greater than 40% chance of living in poverty at age 35; this lack of social mobility has become even more entrenched in recent years (Carr & Wiemers, 2016; Putnam, 2015).

The majority of rural African American youth do not obtain a college degree, and beginning a productive vocational career poses a major transitional challenge. The transition routes to stable jobs are unstructured and left largely to individual initiative (Brody, Yu, Chen, Kogan, & Smith, 2012). After leaving high school, youth typically have no job; those who obtain employment find part-time work or enter low-paying service or retail occupations that offer little training and no opportunity to advance in a stable career path (Silva, 2012). For many rural African American youth, this is not a passing phase; they often remain trapped in a marginal employment status that is best characterized as working poor, perpetuating intergenerational poverty (Williams, 2012).

Despite these trends, recent research suggests that African American youth who develop self-control will have an easier transition into the workforce. Self-control is an organization of attributes involved in the self-regulation of cognition, emotion, and behavior (de Ridder, Lensvelt-Mulders, Finkenauer, Stok, & Baumeister, 2012). It involves planning, persistence, and a future goal orientation. Poor self-control involves impatience, orientation to the present, and the use of negative emotions such as anger and hostility to cope with problems (Ayduk et al., 2000). In prospective studies that follow children into adulthood, self-control presages favorable life

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outcomes. Youth who exhibit greater self-control go on to find jobs and remain stably employed, save more money, and make sound financial decisions; they also form more supportive relationships and are less likely to use drugs or to develop psychiatric disorders (Moffitt et al., 2011).

Research with children and adolescents indicates that supportive parenting processes figure prominently in the development of cognitive and emotional self-control (Brody, Kogan, & Grange, 2012; Morris, Criss, Silk, & Houltberg, 2017). The ways in which this occurs can be explained theoretically in terms of socialization and observational learning mechanisms. When parents engage in supportive interactions with their children, they demonstrate cognitive control and problem-solving skills that the children learn through observation and modeling (Morris et al., 2017). This learning takes place either directly, through supportive transactions between parent and child, or indirectly, as the child observes a parent interacting with other people. To the extent that children have multiple opportunities over time to see planned solutions demonstrated, they will be more likely to approach problems with the belief they can be solved through deliberate, planful, and direct action rather than coping with problems through avoidance or negative emotions such as anger (Brody, 2016). These results suggest that children pick up cues from their parents' regulatory behaviors, which are incorporated into neuroregulatory systems that are at least partially determined by context (Shonkoff et al., 2009; Telzer et al., 2014).

This study was designed to examine hypotheses involving prospective associations of self-control and supportive parenting during childhood with employment income and poverty during young adulthood. The hypotheses were tested with a sample of African American youth who took part in a randomized prevention trial during childhood, at age 11. The preventive intervention, the Strong African American Families (SAAF) program [trial registration number NCT03139214], was designed to enhance supportive parenting and strengthen family relationships. SAAF's parenting enhancements have demonstrated stress-buffering capacities for a range of psychosocial and health outcomes (Brody, 2016). The present study, then, is the first of which we are aware on the impact of a preventive parenting intervention during late childhood on African Americans' employment income and poverty status during young adulthood. Consistent with previous research that has documented larger intervention effects for those at greater risk (Brody, Yu, & Beach, 2016), we hypothesized that SAAF would yield the greatest benefits for employment earnings and poverty status among children with low levels of self-control at baseline. This hypothesis is consistent with differential susceptibility models (Belsky, Bakermans-Kranenburg, & van IJzendoorn, 2007; Belsky & Pluess, 2009), in which youth with the lowest levels of self-control are the most susceptible to their surrounding environments, whether those environments are highly positive or highly risky. Thus, we expected poor self-control during childhood to be associated with low employment earnings and a high likelihood of poverty among young adults in the control group, but not among young adults assigned randomly to the SAAF condition.

Method

Participants

The SAAF sample included 667 African American families who were recruited randomly from rural communities in Georgia when the target youth were 11 years of age (*M* age at pretest = 11.2 years, *SD* = 0.34 years; Brody et al., 2004). Schools in these communities provided lists of 11-year-old students, from which families were selected randomly. Research staff contacted these families by telephone. During these conversations, staff provided information about the pretest assessment and answered parents' questions. Of the randomly selected families, 667 completed the pretest. These participants were then assigned randomly to the SAAF or control condition using a random number generator. At pretest, the sample could be characterized as working poor. Although primary caregivers worked an average of 39.4 hr a week, 46.3% of the families lived below federal poverty standards. Table S1 in the Supporting Information provides demographic data on the sample. When the youth had reached ages 19–20, a subgroup of 500 was randomly selected for a substudy of stress hormones and blood pressure. Funding constraints associated with the collection of stress hormone data necessitated the selection of a random subsample.

