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CONCISE REPORT

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Improving the education and wellbeing of student parents

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Abstract

Student parents, who make up approximately four million US undergraduates, are highly motivated to succeed in school but often face barriers to educational success due to logistical and financial constraints as well as mental health stressors. This randomized control trial examined the effectiveness of an education program centered in an adult workforce agency that was specifically designed to meet the needs of student parents and their families. Family-centered supportive services included coordinated parent–child schedules and childcare in addition to peer cohorts led by coaches, tuition-free courses, and additional financial assistance. Two hundred seventy-seven parents responded to online survey questions about their education and career, wellbeing, and parenting at baseline and approximately 1 year later (treatment $n = 191$, control $n = 86$). The racially and ethnically diverse pool of parents consisted mostly of low-income mothers aged 29 years on average who had a high school diploma or completed a General Educational Development (GED) program. After 1 year, parents in the education program were more likely to obtain at least a certificate or associate degree compared to control parents. These findings suggest that a family-focused approach is key to improving the educational success of student parents.

KEYWORDS
career pathways training, education, low-income families, student parents, two-generation programs

INTRODUCTION

Student parents comprise over one-fifth of all undergraduates in the United States but often face significant barriers to educational success, such as fewer financial resources, lack of childcare, and mental health concerns.[1–4] At the same time, parents are often highly motivated to succeed in school for the benefit of their children.[5,6] For families, education is key to promoting life opportunities, economic stability, psychological wellbeing, and positive experiences in the home, which can have lasting intergenerational benefits.[7,8] Using a randomized control trial, the current study evaluated the 1-year impacts of a family-centered program designed to improve low-income parents' education and career, wellbeing, and parenting.

The role of education in family systems

Family systems theory is an ecological approach to studying the multiple environments of family members and how these contexts, in turn, influence the bidirectional nature and transactional patterns of

parent–child relationships.[9] Education is often seen as the primary source of upward mobility in the United States.[10] Traditionally, higher levels of education lead to better-paying jobs, in addition to more income and resources for families. For instance, in 2021, the median earnings of young American adults with a bachelor's degree were 55% higher than the earnings of their counterparts with a high school diploma.[11]

The positive association between educational attainment and income may also lead to improved psychological and parenting outcomes for student parents. Economic hardship can take a toll on parents' mental health (e.g., high levels of psychological distress), which can negatively affect their parenting practices and relationships with their children.[12–14] More education, and subsequently more income and less material hardship, may alleviate some of the stress that lower-income parents face and result in improved psychological wellbeing.[15,16] Advances in education and psychological wellbeing may also produce stronger family functioning.[8] Parents with higher education typically spend more time with their children, devote more time to developmentally appropriate activities, and provide more educationally stimulating resources.[17,18] Further, additional education after the birth of a child can result in a higher quality home environment, particularly for children of younger mothers with low levels of education.[19]

This evidence suggests that education plays a significant role in the lives of student parents and their families. Yet, students with children face an elevated risk of dropping out of postsecondary education.[20] In fact, student parents are nearly twice as likely to leave college or education training without a credential, such as a certificate or degree, compared to students without children.[21]

Supporting the education of student parents through family-centered approaches

There are different approaches to supporting the education of student parents who must also consider the education and wellbeing of their children. Family-centered approaches, also known as two-generation programs, explicitly target low-income parents and children from the same family at the same time.[1] Programs for families can originate in either child-centered platforms, such as Head Start or adult-centered platforms like a community workforce agency. Operating in Tulsa, Oklahoma, Career*Advance* is a family-centered education program designed to meet the needs of student parents and their families through two types of model implementation: child platform and adult platform.