At age 25, 408 of the 500 (80% of the subsample) agreed to participate in the follow-up assessment reported here. The analytic sample in this study consisted of 381 individuals who had both teachers' reports of self-control at pretest and participants' assessments at ages 19, 20, 21, and 25 years. At age 11, 222 of these participants had been assigned randomly to the SAAF condition and 159 had been assigned randomly to the control condition. The original random assignment oversampled participants into the SAAF condition; this accounts for the greater number of 25-year-olds in the SAAF group. A two-factor multivariate analysis of variance was conducted to evaluate the equivalence of baseline demographics and study variables for participants with or without missing data by intervention group. No significant interaction effects emerged for any baseline variables. Families assigned to the intervention condition ($M = 2.43$, $SD = 1.45$) experienced more socioeconomic disadvantage than did those assigned to the control condition ($M = 2.15$, $SD = 1.52$, $t[665] = 2.40$, $p < .05$). In addition, compared with the original study cohort, the analytic sample had a higher percentage of female participants (59.3% vs. 52.8%). At baseline, their teachers reported that the members of the analytic sample displayed relatively higher levels of self-control than did the original cohort ($M = 29.72$ vs. $M = 28.89$, all ps $< .05$). These analyses suggest that chance differences in the random assignment process were operating whereby SAAF group participants experienced greater SES disadvantage than did control participants. Although the analytic sample included more female youth and youth with greater self-control, the SAAF and control groups were equivalent in gender composition and self-control levels. Because self-control was higher among the girls than the boys in the original SAAF sample (Brody et al, 2004), higher levels of self-control in the analytic sample were likely due to greater participation by young women. Therefore, family socioeconomic disadvantage and youth gender were controlled in all

the analyses. Figure 1 presents a CONSORT diagram of the flow of participants through the study.

Intervention implementation

The SAAF prevention program consisted of seven consecutive meetings held at community facilities (details provided in Brody, 2016). Each meeting took place in a group setting with 3–12 families. The meetings included separate, concurrent training sessions for parents and youth, followed by a joint parent–youth session during which the families practiced the skills they learned in the separate sessions. Concurrent and family sessions each lasted 1 hr; thus, parents and youth received 14 hr of prevention programming. Program content for the sessions was delivered by narrators on videotapes that also depicted family interactions illustrating targeted behaviors. Group leaders presented the prevention curriculum, organized role-playing activities, guided discussions among group members, and answered participants' questions. All group leaders were African Americans. Caregivers in the prevention condition were taught supportive parenting processes; these processes included the consistent provision of warmth and responsive parenting, high levels of communication, and emotional support. During youth sessions, the participants learned the importance of having and abiding by household rules and the importance of forming goals for the future and making plans to attain them. These sessions were designed to reinforce information presented in the parent sessions, namely the importance of compliance with household rules, being planful and setting goals, and creating a vision of the future.

On average, parents and youth participated in 4.8 sessions. Approximately 67% of the families took part in five or more sessions, with 39% attending all seven of them. Coverage of the components that made up the prevention curriculum (i.e., fidelity) was checked on 20% of the caregiver, youth, and family sessions and exceeded .80 for each type of session. During the weeks when the prevention families participated in the prevention sessions, the control families received leaflets via postal mail that described adolescent development and provided tips for stress management and exercise promotion. To preserve the random nature of the group assignments, the analyses reported here included all families who completed the pretest regardless of the number of prevention sessions that they actually attended (an intent-to-treat analysis). These families were retained in the analysis to preclude the introduction of self-selection bias into the findings. Similar results emerged when assignment to condition and dose (number of sessions attended) were used in the data analyses.

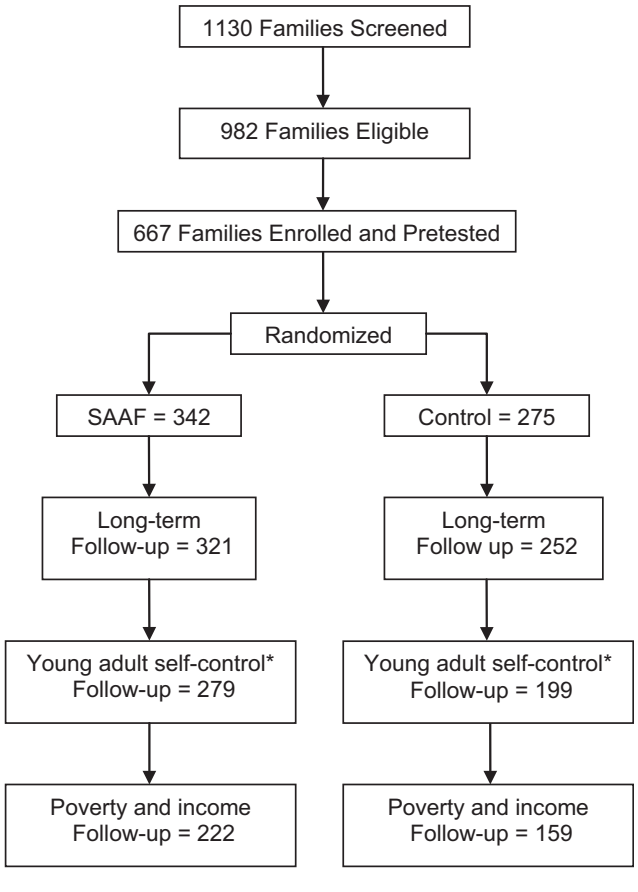

Figure 1 Participant flow through the SAAF trial. Youths' mean age was 11 at pretest, 13 at long-term follow-up, 19–21 at young adult self-control assessment, and 25 at the poverty and income assessment. *Sample size reduced at age 19 due to budgetary constraints

Procedures

All data were collected in participants' homes using a standardized protocol. African American field researchers visited families' homes to administer computer-based interviews, allowing responses to sensitive questions to be answered privately by respondents. Each family was paid $100 after the assessment at pretest and follow-up. At ages 19, 20, 21, and 25 years, each participant was paid $160 after the assessments.

Ethical considerations

At ages 11 and 13, parents gave written informed consent to their own and their minor youth's participation, and minor youth gave written assent to their own participation. At age 19 and thereafter, young adults gave written informed consent to their own participation. The University of Georgia's Institutional Review Board reviewed and approved all study procedures.

Measures

Intervention status and gender. Intervention status and gender were dummy coded. SAAF participants were coded 1, and control participants were coded 0; male participants were coded 1, and female participants were coded 0.

Family socioeconomic disadvantage. Six dichotomous variables formed an index of socioeconomic disadvantage at age 11 that was used as a control in the data analyses. A score of 1 was assigned to each of the following: family poverty based on federal guidelines, primary caregiver unemployment, receipt of Temporary Assistance for Needy Families, primary caregiver single parenthood, primary caregiver education level less than high school graduation, and caregiver-reported inadequacy of family income. The scores were summed to form the index.

Child self-control. When participants were 11 years of age, one of each participant's teachers assessed the child's self-control using Humphrey's (1982) 12-item self-control inventory. Example items include, 'sticks to what he/she is doing even during long, unpleasant tasks until finished', 'works toward a goal', and 'pays attention to what he/she is doing'. Cronbach's alpha was .94. Self-control was operationalized as the sum of the teachers' ratings.

Supportive parenting. Two measures that parents rated were used at ages 11 and 13 to assess supportive parenting: warmth and high levels of communication. Each of these measures has been used in longitudinal, epidemiological research with African American parents (Brody, Kogan, et al., 2012); they were associated with assessments across time of psychosocial variables (i.e., drug use, conduct problems) and biomarkers of physical health (Brody, 2016). In addition, the measures were used to gauge the efficacy of the SAAF program (Brody et al., 2004). The first measure indexed parental warmth (Brody et al., 2001). This scale has three items, with a response set ranging from 1 = *never* to 5 = *always*; Cronbach's alphas were .79 at pretest and .76 at follow-up. The items are 'how often did you let your child know you really care about him/her', 'act loving and affectionate toward him/her', and 'let your child know that you appreciate his/her ideas or the things that he/she does'. The second scale assessed reciprocal parent–child communication during discussions that focused on choice of friends, school and school work, and alcohol use (Brody, Flor, Hollett-Wright, & McCoy, 1998). This scale has six items that were used to assess the extent of the child's active involvement in parent–child discussions and the extent of arguing that occurred. High scores indicated more positive, more reciprocal, and less conflicted parent–child communication. Example items include 'When you and your child talk about his/her choice of friends, how does the conversation go?' (response options: 1 = *I usually do most of the talking and usually just tell him/her what to do or believe* to 3 = *we usually talk about it openly and we each share our sides of the issue*) and 'When you and your child talk about his/her choice of friends, how often do you end up arguing?' (response options: 0 = *always/nearly every time* to 4 = *never*). Similar questions were asked with respect to school/school work and alcohol. Cronbach's alphas were .64 at pretest and .73 at follow-up. The two measures were highly correlated at baseline ($p < .01$) and at follow-up ($p < .01$). Each indicator was standardized and summed.

Harsh parenting. Harsh parenting was also assessed to determine whether prevention-induced decreases in harsh parenting served as a mediator in mediated moderation analyses. The four-item harsh parenting measure assessed parents' use of slapping, hitting, and shouting to discipline the youth (Brody et al., 2001). The four items are 'When your child does something wrong, how often do you blow up at your child; spank your child; tell your child to get out or lock your child out of the house' and 'When you discipline your child, how often do you hit your child with a belt, a paddle, or something else?' (response options: 1 = *never* to 4 = *always*). Cronbach's alpha was .55 at pretest and .58 at follow-up. Low internal consistency is common in the literature for measures of harsh parenting because these disciplinary practices have low base rates (Brody et al., 2001). The study sample's harsh parenting scores ranged from 4 to 13 and represented the following percentages (first percentage, pretest and second percentage, follow-up: 4 = 4.2% and 6.8%; 5 = 19.8% and 29.6%; 6 = 14.2% and 14.0%; 7 = 32.4% and 32.6%; 8 = 15.8% and 10.4%; 9 or more = 13.6% and 6.6%).