The original child platform model was developed by the Community Action Project of Tulsa (CAP Tulsa) for parents of young children enrolled in their Head Start program. Low-income families were offered a safe, trusting community as part of CAP Tulsa's longstanding, high-quality early childhood program.[1,22,23] The child platform model provided education and career training in healthcare to parents while addressing common barriers: parents' education schedules were aligned with center hours and additional childcare was provided if needed. These family-centered supportive services were in addition to peer cohorts led by experienced coaches, free tuition for community college courses, and financial incentives. Our previous quasi-experimental studies of the child platform model examined the short-term impacts of Career*Advance* on parents and children.[24,25] Parents in the program demonstrated higher rates of certification, employment in healthcare, self-efficacy, optimism, and career identity compared to a matched comparison group after 1 year.[24] Parents' participation in the program also led to improvements for their children with increased child attendance and less chronic absence in Head Start.[25]

Following the success of the first model, the second Career*Advance* model was designed to serve low-income families from the broader Tulsa area through Tulsa Community WorkAdvance, an adult education and workforce agency. In the adult platform model, parents with children in preschool or elementary school were recruited by Tulsa Community WorkAdvance, who strove to adopt family-focused services (e.g., nursing room, play spaces). With this model, there was an increased emphasis on quickly obtaining certification through community college courses for jobs that would lead to sustainable careers. Most of the supportive elements remained but were modified to be more cost-effective (i.e., free tuition but services provided on an as-needed basis with a lower amount of cash assistance). This second model more closely resembled a traditional education and career training program for adults but in an environment amenable to families and children. It is not yet known whether the adult platform model of Career*Advance* can replicate the benefits of the child platform model.

The current study

Through quasi-experimental studies, family-centered approaches to improving the outcomes of student parents and their families have proven beneficial when implemented from a child education platform.[24,25] In this study, we test whether the family-centered, two-generation Career*Advance* program works when delivered from an adult education platform. The current study employs a randomized control trial to evaluate the impacts of the adult platform model of Career*Advance* on parents' education and career, wellbeing, and parenting after 1 year. Few studies of two-generation education programs have employed rigorous experimental designs to study family outcomes.

MATERIALS AND METHODS

Data

Data for the current study come from the longitudinal, experimental evaluation of the second Career*Advance* model. Through Tulsa Community WorkAdvance, 373 adults with children aged 15 years or younger voluntarily selected into the program and consented to participate in the study. Enrollment into the program and study was ongoing from January 2017 to September 2019. Participants were

randomly assigned (2:1 randomization ratio) to receive access to the Career*Advance* program (treatment $n = 251$) or to not receive access (control $n = 122$). The randomization ratio, which allocated twice the number of participants to the treatment group, allowed more families to benefit from the program. Of the 373 recruited participants, 277 parents participated at both baseline (Wave 1) and 9–15 months after baseline (Wave 2). Within this analytic sample of 277 parents, 191 were assigned to the treatment group and 86 were assigned to the control group.

Procedures

At program application and after consenting to the study, all study participants completed the Wave 1 survey online (via Qualtrics), which lasted around 30 min, in the administrative office of Tulsa Community WorkAdvance with trained staff. Parents were then contacted approximately 1 year after baseline (between 9 and 15 months) by trained agency staff or the research team. During coaching visits at Tulsa Community WorkAdvance, program participants had the option to complete the Wave 2 survey. If the participant did not want to complete the Wave 2 survey at the agency, a member of the research team sent them the survey link via email or text. The research team also managed online survey administration for control group members at Wave 2.

The follow-up time between the Wave 1 and Wave 2 surveys varied by treatment status (treatment $M = 398.72$ days, $SD = 115.17$; control $M = 366.30$ days, $SD = 112.12$; $t(275) = -2.19$, $p = 0.029$, Hedges' $g = -0.28$). Due to this difference in time elapsed, the number of days between Wave 1 and Wave 2 survey completion was included as a covariate in the regression analyses (see Analytic Strategy). Parents were offered a $40 gift card for completing each survey. The study protocol and procedures were approved by Northwestern University (IRB # STU00201886).