Emerging adult self-control. At ages 19, 20, and 21, aspects of cognitive control and emotion regulation were assessed. Together, these indicators of self-control comprised a latent construct that we called *emerging adult self-control*. To assess cognitive control, youth completed the 12-item Future/Goal orientation subscale from the MacArthur Reactive Responding scale (Taylor & Seeman, 1999). Example items include 'it is important to me to take time to plan out where I am going in life', 'before I make a decision today, I think about its consequences for the future', and 'I have many long-term goals that I will work to achieve'. All items were summed to yield a future/goal orientation score and were averaged across three waves. Cronbach's alphas were .71 to .77. To assess emotion regulation, youth completed the 8-item Anger/Hostility scale (Joe, Broome, Rowan-Szal, & Simpson, 2002). Example items include 'you feel a lot of anger inside you', 'you like others to feel afraid of you', and 'you get mad at other people easily'. All items were summed to yield an emotion regulation score and were averaged across three waves. Cronbach's alphas were .90.

Young adult employment income and poverty status. At age 25, participants reported their average monthly gross personal incomes. According to federal poverty guidelines ('Annual Updates', 2015), incomes less than $980.83 per month were defined as 100% poverty (45.9%), and monthly incomes less than $1,471.25 were defined as 150% poverty (70.9%). The youth's poverty status was coded as a three-level ordinal variable: 0 = above 150% poverty (29.1%), 1 = below 150% and above 100% poverty (24.9%), and 2 = below 100% poverty (45.9%).

Plan of analysis

Linear regression (with employment income as the outcome) and probit regression (with poverty status as the outcome) models were executed to test the study hypotheses. The models estimated the main effects of intervention assignment and self-control, and the hypothesized two-way interaction of intervention assignment × self-control in forecasting employment income and poverty status at age 25. In each model, youth gender and family socioeconomic disadvantage at baseline were entered first as covariates.

We then executed a mediated moderation model to determine whether the effects of the SAAF × self-control interaction on the study outcomes were attributable to intervention-induced changes in either supportive or harsh parenting. This hypothesis was tested using a structural equation model with latent difference scores on parenting assessed at ages 11 and 13 (Valente & MacKinnon, 2017), conducted with Mplus (Muthén, 2011). The change in parenting between ages 11 and 13 was modeled with the following settings: (a) the parenting variable at age 13 was the single indicator of the latent difference scores (the loading was set to 1 without measurement error); (b) the parenting variable at age 13 was regressed on the parenting variable at age 11, and the path coefficient was set to be 1; and (c) the latent difference scores were regressed on a parenting variable at age 11 and the path coefficient was estimated. The latent difference score reflected the degree to which parenting changed from the time prior to SAAF implementation to the follow-up at age 13. The conditional indirect (or mediation) effect was also tested by calculating bias-corrected 95% CIs using bootstrapping with 1,000 resamples.

Results

SAAF participation, children's self-control, and age 25 employment income and poverty status

Table 1 presents descriptive statistics for the sample, along with bivariate correlations. Our first analysis was designed to determine whether children with low self-control in the control condition would earn less income and be more likely to live in poverty than similar low self-control children assigned randomly to the SAAF condition. As shown in Table 2, a significant SAAF participation × self-control two-

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Table 1 Correlations and descriptive statistics among study variables

Variable	*n* (%)	Mean (*SD*)	Correlations										
			1	2	3	4	5	6	7	8	9	10	11
1. Gender, male	155 (40.7%)		—										
2. Intervention, SAAF	222 (58.3%)		−.058	—									
3. Family SES disadvantage (age 11)		2.360 (1.471)	−.006	.069	—								
4. Child self-control (age 11)		29.718 (10.119)	−.261***	.002	−.192***	—							
5. Supportive parenting (age 11)		0 (1.602)	−.015	−.056	−.161**	.157**	—						
6. Harsh parenting (age 11)		6.855 (1.595)	.094	.004	.024	−.142**	−.215***	—					
7. Supportive parenting (age 13)		0 (1.576)	−.107*	.108*	−.021	.131*	.469***	−.070	—				
8. Harsh parenting (age 13)		6.334 (1.433)	.040	−.040	.031	−.163**	−.272***	.501***	−.246***	—			
9. Cognitive control (ages 19–21)		44.566 (5.548)	−.101*	−.036	−.188***	.247***	.141**	−.009	.213***	−.046	—		
10. Low emotion regulation (ages 19–21)		14.422 (5.910)	.063	.007	.107*	−.258***	−.044	.029	−.120*	.088	−.444***	—	
11. Employment income (age 25)		1,083.57 (908.28)	.126*	.053	−.151**	.072	.007	.082	.141**	−.025	.160**	−.216***	—
12. Poverty status (age 25)	175 (45.9%)		−.109*	−.042	.158**	−.039	−.055	−.040	−.139**	.065	−.171**	.199***	−.763***

*$p < .05$; **$p < .01$; ***$p < .001$.

Table 2 Self-control and intervention status as predictors of employment income and poverty status at age 25

	Employment Income		Poverty Status	
Predictors	*b*	[95% CI]	*b*	[95% CI]
1. Gender, male	289.93**	[100.70, 479.16]	−0.357**	[−0.613, −0.102]
2. Family SES disadvantage (age 11)	−80.98*	[−143.35, −18.61]	0.119**	[0.040, 0.199]
3. Self-control (age 11)	181.64*	[41.88, 321.40]	−0.215*	[−0.404, −0.026]
4. Intervention, SAAF	130.75	[−51.11, 312.60]	−0.137	[−0.274, 0.101]
5. Self-control × SAAF	−183.18*	[−363.82, −2.53]	0.257*	[0.018, 0.497]

$N = 381$; *b* = unstandardized regression coefficient.
CI, confidence interval; SAAF, Strong African American Families preventive intervention program; SES, socioeconomic status.
*$p < .05$; **$p < .01$.

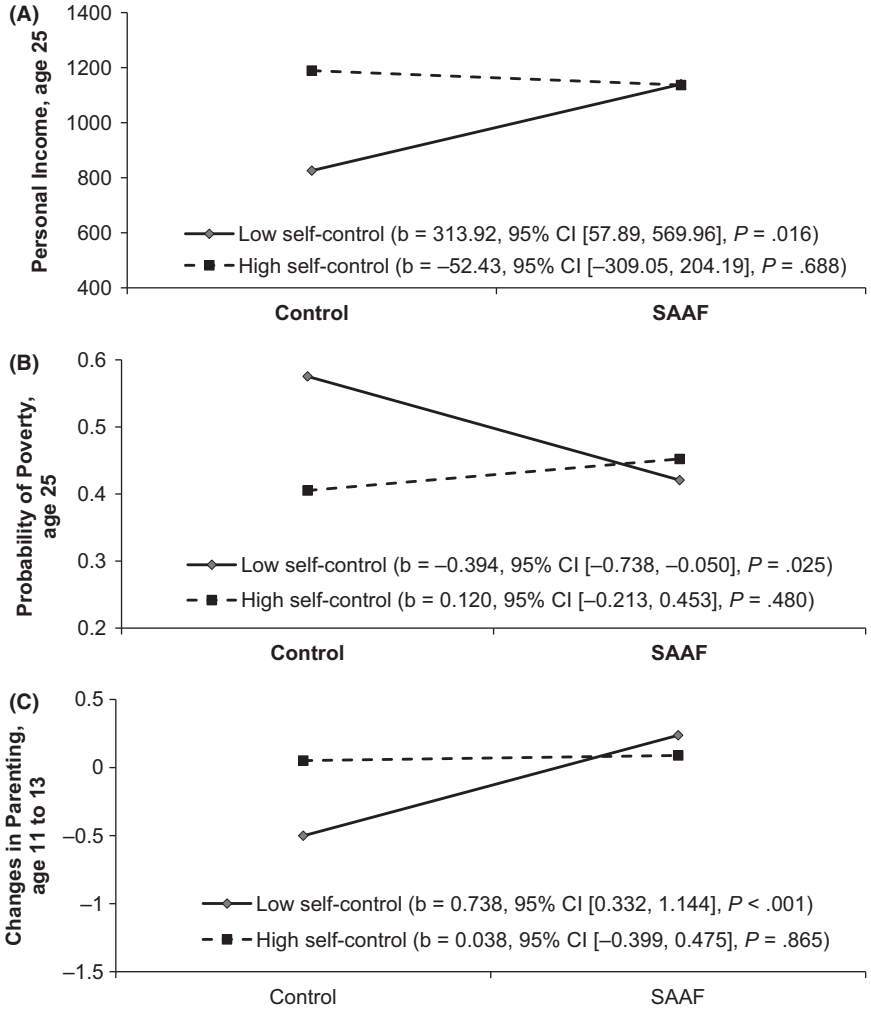

Figure 2 The effect of intervention assignment on youths' personal income (A) and probability of living in poverty (B) at age 25, and changes in supportive parenting from age 11 to age 13 (C) by levels of child self-control (low: 1 *SD* below the mean; high: 1 *SD* above the mean). Numbers in parentheses refer to simple slopes for intervention assignment