Participants

Table 1 provides descriptive information for the full analytic sample of 277 parents. The sample consisted almost entirely of mothers (98%) around 29 years old ($SD = 6.68$). Slightly less than half were single or not in a steady relationship (43%). The sample was ethnically and racially diverse: 32% White, 33% Black, 12% Hispanic/Latinx, and 23% identified as another race (e.g., American Indian or Alaska Native, Asian or Pacific Islander, multiracial). Most parents spoke English as their primary language (89%). Three-quarters of participants had a high school degree or completed a General Educational Development (GED) program. The remaining parents had a certificate, associate degree, or bachelor's degree (23%) or less than a high school diploma (2%). Three-fifths of the sample made less than $20,000 in household income and one-third made between $20,000 and $39,999. The average household size was around four people ($SD = 1.49$) and parents had approximately two children on average ($SD = 1.13$).

We tested these demographic variables for baseline equivalence between participants in the treatment and control groups in the full analytic sample ($N = 277$). All demographics were equivalent at baseline except for parental age ($t(271) = -2.14$, $p = 0.033$, Hedges' $g = -0.28$). In the treatment group, parents were 29.20 years old ($SD = 0.49$) on average, whereas parents in the control group were 27.34 years old ($SD = 0.69$) on average. Based on this information, we included parental age as a covariate in the regression models in addition to several other key variables (see Analytic Strategy).

Measures

Parents responded to survey questions across the following three domains: education and career, wellbeing, and parenting. All measures were standardized so coefficient estimates can be interpreted as effect sizes and represent the mean difference in outcomes between parents randomly assigned to Career*Advance* and those randomized to the control group in standard deviation units.

Education and career

Parents were first asked for their highest level of education, which was then coded as a binary variable (1 = *certificate, associate degree, or higher* or 0 = *less than a certificate or associate degree*). Parents were also asked whether they were currently working for pay (1 = *yes*). Parents then responded to 10 questions regarding their career identity, or the importance of work and career, using the Work Role Salience Questionnaire.[26] Questions such as, "I enjoy thinking about and making plans about my future career" were rated on a 5-point scale from 1 = *strongly disagree* to 5 = *strongly agree*. Responses were averaged with higher scores reflecting higher levels of career identity ($\alpha = 0.58$).

Wellbeing

Wellbeing consisted of five measures: material hardship, perceived stress, optimism, depressive symptoms, and self-efficacy. Participants were asked whether their families had experienced six different events that indicate material hardship (e.g., "In the past 6 months, has there been a time when you and your family didn't pay the full amount of the rent or mortgage?"), which were adapted from the New Hope Project.[27] Respondents answered either yes (1) or no (0) for each event. Responses were averaged with higher scores reflecting more material hardship ($\alpha = 0.92$).

Next, perceived stress was measured using the 10-item Perceived Stress Scale.[28] Parents were asked to rate how often they have felt or thought a certain way about events in their lives in the last month (e.g., "How often have you felt that you were unable to control the important things in your life?"), using a 5-point scale from 0 = *never* to 4 = *very often*. Responses were averaged with higher scores reflecting more perceived stress ($\alpha = 0.95$).

TABLE 1 Parent sample descriptions at baseline in the full and pre-COVID restricted samples.

Variable	Full sample $N = 277$	Pre-COVID Restricted sample $N = 202$
Female %	97.83	98.02
Age, in years *M (SD)*	28.62 (6.68)	28.60 (6.68)
Single (not in a relationship) %	42.96	41.58
Ethnicity/race %		
White	31.87	30.15
Black	32.97	34.67
Hispanic/Latinx	12.09	13.57
Another race	23.07	21.61
English primary language %	88.81	88.61
Education %		
Less than high school diploma	1.81	2.48
High school diploma or GED	75.09	73.27
Certificate, associate, or higher	23.10	24.26
Annual household income %		
Less than $20,000	60.58	64.74
Between $20,000 and $39,999	33.61	33.53
$40,000 or more	5.81	1.73
Household size *M (SD)*	3.88 (1.49)	3.89 (1.52)
Number of children *M (SD)*	2.13 (1.13)	2.16 (1.16)

Note: The analytic sample included parents with data at baseline and 1 year after baseline.

Parents were asked 10 separate questions regarding their optimism using the Revised Life Orientation Test,[29] which included statements such as, "In uncertain times, I usually expect the best." Questions were answered on a 4-point scale from 0 = *strongly disagree* to 4 = *strongly agree*. Responses were averaged with higher scores reflecting higher levels of optimism ($\alpha = 0.96$).

Depressive symptoms were measured using 11 items from the Beck Depressive Inventory II.[30] Parents were asked to choose which statement best describes the way they have been feeling during the past 2 weeks, including the current day. For example, parents picked one of the following four statements regarding sadness: 0 = *I do not feel sad*, 1 = *I feel sad some of the time*, 2 = *I am sad all of the time*, and 3 = *I am so sad or unhappy that I can't stand it*. Each statement was rated on a scale from 0 (*not present*) to 3 (*severe*). Items were averaged so that higher scores indicate higher levels of depressive symptoms ($\alpha = 0.91$).

Finally, self-efficacy was measured using six statements from the State Hope Scale.[31] Parents answered questions such as, "At this time I am meeting the goals I set for myself" using a 4-point scale from 1 = *strongly disagree* to 4 = *strongly agree*. Items were averaged with higher scores reflecting higher levels of self-efficacy ($\alpha = 0.85$).

Parenting

Parents were asked about their parenting stress as well as the home environment. Parenting stress was assessed using four items from the Aggravation in Parenting Questionnaire.[32] Example items such as, "I often feel tired, worn out, or exhausted from raising a family" were rated on a 4-point scale from 0 = *strongly disagree* to 3 = *strongly agree*. Items were averaged with higher scores representing higher levels of parenting stress ($\alpha = 0.88$).

The home environment consisted of questions from the cognitive stimulation subscale of the Home Observation for Measurement of the Environment–Short Form (HOME-SF[33]). Questions within the HOME-SF were divided by age: children under age 3 (10 questions, $\alpha = 0.13$), children ages 3–5 (11 questions, $\alpha = 0.04$), children ages 6–9 (17 questions, $\alpha = 0.11$), and children ages 10 and over (13 questions, $\alpha = 0.16$). The original HOME has been shown to have internal consistency reliabilities from 0.67 to 0.89.[34] However, the reliability of the subscales of the HOME appears to be lower.[35] For instance, the reliability scores for the cognitive subscales were 0.32 (children under the age of 5) and 0.54 (children aged 6–9) in the Three-City Study.[36] In the spirit of transparency to our original analytic plan, we included this home environment variable in the findings. However, due to the questions around the reliability of the subscales and its low internal consistency, we caution the interpretation of any results.

Responses to the HOME varied depending on the question and included dichotomous response, multiple response, and free response options. All items were translated into dichotomous zero–one variables where a score of one indicates the presence of a developmentally supportive aspect in the child's home environment and a score of zero indicates its absence. Scores in the individual items were then summed for a total cognitive subscale score.

For all measures pertaining to parenting behavior and children, parents could report on each child separately for a maximum of two children. Of the 277 parents, 56% listed two children in Wave 2 and could, therefore, report on levels of parenting stress and experiences in the home for each child. For these families, we averaged parents' responses for each child together to create a mean score for parenting stress and a mean score for the home environment.

Analysis strategy

Full sample analyses

The purpose of this study is to examine the 1-year effects of Career*Advance* on participant parents' education and career, wellbeing, and parenting. We used the intent-to-treat (ITT) approach to compare participants' outcomes depending on whether they were offered treatment (i.e., access to the Career*Advance* program). The ITT approach provides information about the effect of offering the program regardless of actual participation, which more closely mimics real-world scenarios.[37] All participants randomly assigned to the control group complied and did not participate in Career*Advance* during the study period.