way interaction predicted employment income ($b = -183.18$, 95% CI [−363.824, −2.530], $\beta = -.150$, $p = .047$) and poverty status at age 25 ($b = 0.257$, 95% CI [0.018, 0.497], $\beta = .185$, $p = .035$), after controlling for children's gender and family socioeconomic disadvantage at baseline. According to Fidler, Zack, and Barr, (2010), the common types of effect sizes for multivariate analyses of regression and SEM are unstandardized coefficients (B) and standardized coefficients (β). The standardized coefficients ($\beta = -.150$ and .257, respectively, for employment income and poverty status) represented a small to moderate effect 14 years after participation in SAAF. To interpret these interactions, we calculated the effects of intervention assignment (simple slopes) on employment

Table 3 Changes in supportive parenting from age 11 to age 13 mediated the effects of self-control by intervention status on employment income and poverty status at age 25

	Changes in parenting		Employment income		Poverty status	
Predictors	*b*	[95% CI]	*b*	[95% CI]	*b*	[95% CI]
1. Gender, male	−0.256	[−0.553, 0.053]	313.751**	[122.683, 497.320]	−0.382**	[−0.611, −0.151]
2. Family SES disadvantage (age 11)	0.077	[−0.038, 0.170]	−94.361**	[−168.983, −32.818]	0.125**	[0.044, 0.224]
3. Self-control (age 11)	0.276*	[0.053, 0.529]	162.687**	[39.003, 276.552]	−0.101	[−0.351, 0.161]
4. Intervention, SAAF	0.388**	[0.093, 0.635]	90.883	[−80.763, 278.120]	−0.187	[−0.400, 0.035]
5. Self-control × SAAF	−0.350*	[−0.632, −0.085]	−144.697	[−288.795, 6.750]	0.226	[−0.038, 0.494]
6. Changes in parenting (ages 11–13)	-	-	85.443**	[31.728, 147.817]	−0.096*	[−0.171, −0.017]

$N = 381$; *b* = unstandardized regression coefficient
CI, confidence interval; SAAF, Strong African American Families preventive intervention program; SES, socioeconomic status
*$p < .05$; **$p < .01$.

income and probability of living in poverty at low (1 *SD* below the mean) and high (1 *SD* above the mean) levels of self-control (see Figure 2A,B). The simple slopes (unstandardized and standardized coefficients) served as the estimation of effect size for prevention assignment. The results showed that young adults with low levels of self-control as children and who had participated in SAAF earned more monthly income (coefficient of intervention effect = 313.92, 95% CI [57.89, 569.96], β = .171, $p = .016$) and were less likely to be living in poverty (probit coefficient of intervention effect = −0.394, 95% CI [−0.738, −0.050], β = −.250, $p = .025$) than similar young adults in the control condition. These simple slopes (β = .171 and −.250) represented a small to moderate effect size for employment income and poverty status. For young adults who had high levels of self-control as children, no differences emerged between the control and SAAF groups for either employment income (coefficient of intervention effect = −52.43, 95% CI [−309.05, 204.19], β = −.029, $p = .668$) or probability of living in poverty (probit coefficient of intervention effect = 0.120, 95% CI [−0.213, 0.453], β = .120, $p = .480$).

SAAF-induced changes in parenting accounted for the program's effects on employment income and poverty status among children with low self-control

Next, we addressed the mediated moderation hypothesis that SAAF-induced changes in parenting would account for the results. After controlling for youth gender and family socioeconomic disadvantage at baseline, the results of a structural equation model with latent difference scores on harsh parenting did not reveal a significant SAAF participation × self-control interaction predicting changes in harsh parenting from pretest to follow-up (*b* = 0.053, 95% CI [−0.197, 0.318], β = .026, $p = .694$). Thus, harsh parenting was not considered further in the data analyses.

The results of a structural equation model with latent difference scores on supportive parenting revealed a significant SAAF participation × self-control interaction predicting changes in supportive parenting from pretest to follow-up with youth gender and family socioeconomic disadvantage at baseline controlled (Table 3, left column, *b* = −0.350, 95% CI [−0.632, −0.085], β = −.159, $p = .015$). This finding represented a small effect size. To explicate this interaction, we illustrated the effects of intervention assignment (simple slopes) on changes in supportive parenting at low (1 *SD* below the mean) and high (1 *SD* above the mean) levels of self-control (see Figure 2C). For participants with low levels of self-control, participation in SAAF was associated with statistically significant improvements in supportive parenting (coefficient of intervention effect = 0.738, 95% CI [0.332, 1.144], β = .276, $p < .001$). This finding represented a moderate effect size. Participation in SAAF was not associated with changes in parenting for children with high levels of self-control (coefficient of intervention effect = 0.038, 95% CI [−0.399, 0.475], β = .042, $p = .865$).