We conducted a series of ordinary least squares regressions to examine the effect of program randomization assignment (1 = *treatment*, 0 = *control*) on parents' outcomes. The following covariates were included in the regression models to increase estimate precision: participant's gender, race, age, year of entry into the program, baseline education level, baseline outcome, and number of days between completing the Wave 1 and Wave 2 surveys. The Holm–Bonferonni procedure was used to account for multiple comparisons and all findings presented are significant after the correction.[38]

Pre-COVID restricted sample analyses

In addition to measuring the full sample treatment effects of participation in Career*Advance* on parent outcomes, we examined the effects of the program prior to the onset of the COVID-19 pandemic. All participants were enrolled in Career*Advance* and completed the Wave 1 survey by 2019 before the onset of COVID-19 in the United States. In March 2020, the World Health Organization officially declared COVID-19 a pandemic. Data collection for Wave 2 continued during this time with the survey administered online. Concerned with the effects of the pandemic on the wellbeing of participants and their families, as well as to understand the effectiveness of the program in more traditional circumstances, we conducted additional analyses on a restricted sample. This sample only included the participants who completed their Wave 2 survey before March 1, 2020 ($n = 202$; see Table 1 for descriptives). Within this pre-COVID restricted sample, the treatment and control groups were equivalent at baseline but the time to follow-up differed (treatment $M = 393.19$ days, $SD = 102.56$; control $M = 357.98$ days, $SD = 99.72$; $t(200) = -2.28$, $p = 0.024$, Hedges' $g = -0.34$). The analytic strategy for this restricted sample was identical to the full sample analyses described previously.

Attrition and missing data

Typical of longitudinal studies, this study experienced attrition over time. Parents must have completed the baseline survey to be included in the analytic sample as sociodemographic information was collected in that wave. Of the 373 recruited and consented families (treatment $N = 251$, control $N = 122$), 277 parents completed both waves of the survey (treatment $n = 191$, 24% attrition; control $n = 86$, 30% attrition). Therefore, the overall attrition rate for parents was 26% with a differential attrition rate of 6%. At the onset of the COVID-19 pandemic, 202 parents had completed both survey waves (treatment $n = 139$, 45% attrition; control $n = 63$, 48% attrition). This resulted in a 46% overall attrition rate and a 3% differential attrition rate for the pre-COVID restricted sample.

The amount of variable missingness on the parent surveys over both waves ranged from 0% (education level at Wave 1) to 38% (home environment at Waves 1 and 2). Multiple imputation with chained equations (MICE) in Stata 15.1 (StataCorp) was used to create 40 datasets. Using the multiple imputation, then deletion (MID) method,[39] all variables used in the analyses were included in the imputation model but cases with imputed outcome values were deleted before analysis. Therefore, sample sizes differ depending on the outcome.

RESULTS

Table 2 presents the 1-year effects of the adult platform model of Career*Advance* on the full and pre-COVID restricted parent samples.

Education and career

Parents in the treatment group were significantly more likely to obtain at least a certificate or associate degree compared to the control group after 1 year (*effect size [ES]* = 0.47, $SE = 0.12$, $p < 0.001$). There were no effects on employment or career identity. The effect on certification was larger in magnitude in the pre-COVID restricted sample ($ES = 0.53$, $SE = 0.14$, $p < 0.001$).

TABLE 2 One-year effects of the Career*Advance* adult platform model on parents' education and career, wellbeing, and parenting.

	Full sample				Pre-COVID restricted sample[a]			
Domain and outcome	***N***	***ES***	***SE***		***N***	***ES***	***SE***	
Education and career								
Certificate/AA+ (y/n)	264	0.47	0.12	***	193	0.53	0.14	***
Employed (y/n)	262	−0.08	0.09		190	0.03	0.16	
Career identity	232	0.04	0.14		167	0.05	0.17	
Wellbeing								
Material hardship	239	−0.01	0.13		175	−0.07	0.15	
Perceived stress	255	0.11	0.12		186	−0.03	0.15	
Optimism	239	0.02	0.13		177	0.02	0.15	
Depressive symptoms	213	−0.03	0.16		161	0.02	0.19	
Self-efficacy	209	0.15	0.14		156	0.27	0.17	
Parenting								
Parenting stress	223	0.05	0.12		162	−0.01	0.15	
Home environment	152	0.27	0.18		109	0.20	0.23	

Note: Analyses controlled for participant's gender, race, age, year of entry into the program, baseline education level, baseline outcome, and number of days between completing the Wave 1 and Wave 2 surveys. All values can be interpreted as effect sizes as outcomes were standardized.
Abbreviations: AA+, associate degree or higher; *ES*, effect size.
[a]The restricted sample included participants who completed the Wave 2 survey prior to March 1, 2020 and the onset of the COVID-19 pandemic in the United States.
***$p < 0.001$.

Wellbeing

There were no significant effects on material hardship, perceived stress, optimism, depressive symptoms, and self-efficacy in the full sample or the pre-COVID restricted sample.

Parenting

No significant effects on parenting stress or the home environment were found in the full sample or the pre-COVID restricted sample.

DISCUSSION

The purpose of this study was to determine if Career*Advance* could improve the educational outcomes of student parents through an adult platform model. Overall, parents who received access to the program demonstrated more educational advancement after 1 year compared to parents who did not receive access. These experimental results are similar to those in the quasi-experimental study of Career*Advance*'s child platform model, which also found that program parents reported higher rates of certification after 1 year.[24] Together, findings from these two studies suggest that both adult- and child-centered education platforms are effective in improving the education levels of student parents.

Although parental education is linked to psychological wellbeing theoretically and empirically,[8,12,24] the adult platform model did not significantly affect those outcomes. Conversely, the study of the child platform model found increased self-efficacy and optimism after 1 year.[24] One reason for the lack of significant results on parent wellbeing is that the adult platform model did not replicate all of the supports found in the child platform model, which included the safe, trusted environment of Head Start. These qualities of Head Start have been shown to give parents the confidence and security to pursue their own education.[1,6] Compared to parents in the adult platform model of Career*Advance*, those in the child platform model had an additional community from which to draw support.

Similarly, there were no significant differences between participants in the treatment and control groups on parenting measures even though the theoretical and correlational associations between educational advancement and parenting behavior are well-documented.[7,19] One limitation of this study was the psychometric properties of the home environment measure. It suffered from poor internal consistency and thus did not adequately measure the quality of the home environment of participant families. Future studies will require innovative approaches to measure parenting that may be more relevant to diverse populations of student parents. As expected, the pandemic appeared to decrease the effectiveness of the program given that significant findings were more robust in the pre-COVID restricted sample compared to the full sample. Faced with stressors related to the program and their everyday lives (e.g., illness, isolation, employment responsibilities,

virtual or paused learning for themselves and their children), parents may have struggled to fully participate in the program given more demanding priorities. Lastly, although we sought to maximize study participation by giving participants multiple ways to complete the survey, differences in data collection approaches between the treatment and control groups may be a confounding factor. All participants could complete the Wave 2 surveys online, but parents in the program were first given the option to complete the survey during a coaching session. This may have resulted in differences in time elapsed between the Wave 1 and Wave 2 surveys as well as varying attrition rates between the two groups.

The current study is one of the few to provide experimental evidence on the effectiveness of a family-centered, two-generation program to the literature on education and wellbeing. Regardless of the originating platform, a family-focused approach improves the educational success of student parents. Although Career*Advance* evolved over time, the program's mission to provide higher education for parents with essential services for children remained. Children are sources of strength for student parents, and education programs should consider supporting both generations with equal emphasis and intention. Future studies will examine the impact of this program on children.

AUTHOR CONTRIBUTIONS

Analyses, interpretation, writing, and revisions: L.A.T. Study conceptualization, analyses, interpretation, and editing: T.E.S., T.J.S., and P.L.C-L.

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COMPETING INTERESTS

All authors declare no competing interests.

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