The results also revealed the mediated moderation finding that, at age 25, participants' employment income was positively associated with improvements in supportive parenting (*b* = 85.443, 95% CI [31.728, 137.480], β = .154, $p = .004$), whereas their poverty status was negatively associated with improvements in supportive parenting (*b* = −0.096, 95% CI [−0.171, −0.017], β = −.151, $p = .015$). The effect size is small (β = .154 and −.151, for employment income and poverty status, respectively). The conditional indirect effects were calculated for children with low versus high levels of self-control. A significant indirect effect linking SAAF participation to age 25 employment income (indirect effect = 63.057, 95% BCA [19.385, 124.748] with 1,000 bootstrapping) and poverty status (indirect effect = −0.071, 95% BCA [−0.165, −0.016] with 1,000 bootstrapping) via improvements in supportive parenting only emerged when children had low

self-control. No significant indirect effects emerged when children had high self-control (employment income: indirect effect = 3.247, 95% BCA [−29.596, 39.516] with 1,000 bootstrapping; poverty status: indirect effect = −0.004, 95% BCA [−0.052, 0.030] with 1,000 bootstrapping). The overall model fit for the employment income model was good, with χ^2 (1) = 2.053, p = .151, comparative fit index (CFI) = 0.992, and root mean square error of approximation (RMSEA) = 0.053 (95% CI = 0 to 0.158). The model fit for the poverty status model was also good, with a weighted root mean square residual (WRMR) = 0.440. Finally, for all of the analyses reported here, we executed intent-to-treat analyses to determine whether the results differed if the dose (number of sessions attended) was used in the analyses in place of assignment to condition. Identical results emerged for assignment to condition and dose.

Exploratory analyses

The analyses presented here were designed to extend the study findings by exploring the notion that SAAF-induced changes in supportive parenting were linked with the study outcomes at age 25 via their association with emerging adult self-control at ages 19, 20, and 21 years. To do this, we examined an additional mediation model in which changes in supportive parenting predicted a latent construct of emerging adult self-control at ages 19, 20, and 21, which we expected would predict employment income and poverty status at age 25. The latent variable of self-control at ages 19 to 21 was measured in terms of cognitive control and emotion regulation. The results of the structural equation models revealed (a) a significant positive association between changes in supportive parenting and emerging adult self-control (b = 0.324, 95% CI [0.044, 0.663], β = .138, p = .037), suggesting that improvement in parenting during childhood was associated with high self-control at ages 19, 20, and 21; (b) a significant positive association between emerging adult self-control and employment income (b = 61.550, 95% CI [12.501, 104.326], β = .261, p = .006); and (c) a significant negative association between emerging adult self-control and poverty status (b = −0.073, 95% CI [−0.128, −0.022], β = −.274, p = .008). These findings suggest that high self-control at ages 19, 20, and 21 was associated with increased employment income and a lower probability of living in poverty at age 25. Multiplying these coefficients yielded an indirect effect of 19.942 with a bootstrapped 95% confidence interval (CI) of 1.225, 41.849 for employment income and an indirect effect of −0.024 with a bootstrapped 95% confidence interval (CI) of −0.058, −0.003 for poverty status. The overall model fit for the employment income model was acceptable, with χ^2 (6) = 19.245, p = .004, CFI = 0.946, and RMSEA = 0.076 (95% CI = 0.040, 0.115). The model fit for the poverty status model was WRMR = 0.856.

Discussion

The transition from high school to gainful employment is challenging for non-college-bound, rural African American youth. Those who enter this transition poorly equipped with self-regulatory skills find it demoralizing and full of hardships, including the prospect of continuing poverty. Against this backdrop, we conducted a secondary analysis of data from a family-centered intervention to determine whether that intervention was associated with employment income and poverty status during young adulthood. The results supported the hypothesis that participation in SAAF can ameliorate the association of low self-control in childhood with employment earnings and poverty status at age 25. Among children in the control group, lower levels of self-control at age 11 prospectively predicted less employment income and greater poverty. In contrast, among children who participated in SAAF, no relationship emerged between low self-control assessed at baseline and age 25 employment income or poverty status. These findings are reminiscent of those reported in the life course literature that link low childhood self-control to diminished adult economic well-being (Moffitt et al., 2011). The present study offers support for the life course findings while avoiding some of the interpretational problems associated with prospective, observational designs; these include omitted variable biases and reverse directionality errors that, in this study, were minimized by children's random assignment to SAAF or the control condition.

Mediation analyses also were consistent with the explanation that SAAF increased earnings and reduced poverty by enhancing supportive parenting. The intervention did not affect harsh parenting; therefore, harsh parenting was not included in the mediation moderation analysis. These findings raise a question: What are the mechanisms that connect, or mediate, SAAF-induced increases in supportive parenting and the study outcomes? The exploratory analyses suggest that increases in supportive parenting contributed to the development of cognitive control (planful, future goal orientation) and emotion regulation (low anger and hostility). The ability to manage these aspects of self-control may be a foundational skill that contributes to a successful transition to work. For example, future orientation and the forethought that accompany it could help young adults manage time, anticipate troublesome situations, and prepare strategies for dealing with them when they arise. Emotional self-regulation could enhance emotional control in day-to-day work situations, thus enabling individuals to avoid ruminating about negative emotions after adverse workplace events and to collaborate with others, garner support, and achieve solutions without conflict.

The results support Belsky and colleagues' differential susceptibility hypothesis, in which they proposed that low levels of self-control will render children and youth more susceptible to the surrounding environment, whether is characterized by high positivity or high risk. The finding that, after exposure to SAAF protective processes, children with low self-control earned more income and were less likely to live in poverty during young adulthood compared with similar children in the control group supports differential susceptibility predictions. If supported on a broader basis, these results imply that general estimates of prevention-induced resilience effects both under- and overestimate protective effects. Resilience effects are underestimated for those with relatively lower self-control and overestimated for those with higher self-control. Clearly, more research is needed to test this conjecture.

The results also raise the question: Why is parenting improved more for youth with lower levels of self-control in the context of a prevention trial? The pretest correlations presented in Table 1 show that teacher assessments of self-control and parent reports of supportive parenting were positively associated at age 11. This suggests that parents whose children were highly self-controlled were already using supportive parenting practices more often than were parents with less self-controlled children. Thus, following exposure to prevention training, parents with children low in self-control 'have more room' to increase their supportive parenting than do parents with highly self-controlled children. In turn, children low in self-control may be particularly receptive to these changes in parenting, creating a reciprocal influence system that is mutually reinforcing for parents and children over time. It will be important in future prevention trials to evaluate more thoroughly the role of reciprocal influence processes to understand why parents of children low in self-control evince relatively greater changes in their parenting practices following exposure to prevention experiences.

A major strength of this study was the longitudinal testing of the hypotheses using data from a randomized prevention trial in which participants were followed for 14 years. The primary study hypothesis used data obtained from independent sources. Teachers, who often have a sense of normative child behavior that parents sometimes lack, provided the assessments of children's self-control; parents provided data on their own supportive parenting; and young adults provided employment income data from which their poverty statuses were computed. Several limitations of this study must also be noted. First, the SAAF trial began when the participants were 11 years of age and was not designed with young adult employment income and poverty status as endpoints. As a result, post hoc rather than a priori hypotheses were tested in this report. These hypotheses were informed by the authors' long-standing interest in the development of African American children's and adolescents' self-control (Brody, Murry, Kim, & Brown, 2002; Brody, Stoneman, Flor, McCrary, Hastings, & Conyers, 1994; Brody, Chen, Miller, Kogan, & Beach, 2013) and by the seminal work that Moffitt et al. (2011) conducted that demonstrated the long-term risk that low self-control during childhood poses for employment income and adjustment during adulthood. Although the post hoc subgroup analyses reported here are valuable, they carry a risk of enhancing chance findings. This limitation can be addressed through a follow-up randomized trial with older participants low in self-control and an age-appropriate prevention program that is designed and executed with an a priori focus on assessing employment income and poverty status at baseline and at follow-up assessments. A study such as this would rule out reverse causality and omitted variable biases. Second, the findings' generalizability must be determined with other groups living in rural and nonrural areas. Third, the study sample included somewhat more female than male youth. Because no empirical reasons could be found for this gender difference, the gender composition of the research staff (all female African Americans) could have contributed to it. In future research, research staff and study participants should be matched on race and gender. Fourth, although independent assessments of the study constructs were obtained from multiple informants, future research would benefit from observational assessments of parenting and task-based assessments of self-control during young adulthood. Despite these limitations, this study provides initial evidence suggesting that a family-oriented intervention may lead to an increase in employment income and a decrease in poverty among young adults with a history of low self-control.

Conclusions

Given the intergenerational continuity in poverty and economic hardship among many rural African Americans, it is important to verify that prevention programs like SAAF have demonstrable prevention effects, especially for those at highest risk that last into adulthood and improve employment income. This study provided such a demonstration while also spotlighting the contribution of supportive parenting in combating intergenerational poverty.

Supporting information

Additional supporting information may be found online in the Supporting Information section at the end of the article:

Table S1. Sample characteristics at study entry: The Strong African American Families program in rural Georgia (N = 381).

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Key points

- Hypotheses were tested to determine whether children's low self-control forecasts employment income and poverty status during young adulthood.
- Data were obtained at six times from age 11 to age 25 from 381 African American children who lived in a rural region of the southeastern United States.
- At age 11, children took part in a randomized family-centered prevention trial designed to enhance supportive parenting.
- Prevention program effects completely ameliorated the risks that children's self-control conferred on employment income and living in poverty 14 years later during young adulthood.

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